GW - 97

PERMITS, RENEWALS, & MODS

Application

THE WESTERN COMPANY OF NORTH AMERICA
FARMINGTON, NEW MEXICO FACILITY

DISCHARGE PLAN
APPLICATION FOR
OIL FIELD SERVICE FACILITIES

TABLE OF CONTENTS

SECTIONS I, II, III & IV

I TYPE OF OPERATION

The Western Company of North America, Farmington, New Mexico Facility provides cementation, acidizing and high pressure pumping services for oil and gas wells.

II OPERATOR: The Western Company of North America

ADDRESS: 3250 Southside River Road
Farmington, New Mexico 87401

CONTACT PERSON: Phillip Box

PHONE: 713/629-2861

III LOCATION:
W1/2 SW1/4 NW1/4 Sec 13 & E1/2 SE1/4 NE1/4 Sec 14 T29N, R13W, NMPM, San Juan Co., Farmington, New Mexico

TOPOGRAPHIC MAP: Figure III.1

IV OWNER: The Western Company of North America

ADDRESS: 515 Post Oak Blvd., Ste. 915
Houston, TX 77027-9407
713/629-2861

FIGURE III.1

LOCATION - TOPOGRAPHIC MAP

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

FARMINGTON SOUTH QUADRANGLE
NEW MEXICO—SAN JUAN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS, NOS/NOAA, and U. S. Bureau of Reclamation

Topography by photogrammetric methods from aerial photographs taken 1964 and by planetable surveys of the Bureau of Reclamation 1965. Field checked by USGS 1965

Polyconic projection. 1927 North American datum
10,000-foot grid based on New Mexico coordinate system, west zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

Red tint indicates areas in which only landmark buildings are shown

Fine red dashed lines indicate selected fence lines

To place on the predicted North American Datum 1983 move the projection lines 2 meters north and 56 meters east as shown by dashed corner ticks

Revisions shown in purple compiled from aerial photographs taken 1978 and other source data. This information not field checked. Map edited 1979

Purple tint indicates extension of urban areas

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

NEW MEXICO
QUADRANGLE LOCATION

FARMINGTON SOUTH, N. MEX.
N3637.5—W10807.5/7.5

1965
PHOTOREVISED 1979
DMA 4357 II NW—SERIES V881

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1980

SECTION V

FACILITY DESCRIPTION & DIAGRAM

The Western Company of North America (Western) provides cementing, acidizing and high pressure pumping services to oil and gas well operators in the Farmington, New Mexico area. The principal materials stored and utilized in the servicing operations at the wellhead include: hydrochloric acid, cement sand and liquid and dry chemical additives.

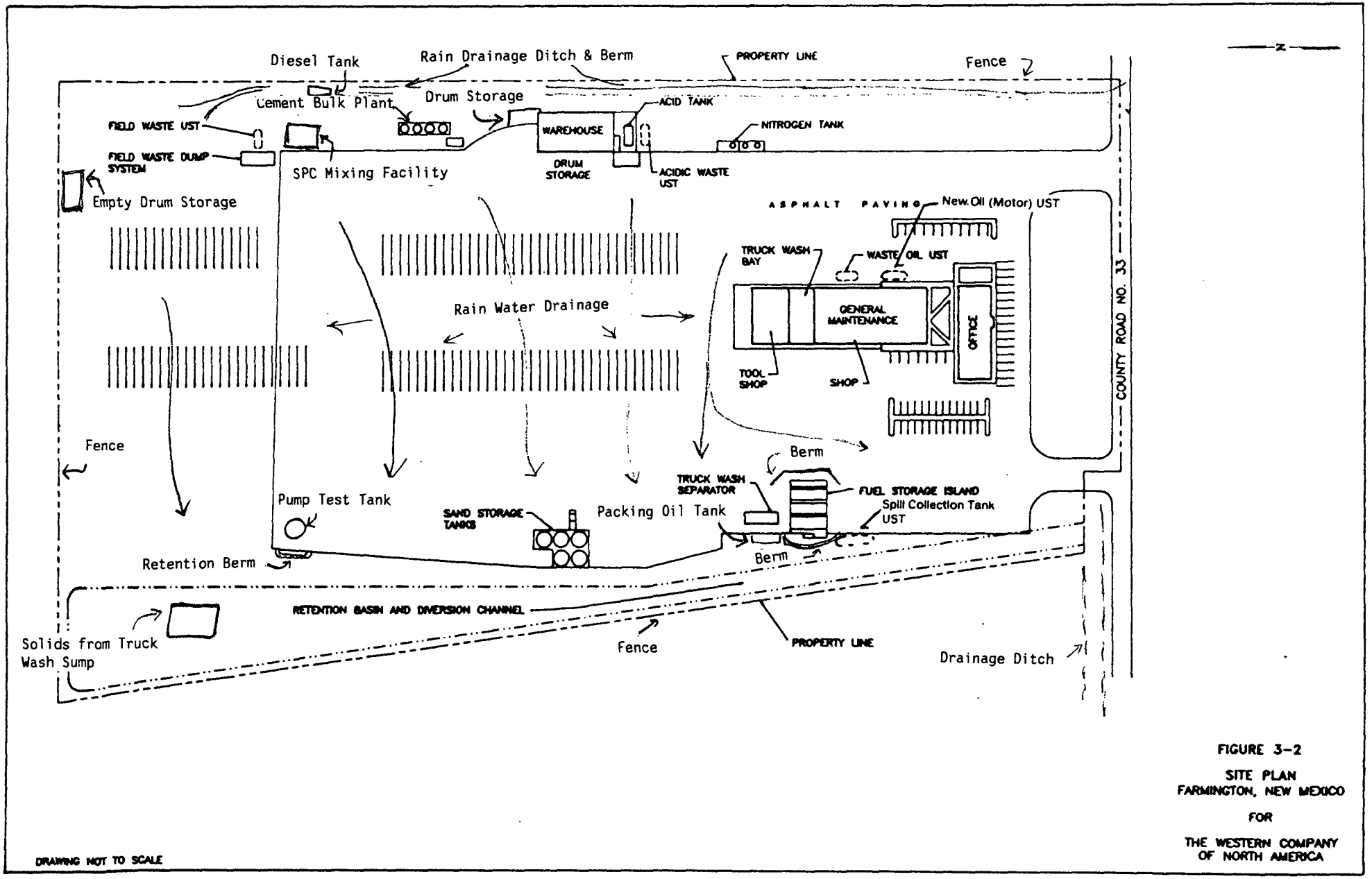


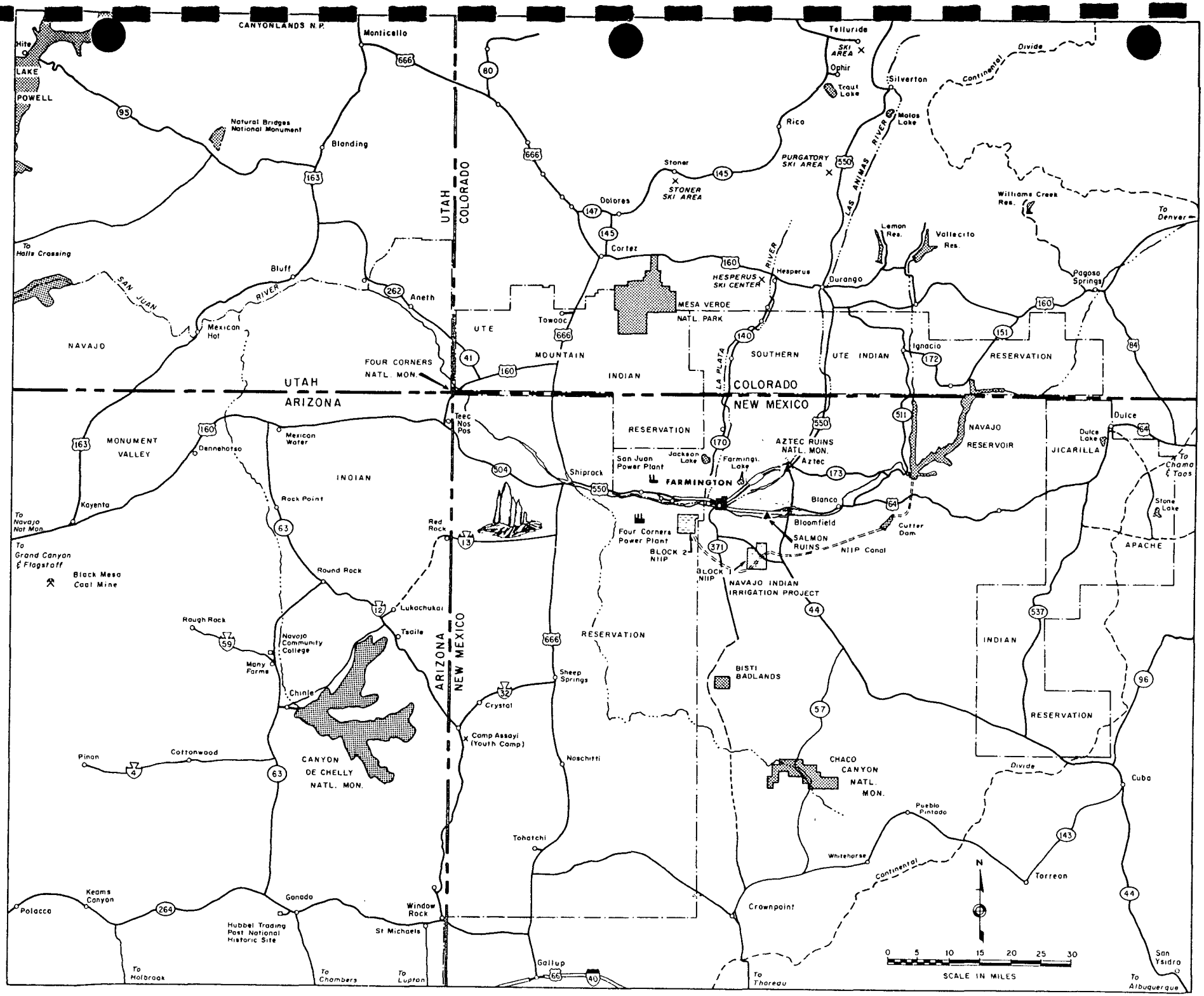
FIGURE 3-2

SITE PLAN
FARMINGTON, NEW MEXICO

FOR

THE WESTERN COMPANY
OF NORTH AMERICA


THE WESTERN COMPANY OF NORTH AMERICA
FARMINGTON, NEW MEXICO FACILITY


CANYONLANDS N.P.
Hite
LAKE POWELL
Monticello
Natural Bridges National Monument
Blanding
To Halls Crossing
SAN JUAN RIVER
Bluff
Aneth
Mexican Hat
NAVAJO
UTAH
COLORADO
FOUR CORNERS NATL. MON.
UTE MOUNTAIN INDIAN
Towaoc
Cortez
Dolores
Stoner
STONER SKI AREA
Rico
Telluride
SKI AREA
Ophir
Trout Lake
Silverton
Continental Divide
PURGATORY SKI AREA
Matos Lake
LAS ANIMAS RIVER
Williams Creek Res.
To Denver
Lemon Res.
Vallecito Res.
Durango
HESPERUS SKI CENTER
Hesperus
MESA VERDE NATL. PARK
LA PLATA RIVER
SOUTHERN UTE INDIAN RESERVATION
Ignacio
Pagosa Springs
UTAH
ARIZONA
COLORADO
NEW MEXICO
MONUMENT VALLEY
Dennehotso
Kayenta
To Navajo Nat Mon.
To Grand Canyon & Flagstaff
Black Mesa Coal Mine
Teec Nos Pos
Mexican Water
INDIAN RESERVATION
Rock Point
Red Rock
Round Rock
Lukachukai
Rough Rock
Navajo Community College
Many Farms
Chinle
Tsaile
CANYON DE CHELLY NATL. MON.
Pinon
Cottonwood
Shiprock
San Juan Power Plant
Four Corners Power Plant
FARMINGTON
Jackson Lake
Farmington Lake
AZTEC RUINS NATL. MON.
Aztec
Bloomfield
Blanco
SALMON RUINS
Cutter Dam
NIIP Canal
BLOCK 2 NIIP
BLOCK 1 NIIP
NAVAJO INDIAN IRRIGATION PROJECT
NAVAJO RESERVOIR
Dulce
Dulce Lake
JICARILLA APACHE RESERVATION
To Chama & Taos
Stone Lake
Sheep Springs
Crystal
Camp Assayi (Youth Camp)
Naschitti
BISTI BADLANDS
CHACO CANYON NATL. MON.
Pueblo Pintado
Whitehorse
Crownpoint
Tohatchi
Cuba
Torreon
Continental Divide
Keams Canyon
Polacca
Ganado
Hubbel Trading Post National Historic Site
Window Rock
St Michaels
To Holbrook
To Chambers
To Lupton
Gallup
To Thoreau
To Albuquerque
San Ysidro
N
0 5 10 15 20 25 30
SCALE IN MILES

SECTION VI

MATERIALS STORED

CHEMICALS USED AT THE FARMINGTON, NEW MEXICO FACILITY

PRODUCT	TYPE	STORED	WESTERN CONTAINER	WIN NO.	HAZ NO.	LB/GAL. QUANTITY
AB-54	S	WAREHOUSE	50 LB BAG	100142	60	550 L
ACID, ACETIC ACID, AC-2	L	WAREHOUSE	55 GAL PLASTIC DRUM	100174	60	231 G
ACID, BORIC	S	WAREHOUSE	50 LB BAG	100158	NA	200 L
ACID, CITRIC	L	WAREHOUSE	55 GAL PLASTIC DRUM	100091		111 G
ACID, FORMIC	L	WAREHOUSE	55 GAL PLASTIC DRUM	100097	60	55 G
ACID, FUMARIC	S	WAREHOUSE	50 LB BAG	100409	31	300 L
ACID, HCL 22°	L	TANK	ABOVEGROUND	100088	60	56,629 G
ACID, SULFAMIC	S	WAREHOUSE	50 LB BAG	100095	60	200 L
ACIGEL	L	WAREHOUSE	55 GAL STEEL DRUM	499520		55 G
ADOFOAM	L	WAREHOUSE	55 GAL STEEL DRUM	100181	26	55 G
ADOMALL	L	WAREHOUSE	55 GAL STEEL DRUM	100098	26	55 G
AF-11L	L	WAREHOUSE	5 GAL PLASTIC PAIL	100280	26	20 G
AMMONIUM HYDROXIDE	L	DRUM STORAGE	55 GAL PLASTIC DRUM	100223	60	1,238 G
AQUAFLOW	L	WAREHOUSE	55 GAL STEEL DRUM	100146	26	447 G
AQUASEAL 2	S	WAREHOUSE	50 LB BAG	100147	NA	534 L
ASA-300	S	WAREHOUSE	50 LB BAG	499685		100 L
ASP-530, ASP-539D	L	WAREHOUSE	5 GAL PLASTIC PAIL	100125,100126	NA	35 G
ATACLAY	S	WAREHOUSE	50 LB BAG	100274	NA	600 L
B-5	S	WAREHOUSE	50 LB BOX	100175	35	1,200 L
B-11	S	WAREHOUSE	50 LB BOX	100185	NA	800 L
B-16	S	WAREHOUSE	50 LB BAG	100130	NA	1,575 L
BARITE	S	WAREHOUSE	100 LB BAG	100356	NA	2,383 L
BENTONITE	S	SILO		100120	NA	60,000 L
BUFFER 2	S	WAREHOUSE	50 LB BAG	100149	21	1,200 L
BUFFER 4	S	WAREHOUSE	50 LB BAG	100237	NA	1,860 L
BUFFER 5L	L	DRUM STORAGE	55 GAL PLASTIC DRUM	499654		440 G
CELLO SEAL	S	WAREHOUSE	25 LB BAG	100295	NA	1,415 L
CEMENT	S	SILO	90 LB BAGS	100022,100160	NA	245,998 L
CF-2, CF-9	S	WAREHOUSE	50 LB BAG	100267,100270	NA	1,144 L
CF-10	S	WAREHOUSE	50 LB BAG	100271	NA	1,552 L
CF-14	S	WAREHOUSE	50 LB BAG	499508	NA	613 L
CF-18	S	WAREHOUSE	55 LB BAG	499604	NA	770 L
CL-2L	L	DRUM STORAGE	55 GAL PLASTIC DRUM	499630		330 G
CL-9	L	WAREHOUSE	55 GAL STEEL DRUM	100150	26	341 G
CL-14	L	WAREHOUSE	55 GAL PLASTIC DRUM	100377	26	150 G
CL-30	L	WAREHOUSE	55 GAL STEEL DRUM	499644		179 G
CLAY MASTER 4	L	WAREHOUSE	55 GAL PLASTIC DRUM	499545		165 G
CLAY TREAT	L	DRUM STORAGE	55 GAL PLASTIC DRUM	499653	27	440 G
CLM	L	WAREHOUSE	55 GAL STEEL DRUM	499521	26	110 G
COAL SURF	L	WAREHOUSE	55 GAL STEEL DRUM	499696		299 G
DIESEL 2	L	TANK	ABOVEGROUND	100365	26	263 G
DRYOCIDE	S	WAREHOUSE	5 LB BAG	499593	31	150 L
EE-200	L	WAREHOUSE	55 GAL STEEL DRUM	100293	26	55 G
FLO BACK 10	L	WAREHOUSE	55 GAL STEEL DRUM	100462		395 G
FLO-LOK 1	S	WAREHOUSE	50 LB BAG	100393	NA	605 L
FR-28	L	WAREHOUSE	55 GAL STEEL DRUM	499514	NA	885 G
FRAC CIDE 20	L	WAREHOUSE	6 GAL JUG	100486	NA	180 G
FRAC FOAM 1	L	WAREHOUSE	55 GAL PLASTIC DRUM	100362	26	110 G
FRAC FOAM 2	L	WAREHOUSE	55 GAL PLASTIC DRUM	499669	27	784 G
FS-2	L	WAREHOUSE	55 GAL STEEL DRUM	100167		110 G
FUMED SILICA	S	WAREHOUSE	50 LB BAG	499588	NA	6,188 L
GEL MASTER	S	WAREHOUSE	50 LB BAG	100214	NA	935 L
GILSONITE	S	SILO		100294	NA	36,537 L
HI-SEAL 2	S	WAREHOUSE	50 LB BAG	499634	NA	5,379 L
HS-2	L	WAREHOUSE	55 GAL STEEL DRUM	499641	NA	55 G
I-8A	L	WAREHOUSE	55 GAL STEEL DRUM	499617		55 G
I-10D	L	WAREHOUSE	55 GAL STEEL DRUM	499618		55 G
I-17A	L	WAREHOUSE	55 GAL STEEL DRUM	499620	29	55 G
I-18A	L	WAREHOUSE	55 GAL STEEL DRUM	499621		165 G
J-20	S	WAREHOUSE	50 LB BAG	499517	NA	5,020 L
I-22	L	WAREHOUSE	55 GAL STEEL DRUM	499655		141 G
J-20LP	S	WAREHOUSE	1000 LB BAG	499572		4,000 L
J-257W	L	WAREHOUSE	55 GAL PLASTIC DRUM	100256	26	55 G
J-4	S	WAREHOUSE	50 LB BAG	499541	NA	6,649 L
J-4LP	S	WAREHOUSE	1000 LB BAG	499598		9,000 L
LT-17, LT-21, LT-22	L	WAREHOUSE	55 GAL STEEL DRUM	100135,100138,100136	26	532 G
LT-25	L	WAREHOUSE	55 GAL STEEL DRUM	100144	26	55 G
LT-32	L	WAREHOUSE	55 GAL STEEL DRUM	499684		55 G

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085 DIAL COMM 8*235-4085

MATERIALS · INFORMATION · SERVICES

NO. 49

AMMONIUM BIFLUORIDE

Date June 1979

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: AMMONIUM BIFLUORIDE

OTHER DESIGNATIONS: Acid Ammonium Fluoride, Ammonium Hydrogen Fluoride; $(NH_4)HF_2$; GE D4Y18; CAS #001-341-497.

MANUFACTURER: Material available from several suppliers, including Harshaw Chemical Co, 1945 E. 97th St., Cleveland, OH 44106 Telephone: (216)721-8300

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Ammonium Bifluoride, $(NH_4)HF_2$	> 98	8-hr TWA
Ammonium Fluoride, NH_4F	< 2	2.5 mg F/m^3*
Free Hydrogen Fluoride, HF (MSDS #6)	<0.1	8-hr TWA 2 mg/m^3
Ammonium Silicofluoride, $(NH_4)_2SiF_6$	∿.05	No established TLV

*OSHA occupational exposure level for inorganic fluorides; also recommended by NIOSH (10-hr TWA) and ACGIH (1978). The compounds themselves have no established TLV's.

SECTION III. PHYSICAL DATA

Solubility in water, 20 C, g/100g water ------- 58.3 Molecular weight ---------- 57.04

Melting point, 1 atm ------ 125.6 C

Appearance & odor - White, deliquescent crystals (rhombic or tetrahedral) or flakes; no characteristic odor.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
N/A	N/A	N/A	-	-

Extinguishing Media: Use media suitable for surrounding fire, use water spray to cool fire-exposed containers. Toxic fumes are emitted on heating.

Firefighters should wear protective clothing & self-contained breathing apparatus suitable for HF exposure.

SECTION V. REACTIVITY DATA

This acidic material is stable at room temperature in a closed container. It does not polymerize. It is hygroscopic at 50% relative humidity.

Upon heating or contact with acid or acid fumes, highly toxic HF fumes are given off.

This material etches glass and can corrode metal, especially when heated.

It generates heat on reaction with alkaline materials and emits ammonia.

GENERAL ELECTRIC

W.I.N. 100142, INTENSIFIER, acid, Ammonium Bifluoride, AB-54

No. 49

SECTION VI. HEALTH HAZARD INFORMATION

TLV 2.5 mg (F)/m^3 (See Sect.II)

This acidic material is corrosive to body tissues and toxic by inhalation or ingestion. The effects arise from the ready availability of HF and fluoride ion from this compound. It can cause burns of the skin or eyes. Acute ingestion of 3.75g (2.5g of fluoride ion) is estimated to be fatal for an adult. Excessive inhalation of dust, solution mist, or liberated HF (from contact with acidic material or by heating) is irritating and can be severely damaging to the respiratory passages and the lungs and can produce systemic effects.

Chronic effects from fluoride can include bone, ligament and tendon damage, mottling of the teeth, anemia, impairment of growth in the young worker.

FIRST AID:

Eye contact: Immediately flush eyes with plenty of running water for at least 15 minutes; then contact physician (an opthalmologist if available)!

Skin contact: Promptly wash affected areas with plenty of water and soap. Remove contaminated clothing. Get medical help.

Inhalation: Remove from exposure. Get medical help promptly. Keep warm and at rest.

Ingestion: If conscious, give lots of milk or water to drink to dilute. (Induce vomiting only if medical help or direction is not readily available.) Get medical help!

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel when significant spills occur. Exclude from spill area all except clean-up personnel who have approved protection against skin contact and inhalation hazards. Provide ventilation. Pick up solids promptly, avoiding dusting conditions, and place in an approved container with a tight closure for disposal or recovery. Liquid spills can be neutralized and absorbed with a mixture of slaked lime and soda ash (ammonia evolved!), then picked up for disposal. Thoroughly neutralize trace residues; then flush to drain with much water.

DISPOSAL: Neutralize scrap material with water and slaked lime. Allow to settle 24 hrs. Decant liquid and flush it to drain with much water (ammonia solution). Deposit the calcium fluoride-slaked lime residual solids in an approved landfill. Follow Federal, State and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general ventilation and local exhaust ventilation to meet TLV requirements. Approved self-contained or air-supplied respirators are used for nonroutine or emergency conditions where the TLV is exceeded.

Use rubber gloves, safety goggles and body protecting clothing in handling this material. When solutions are used and splashing is possible, face shields, aprons, boots, etc. may also be needed.

A safety shower and eyewash station must be readily available to the workplace.

Fluoride-contaminated work clothing must not be allowed to become a hazard to others, for example members of a workers family, laundry personnel, etc. Health and safety personnel must determine control practices to be used for work clothing.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in tightly closed plastic, rubber or paraffin lined containers in a clean, cool, dry, well-ventilated, low fire hazard area, away from possible contact with acids or acid fumes and away from sources of heat. Inspect storage containers regularly.

Prevent skin contact. Avoid inhalation. Follow good hygienic practice to keep intake of fluorides low and prevent chronic effects. Wash well after using.

Workers exposed to fluorides should have a comprehensive, preplacement medical examination (including complete urinalysis) and biannual examinations thereafter, emphasizing musculoskeletal, pulmonary, GI tract, and kidney functions. Monitor fluoride exposure by periodic urinalysis.

DATA SOURCE(S) CODE: 2-7, 10-12, MSDS #6

APPROVALS: MIS, CRD

Industrial Hygiene and Safety

MEDICAL REVIEW: 12/79

100142

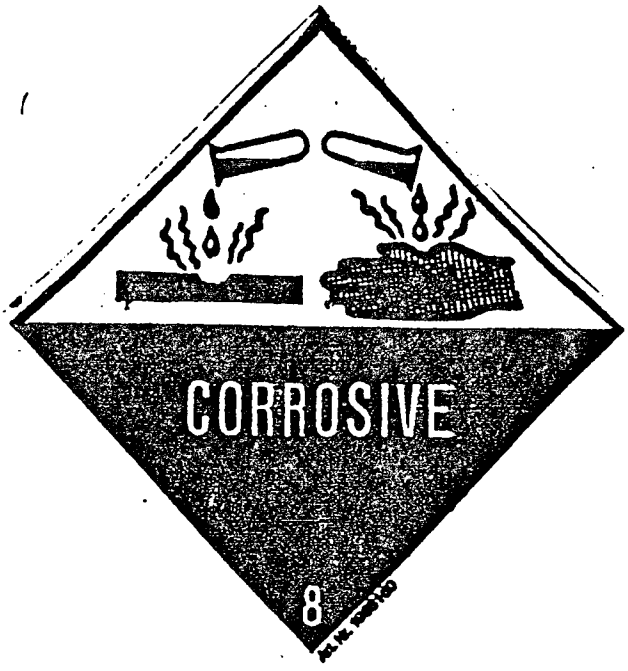
Precautionary Labeling for Bags

(Minimum requirements)

Trade Name: Ammonium Bifluoride, AB-54

W.I.N. 100142

When Handling This Product Employees MUST WEAR: face shield, rubber gloves, & dust mask



UN 1727
Net WT. 50 lb (22.7kg)
Lot No. _____
Reinspect on _____
mo/day/yr

WARNING!
CAUSES BURNS

AVOID: Prolonged or repeated contact with eyes and skin.
WASH: Thoroughly after handling and before eating or smoking.
Do not take internally.
FIRST AID: Immediately flush eyes with plenty of water for at least 15 minutes.
Call a physician.
Flush skin with water.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

100174

DATE: 15 Mar 78

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 7610?

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Acetic Acid & Acetic Anhydride	AC-2
CHEMICAL FAMILY	**FORMULA**
Acid	40% acetic acid, 60% acetic anhydride

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Corrosive liquid, N.O.S.
NAME OF HAZARDOUS COMPONENT	Acetic Anhydride
HAZARD CLASS	Corrosive material
IDENTIFICATION NUMBER	UN1760
D.O.T. LABEL(S) REQUIRED	Corrosive
PRECAUTIONARY LABEL	

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			

APPEARANCE AND ODOR: clear, colorless liquid - sharp acrid odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
112°F, Tag Open cup; 109°F, Tag Closed Cup		2.9%	10.3%

EXTINGUISHING MEDIA: Water spray, dry chemical, and alcohol foam are effective extinguishing agents for acetic anhydride fires.

SPECIAL FIRE FIGHTING PROCEDURES: Addition of water will reduce intensity of flames. If a leak or spill has not ignited, use water spray to disperse the vapor and to protect the personnel trying to stop the leak. Fire fighters should wear self-contained breathing apparatus and full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Water and foam react with chemical, but the heat liberated is not enough to create a hazard. Dry chemical forced below surface can cause foaming and boiling.

(Continued on reverse side)

TRADE NAME: ~~AB-54~~

SECTION V - HEALTH HAZARD DATA

10 0174

THRESHOLD LIMIT VALUE
2.5 mg/m^3 as F

EFFECTS OF OVEREXPOSURE
Skin: may cause burns or rash. Eyes: irritation. Internal: harmful if swallowed.
Inhalation of dust may cause irritation of the respiratory system.

EMERGENCY AND FIRST AID PROCEDURES
Skin: wash with water. Tincture of zephiran chloride, iced, soaks.
Eyes: flush with water at least 15 minutes. Consult a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE		

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR		

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Bureau of Mines approved respirator.

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION Goggles or shield

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

W.I.N.100088,ACID,HCl,22°Be
W.I.N.100092,ACID,HCl,20°Be

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y.

MATERIALS INFORMATION SERVICES

NO. 30 A

HYDROCHLORIC ACID

Date October 1977

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: HYDROCHLORIC ACID
DESCRIPTION: This material is a water solution of hydrogen chloride gas.
OTHER DESIGNATIONS: Muriatic Acid, Concentrated Hydrochloric Acid, GE Material D4A3, CAS# 007647010
MANUFACTURER: Available from many suppliers

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Hydrogen chloride (HCl)	<38	TLV 5 ppm (C)*
Impurities (depends on acid grade)	Traces	
Water	Balance	

*C denotes a ceiling concentration that should not be exceeded in the workplace

SECTION III. PHYSICAL DATA	18°Be'	20°Be'	22°Be'	23°Be'
Weight % HCl	27.9	31.4	35.2	37.1
Boiling pt, 1 atm, deg F	208	182	144	123
Freezing point, deg F	-43.6	-63.4	-86.3	-101.2
Specific gravity, 60/60 F	1.142	1.160	1.179	1.189
Vapor pressure, 25 C, mm Hg	--	25	--	--

Materials are completely water soluble and nearly 100% volatile.
Appearance & Odor: Colorless to lt. yellow fuming liquid with a pungent, suffocating odor.

SECTION IV. FIRE AND EXPLOSION DATA			LOWER	UPPER
Flash Point and Method	Autoignition Temp.	Flammability Limits In Air		
N/A	N/A	N/A		

Extinguishing media: Select that suitable for surrounding fire.
This nonflammable material can react with many metals, such as iron, to produce flammable hydrogen gas. The acid can be neutralized with bases such as slaked lime or soda ash.
Use a water spray to cool fire exposed containers to prevent rupture.
Firefighters should use full protective clothing and self-contained breathing apparatus when this material is involved in a fire situation.

SECTION V. REACTIVITY DATA

This material is stable when properly contained and handled. It is a strong mineral acid and is, thus, highly reactive with materials such as metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. It is highly corrosive to many materials.
It can liberate significant levels of HCl by vapor pressure at room temperature when concentrated and large amounts of HCl when heated.
Reaction with most metals will produce hydrogen gas.

GENERAL ELECTRIC

W.I.N.100088,ACID,HCl,22°Be
W.I.N.100092,ACID,HCl,20°Be

NO. 30 A

SECTION VI. HEALTH HAZARD INFORMATION

TLV 5 ppm ceiling (as HCl)

Prolonged inhalation of HCl vapors or mist just above the TLV can damage the teeth and irritate the nasal passages. Higher concentrations (50+ppm) will cause coughing and choking and produce severe irritation and damage of the mucous membranes of the upper respiratory tract. 1300 ppm is immediately dangerous to life.

Hydrochloric acid is corrosive and causes burns of human tissue. Ingestion can produce burns of the mouth and digestive tract.

FIRST AID:

Eye contact: Flush thoroughly with running water for 15 minutes. Get medical aid.

Skin contact: Wash affected areas thoroughly with much water. For gross contact, remove contaminated clothing under the safety shower; prolong washing for 15+ minutes.

Ingestion: Give limewater or water and milk of magnesia to drink. Do not induce vomiting! Get medical aid.

Inhalation: Remove to fresh air; restore breathing, if required. Oxygen can be given under proper supervision. Get medical aid.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Large spills should be reported to safety personnel. Remove sources of ignition. Supply ventilation. Stay upwind of large spills in outside areas. Those involved in clean up of large spills must use full protective clothing, boots, and self-contained breathing apparatus.

Flush large spills with water to holding area and neutralized with soda ash or lime. Flushing to sewer depends on allowable salt concentrations in effluent water. Follow local, State and Federal regulations. Cover small spills with a mixture of soda ash and slaked lime. Flush the neutralized material to the sewer with much water.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide adequate exhaust ventilation in areas of use or storage to meet TLV requirements. Face velocity of hoods should exceed 100 lfm. Use approved respirator or self-contained breathing apparatus for emergency or non-routine conditions.

Those handling hydrochloric acid should use protective clothing and equipment to prevent body contact with the liquid. Use rubber gloves or gauntlets, rubber apron, rubber boots, long sleeved shirt, etc. Use chemical safety goggles and/or face shield for eye protection against splashing of acid.

An eye wash station and safety shower must be located near areas where hydrochloric acid is handled or used.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store closed containers in clean, cool, open or well-ventilated areas. Keep out of sun. Area should have acid resistant floor and approved drainage. Keep away from oxidizing agents and alkaline materials. Protect containers from damage or breakage. Use non-sparking tools in areas around tanks and pipes where hydrogen might be generated.

Avoid inhalation of HCl vapors; if odor can be detected, workers are being overexposed! Odor of HCl gives adequate warning for a prompt voluntary withdrawal from the exposure area. Avoid skin contact.

Provide emergency neutralization materials and equipment storage & use areas.

APPROVALS: MIS, CRD J. M. Fuller

Industrial Hygiene and Safety

MEDICAL REVIEW:

DU PONT

INDUSTRIAL CHEMICALS department

100095

MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME: E. I. du Pont de Nemours & Co. (Inc.)	EMERGENCY TELEPHONE NO.: (302) 774-7500
ADDRESS (Number, Street, City, State, and ZIP Code): Wilmington, DE 19898	
CHEMICAL NAME AND SYNONYMS: Sulfamic acid	TRADE NAME AND SYNONYMS: Sulfamic Acid
CHEMICAL FAMILY: Inorganic acid	FORMULA: NH_2SO_3H

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES

Not applicable

SECTION III PHYSICAL DATA

BOILING POINT (°F): decomposes		SPECIFIC GRAVITY (H_2O=1)	1.05-1.2
VAPOR PRESSURE (mm Hg): Not applicable		PERCENT VOLATILE BY VOLUME (%): Not applicable	
VAPOR DENSITY (AIR=1): Not applicable		EVAPORATION RATE: Not applicable	
SOLUBILITY IN WATER: appreciable			
APPEARANCE AND ODOR: White crystalline solid with no odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): Not applicable	FLAMMABLE LIMITS: Not applicable	Lel	Uel

EXTINGUISHING MEDIA: Water, "alcohol" foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS: Sulfur dioxide and sulfur trioxide may be released in a fire.

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: Not applicable

EFFECTS OF OVEREXPOSURE: Causes eye burns; causes irritation of nose, throat, skin

EMERGENCY AND FIRST AID PROCEDURES: Flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with plenty of water. For ingestion, drink large quantities of water; do not induce vomiting. Call a physician.

100095

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATIBILITY (Materials to avoid)
Chlorine, hypochlorous acid, sodium hypochlorite

HAZARDOUS DECOMPOSITION PRODUCTS
Sulfur trioxide, sulfur dioxide, nitrogen, sulfuric acid, ammonia

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Do not get in eyes. Avoid contact with skin or clothing. Avoid breathing dust.

WASTE DISPOSAL METHOD
Sweep up excess. Flush area with large quantities of water.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specific Type)
None for normal use

VENTILATION		
	LOCAL EXHAUST: Maintain adequate ventilation	SPECIAL: Not applicable
	MECHANICAL (General): Unknown	OTHER: Not applicable

PROTECTIVE GLOVES	EYE PROTECTION
Wear rubber gloves	Goggles

OTHER PROTECTIVE EQUIPMENT
Not applicable

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store in cool, dry place. Keep container closed.

OTHER PRECAUTIONS
Use with adequate ventilation. Wash thoroughly after handling.

For more information refer to: Properties and Uses of Sulfamic Acid (A-96012-1)
National Fire Protection Association, Manual No. 491M

DUPONT

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 15JUL85

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Proprietary Blend	Gelling Agent, Acigel
CHEMICAL FAMILY	**FORMULA**
Acrylamide Copolymer	W I N 499520

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not Regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
paraffin oil		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212°F	SPECIFIC GRAVITY (H_2O=1) @ 60°F	1.08
VAPOR PRESSURE (mm Hg.)	No Data	PERCENT, VOLATILE BY weight % @ 75°F	44
VAPOR DENSITY (AIR=1)	No Data	EVAPORATION RATE (_____ =1)	-----
SOLUBILITY IN WATER	Polymer Soluble in Water at pH < 7		
APPEARANCE AND ODOR	Milky white liquid, Sweet odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
None, flames out @ 52°C(125°F) PMCC			

EXTINGUISHING MEDIA
carbon dioxide, dry chemical, alcohol foam

SPECIAL FIRE FIGHTING PROCEDURES
none

UNUSUAL FIRE AND EXPLOSION HAZARDS
none

(Continued on reverse side)

TRADE NAME: W.I.N. 499520, Gelling Agent, acid, Acigel

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: None established for the product

EFFECTS OF OVEREXPOSURE: May cause irritation with prolonged contact

EMERGENCY AND FIRST AID PROCEDURES: Eyes: Flush with water for 15 minutes. Call a physician.

Skin: Wash thoroughly with soap and water.

Ingestion: Do not induce vomiting. Give water. Call a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID: none
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS: oxides of nitrogen

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain with absorbent material.

WASTE DISPOSAL METHOD: No special method. Consult local, state, and federal regulations for appropriate disposal methods. This product is not regualted under RCRA.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: None normally required.

VENTILATION	LOCAL EXHAUST: X	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES: synthetic

EYE PROTECTION: chemical goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: none

OTHER PRECAUTIONS: Do not take internally. Avoid eye and prolonged skin contact.

WESTERN
Pacesetters

Western Petroleum Services

W.I.N. 499520

ACIGEL

Acid Gellant

Net Content: 498 lb(226 kg)
55 gal(208 L)@60°F

DIRECTIONS

For Proper Use, Refer to Service Bulletin No.(s) 683.0

SPECIFIC USAGE: Use at the rate of 1 to 60 gal/1000 gal of acid.

FOR INDUSTRIAL USE ONLY

CAUTION!

Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.
Keep container closed.
Avoid breathing vapor. Use with adequate ventilation.
At elevated temperatures this product may burn.
Use foam, dry chemical or CO_2.

FIRST AID:
FOR EYES: In case of contact, immediately wash with water for at least 15 minutes. Call physician.
FOR SKIN: In case of contact, wash thoroughly with water. Wash clothing before re-use.

HANDLING: Employees must wear chemical goggles, plastic gloves.

ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Donot cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for:

The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Batch no.

*****D.O.T. PROPER SHIPPING NAME: Not Regulated*****

4793.0

Material Safety Data Sheet

from Genium's Reference Collection
Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855

GENIUM PUBLISHING CORP.

No. 1A 100223
AMMONIUM HYDROXIDE (28-30%)
(Revision A)
Issued: April 1980
Revised: November 1988

SECTION 1. MATERIAL IDENTIFICATION

Material Name: AMMONIUM HYDROXIDE (28-30%)

Description (Origin/Uses): Used in bleaching, fabric printing, as a detergent, and in manufacturing ammonium salts and aniline dyes.

Genium

Other Designations: Ammonium Solution; Ammonium Hydroxide; Strong Ammonia Water; Spirit of Hartshorn; NH_4OH; Aqueous NH_4OH; CAS No. 1336-21-6

HMIS
H 2 R 1
F 1 I 3
R 0 S 3
PPG* K 1
*See sect. 8

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

SECTION 2. INGREDIENTS AND HAZARDS	%	EXPOSURE LIMITS
Anhydrous Ammonia,* CAS No. 7664-41-7	28-30	OSHA PEL STEL: 35 ppm, 27 mg/m³
Water, CAS No. 7732-18-5	70-72	ACGIH TLVs, 1988-89** TLV-TWA: 25 ppm, 18 mg/m³ TLV-STEL: 35 ppm, 27 mg/m³
*See Genium Industrial MSDS 1. **Set to protect against irritation to the eyes and respiratory tract. ***See NIOSH, *RTECS* (BQ9625000), for additional data with references to irritative and mutagenic effects.		Toxicity Data*** Human, Oral, LD_{Lo}: 43 mg/kg Human, Inhalation, LC_{Lo}: 5000 ppm Human, Inhalation, TC_{Lo}: 408 ppm

SECTION 3. PHYSICAL DATA

Boiling Point: Ca 82°F (28°C)
Melting Point: Ca -98°F (-72°C)
Vapor Density (Air = 1): 0.6 (as NH_3)
pH: >13 (Very Basic)
% Volatile by Volume: 28 to 30
Molecular Weight: 35 Grams/Mole (NH_4OH)
Solubility in Water (%): Complete
Specific Gravity (H_2O = 1): 0.9

Appearance and Odor: A clear, colorless liquid; strong, pungent, suffocating, characteristic ammonia odor (like dried urine). The odor is detectable at 5 ppm, irritating at 25 to 50 ppm, and provides a warning of hazardous concentration in the air.

Comments: The temperature at which the solution is saturated with the dissolved ammonia is approximately 80 to 85°F (27 to 29°C) at standard pressure (1 atmosphere). Above these temperatures the excess ammonia gas will bubble out of solution.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	LEL: 15% v/v (as NH_3)	UEL: 28% v/v (as NH_3)
Not Applicable	1204°F (651°C) (as NH_3)		

Extinguishing Media: Ammonium hydroxide solutions are not likely to burn. Although the ammonia gas can burn, it is hard to ignite. Use extinguishing agents that will put out the surrounding fire. Use a cold water spray to cool fire-exposed containers and to control, disperse, or knock down the ammonia vapor. Unusual Fire or Explosion Hazards: When ammonium hydroxide solutions are heated, they evolve substantial quantities of NH_3 vapor. This ammonia gas is dangerously irritating. Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Fire fighters must also wear a complete set of protective clothing designed to prevent any contact with ammonia gas.

SECTION 5. REACTIVITY DATA

Stability/Polymerization: Ammonium hydroxide is stable in closed containers during routine work operations. Hazardous polymerization cannot occur. Chemical Incompatibilities: Avoid hazardous reactions brought about by accidental exposure of ammonium hydroxide solutions and ammonia gas to copper, tin, zinc, aluminum, galvanized surfaces, acrolein, iodine, dimethyl sulfate, fluorine, gold, aqua regia, propylene oxide, ß-propiolactone, silver nitrate, silver oxide, silver permanganate, and strong mineral acids such as hydrofluoric acid, hydrochloric acid, nitric acid, and oleum (a mixture of sulfuric acid [H_2SO_4] and its anhydride [SO_3]). Conditions to Avoid: Avoid direct contact with incompatible chemicals. Always establish compatibility between ammonium hydroxide solutions and other materials by testing small quantities of materials to replicate the expected conditions of bulk operations. Do not heat ammonium hydroxide solutions. Hazardous Products of Decomposition: Ammonia gas (NH_3) will be given off from ammonium hydroxide solutions if they are heated or if sodium hydroxide (NaOH) is added to them. Comments: Ammonia gas is likely to be present in work areas where ammonium hydroxide solutions are used. If gases that react violently with ammonia are also found there, establish appropriate engineering controls to minimize any potential hazard associated with mixing them.

SECTION 6. HEALTH HAZARD INFORMATION

Carcinogenicity: Ammonium hydroxide is not listed as a carcinogen by the NTP, IARC, or OSHA.
Summary of Risks: Ammonium hydroxide is very irritating and corrosive to all body tissue. Accidental ingestion of ammonium hydroxide solutions damages the gastrointestinal tract. Permanent blindness can result from accidentally splashing these solutions into the eyes. Excessive inhalation of ammonia vapor causes severe irritation to the respiratory system, coughing, difficulty in breathing, severe lung congestion, and possibly fatal pulmonary edema (lungs filled with fluid). Tolerance to higher concentrations may develop. Medical Conditions Aggravated by Long-Term Exposure: None reported. Target Organs: Skin, eyes, and respiratory system. Primary Entry: Inhalation, skin or eye contact. Acute Effects: Severe irritation of all exposed tissue (eyes, skin, and respiratory system). Swelling and sloughing of the lining of the air passages may occur; opening them may require emergency measures. First- and second-degree burns may also occur. Chronic Effects: Asthma and chronic hyperactivity of air passages may occur after massive exposure. FIRST AID: Eyes. Immediately flush eyes, including under the eyelids, gently but thoroughly with flooding amounts of running water for at least 15 minutes. Speed and thoroughness in rinsing the eyes is vital to preventing permanent eye injury. Skin. Immediately rinse the area with flooding amounts of water while removing grossly contaminated clothing and shoes, then wash with soap and water. Inhalation. Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Qualified medical personnel should administer oxygen as required. Ingestion (applicable only to accidental ingestion of ammonium hydroxide solutions; not applicable to ammonia gas). Never give anything by mouth to someone who is unconscious or convulsing. If the exposed person is responsive, promptly give him or her plenty of water, dilute vinegar, or citrus juice to drink, followed by milk. Do not induce vomiting. Get medical help (in plant, paramedic, community) for all exposures. Seek prompt medical assistance for further treatment, observation, and support after first aid. Note to physician: Immediate hospitalization and observation for 72 hours to detect delayed pulmonary edema is advised in cases of severe exposure.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Preplan emergency response to spills or leaks of ammonium hydroxide solutions. Evacuate all nonessential personnel, notify safety personnel, eliminate all sources of ignition, and provide adequate ventilation. Cleanup personnel need protection against skin and eye contact with the liquid as well as inhalation of its vapor (see sect. 8). Contain large spills and absorb waste with sand, earth, or vermiculite. Neutralize the spilled ammonium hydroxide with dilute hydrochloric acid (HCl) or dilute sulfuric acid (H_2SO_4). The neutralized ammonium hydroxide solutions must be extensively diluted with water before discharge. Prevent runoff from directly entering streams, surface waters, waterways, watersheds, and sewers. Waste Disposal: Consider reclamation, recycling, or destruction rather than disposal in a landfill. Suitable scrap ammonium hydroxide recovered from spills or leaks may be useful in neutralizing acidic wastes. Monitor effluents for pH, ammonia, and salt content because these properties can be subject to specific regulations. Follow Federal, state, and local regulations.
OSHA Designations
Listed as an Air Contaminant (29 CFR 1910.1000 Subpart Z, for NH_3)
EPA Designations (40 CFR 302.4)
CERCLA Hazardous Substance, Reportable Quantity: 1000 lbs (454 kg), per the Clean Water Act (CWA), §311 (b) (4). If this waste ammonium hydroxide satisfies the characteristic of corrosivity detailed in 40 CFR 261.22, it is assigned the RCRA hazardous waste number D002.

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Where splashing of ammonium hydroxide solutions is possible, wear a full face shield. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). Respirator: Wear a NIOSH-approved respirator per Genium reference 88 for the maximum-use concentrations and/or the exposure limits cited in section 2 as applied to ammonia gas. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine operations (spills or cleaning reactor vessels and storage tanks), wear an SCBA. Warning: Air-purifying respirators will *not* protect workers in oxygen-deficient atmospheres. Other: Wear impervious rubber gloves, boots, aprons, and gauntlets, etc., to prevent excessive or prolonged skin contact. Ventilation: Install and operate general and local exhaust-ventilation systems powerful enough to maintain airborne concentrations of ammonia gas below the OSHA PEL standard cited in section 2. Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work areas. A large amount of clean water must be available for emergency response to accidental ammonium hydroxide spills. Contaminated Equipment: Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from your shoes and equipment. Comments: Practice good personal hygiene; always wash thoroughly after using this material. Keep it off your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do *not* eat, drink, or smoke in any work area.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage/Segregation: Store ammonium hydroxide solutions in insulated, closed containers in a cool, dry, well-ventilated area separate from incompatible chemicals (see sect. 5) and direct sunlight. Special Handling/Storage: Protect containers from physical damage and handle them carefully. Use caution when opening sealed containers to relieve pressure. Drain empty containers well and flush them with water before discarding them. Engineering Controls: Follow established safety procedures during transfers of ammonium hydroxide solutions. The ammonia vapor produced by an ammonium hydroxide spill can be a serious hazard at temperatures above 50°F. Monitor the amount of ammonia gas present in pipelines, storage tanks, reactor vessels, etc., with appropriate equipment, especially before entering or inspecting these areas. Comments: Train personnel who work with ammonium hydroxide solutions in their safe use and in proper emergency response. Maintain accurate medical records of employee exposure to ammonia gas from ammonium hydroxide solutions. Severe exposure requires a medical exam to assess any damage and to make recommendations concerning possible future restrictions on job assignments.

Transportation Data (49 CFR 172.101-2)
DOT Shipping Name: Ammonium Hydroxide* ID No. NA2672 IMO Hazard Class: 8
DOT Hazard Class: Corrosive Material DOT Label: Corrosive IMO Label: Corrosive

*Limited to solutions containing at least 12% and not more than 44% ammonia.

References: 1, 26, 38, 84, 86-94, 100, 116, 117.

Prepared by PJ Igoe, BS

Industrial Hygiene Review: DJ Wilson, CIH

499644

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Date: February 3, 1992

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5433
ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS CL-30
CHEMICAL FAMILY Crosslink Additive	FORMULA Proprietary Blend W.I.N. 499644

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME Combustible Liquid, N.O.S. (RQ /)

NAME OF HAZARDOUS COMPONENT Hydrocarbon Distillate

HAZARD CLASS Combustible Liquid

IDENTIFICATION NUMBER NA 1993

D.O.T. LABEL(S) REQUIRED In 110 gallon containers or larger - 49CFR 173.118

PRECAUTIONARY LABEL Combustible

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Hydrocarbon Distillate	45	200 ppm
Complex Hydrocarbon Solvent	4	200 ppm
Methyl Alcohol	2	200 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F)		SPECIFIC GRAVITY (H_2O=1)	1.16
VAPOR PRESSURE (mm Hg)	N/D	PERCENT, VOLATILE BY VOLUME (%)	48
VAPOR DENSITY (AIR=1)	1	EVAPORATION RATE (_____=1)	N/D
SOLUBILITY IN WATER	Soluble		

APPEARANCE AND ODOR Tan color / hydrocarbon odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 146°F (PMCC)	FLAMMABLE LIMITS N/D	Lel	Uel

EXTINGUISHING MEDIA Water spray, foam, dry chemical or carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus. Cool exposed containers with water. Avoid breathing vapors or fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Keep heat, sparks and flame away. Produces toxic combustion products. Vapor is heavier than air and may travel considerable distance to source of ignition.

(Continued on next page)

TRADE NAME: W.I.N. 499644

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

See Attachment.

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Keep away from heat, sparks & open flame.
	STABLE	X	

INCOMPATIBILITY (Materials to avoid) Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, oxides of nitrogen.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all ignition sources. Recover free liquid. Add absorbent (sand, earth, sawdust) to spill area. Advise authorities if product has entered or may enter sewers, water courses or extensive land area.

WASTE DISPOSAL METHOD

Incinerate free liquid. Bury contaminated absorbent in industrial landfill in accordance with local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Normally not needed. Use supplied air respirator in closed areas.

VENTILATION	LOCAL EXHAUST As needed to prevent exceeding recommended exposure limit.	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES Chemical resistant gloves

EYE PROTECTION Splash goggles.

OTHER PROTECTIVE EQUIPMENT Chemical boots and apron as appropriate during use.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from strong oxidizing agents. Avoid contact with eyes, skin or clothing. Keep away from heat, sparks and open flame. never use cutting torch on or near container (even empty)-- explosion may result. Do not reuse empty container. Launder clothes before reuse. Avoid breathing vapors or aerosols.

OTHER PRECAUTIONS

(Continued on next page)

MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION
345 CATALYN ST., SCHENECTADY, NY 12303 USA (518) 377-8854

MSDS # N 143
BORON OXIDE
Issued: August 1985
Revised:

From Genium's MSDS Collection, to be used as a reference.

SECTION 1. MATERIAL IDENTIFICATION

MATERIAL NAME: BORON OXIDE

Other designations: Boric Anhydride, Boric Oxide, Boron Sesquioxide, Anhydrous Boric Acid, Diboron Trioxide, B_2O_3, CAS #1303-86-2

Suppliers: Suppliers of boron oxide include:
United States Borax and Chemical Corp.
3075 Wilshire Blvd.
Los Angeles, CA 90010

SECTION 2. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Boron Oxide, B_2O_3	99 (high purity grade)	ACGIH TLV: 8hr TWA = 10 mg/m3* OSHA PEL: 8hr TWA =15 mg/m^3

*1985-86 TLV for boron oxide

SECTION 3. PHYSICAL DATA

Melting point..... 460°C
Boiling point..... ca 1360°C
Specific gravity:
Crystalline form..... 2.5
Amorphous form..... 1.8
Solubility in water @ 20°C,g/100cc.... 2.77
Molecular weight..... 69.62

Appearance and odor: colorless vitreous granules or flakes. No odor.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
NA	NA	NA		

EXTINGUISHING AGENTS: This material is not combustible. Use agents that are suitable for the surrounding fire. Firefighters should wear self-contained breathing apparatus and protective gear as required by the fire situation.

SECTION 5. REACTIVITY DATA

This material is stable in closed containers under normal conditions of storage and handling. It is hygroscopic at room temperature. It does not polymerize. There are no hazardous decomposition products.

In the molten form, B_2O_3 reacts readily with water vapor to form HBO_2. It may react violently on contact with bromine pentafluoride (BrF_5).

W.I.N.100158,ACID,boric,anhydrous(P-6,CL-2)

MSDS # N 143 Issued 8/85 BORON OXIDE

SECTION 6. HEALTH HAZARD INFORMATION

TLV 10 mg/m^3

Boron oxide is considered to exhibit a low degree of inhalation toxicity. Inhalation of 470 mg/m^3 for 10 weeks produced only mild irritation in laboratory rats. Topical application (1 gram) to rabbit skin produced erythema. Ocular instillation (50 mg) produced conjunctivitis (also in rabbits). This material may be poisonous on ingestion.

FIRST AID Eye Contact: Flush eyes thoroughly with running water for at least 15 minutes. Seek medical attention.
Skin Contact: Wash contaminated area with soap and water. Obtain medical attention if redness or irritation develops.
Inhalation: Remove from exposure. Seek medical attention if discomfort persists or if other symptoms develop.
Ingestion: If conscious, give person several glasses of water to drink. Induce vomiting. Get prompt medical assistance (in-plant, paramedic, or community)

SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES

Promptly scoop up spilled material and place in suitable containers for reclaim or disposal. Avoid excessive dust generation during clean-up. Liquid spills can be absorbed on an inert solid. Clean-up personnel should wear protective equipment (dust respirators, goggles, gloves) as required by the spill situation.

Disposal: Reclaim material for salvage or reuse where possible. Unsalvageable waste may be buried in an approved landfill. Follow local, state, and federal regulations.

SECTION 8. SPECIAL PROTECTION INFORMATION

Provide sufficient exhaust ventilation to keep airborne particulate levels below the TLV. NIOSH-approved dust respirators should be worn where excessive dust levels exist.

Use protective clothing (gloves, aprons, etc.) appropriate for the work situation to minimize skin contact. Avoid eye contact by using chemical safety goggles where dusty conditions occur or solution splashing is possible.

Eye-wash stations and washing facilities should be accessible to areas of use and handling.

Contact lenses pose a special hazard: soft lenses may absorb and all lenses concentrate irritants.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a cool, dry location. Protect containers from physical damage.
Use good housekeeping practices (avoiding excessive dust generation) to prevent accumulation of dust.
Wash hands and face before eating, drinking or smoking, after handling this material.
Do not ingest. Avoid eye and skin contact and dust inhalation.

DOT CLASS: Not listed in 49 CFR 172.101 or 172.102

DATA SOURCE(S) CODE (See Glossary) 2,4,12,1-,25,27,49,55,58,59,V.

APPROVALS JC Aurnau 11/85

INDUST. HYGIENE/SAFETY 11-85

MEDICAL REVIEW Dec 85

GENIUM PUBLISHING

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

100041

MATERIAL SAFETY DATA SHEET

DATE: FEB. 1985

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
50% solution of citric acid	Citric Acid, Liquid (XR-2L)
CHEMICAL FAMILY	**FORMULA**
citric acid	W.I.N. 100091

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Corrosive Liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Citric Acid
HAZARD CLASS	Corrosive Liquid, n.o.s.
IDENTIFICATION NUMBER	UN1760
D.O.T. LABEL(S) REQUIRED	Corrosive Label must be applied
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Citric Acid	50	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.) not established		SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.) not established		PERCENT, VOLATILE BY VOLUME (%) not established	
VAPOR DENSITY (AIR=1) not established		EVAPORATION RATE (_____ =1) not established	
SOLUBILITY IN WATER	1.25		

APPEARANCE AND ODOR Clear, colorless to faintly yellow-green liquid,essentially no odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A		FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA N/A				
SPECIAL FIRE FIGHTING PROCEDURES N/A				
UNUSUAL FIRE AND EXPLOSION HAZARDS				

(Continued on reverse side)

TRADE NAME: W.I.N.100091,ACID,citric,50% solution,XR-2L

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	No TLV established
EFFECTS OF OVEREXPOSURE	May be mild eye and skin irritant
EMERGENCY AND FIRST AID PROCEDURES	Flush skin contact with water and flush eye contact immediately with plenty of water. Seek medical care for eyes.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	N/A
INCOMPATABILITY *(Materials to avoid)*			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	N/A

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Do not attempt to recover.

WASTE DISPOSAL METHOD

Flush with water to drains.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*	None		
VENTILATION	LOCAL EXHAUST: None		SPECIAL
	MECHANICAL *(General)*: None		OTHER
PROTECTIVE GLOVES	Standard work gloves	EYE PROTECTION	Safety glasses
OTHER PROTECTIVE EQUIPMENT			

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

None normally required.

OTHER PRECAUTIONS

None

UNION CARBIDE

MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-OOS-4)

15 MAR 78

ICAL NAME: FORMIC ACID, 90% – PM 4592

SYNONYMS: Methanoic Acid

CHEMICAL FAMILY: Acids

FORMULA: HCOOH

MOLECULAR WEIGHT: 46.03

TRADE NAME AND SYNONYMS: Formic Acid, 90% PM 4592

WIN 100097

I PHYSICAL DATA

BOILING POINT, 760 mm. Hg	104 °C. (219.2 °F.)	FREEZING POINT	-9.4 °C.
SPECIFIC GRAVITY (H_2O = 1)	1.2076 at 20/20 °C.	VAPOR PRESSURE AT 20°C.	23 mm. Hg
VAPOR DENSITY (air = 1)	1.59	SOLUBILITY IN WATER, % by wt. at 20 °C.	Complete
PER CENT VOLATILES BY VOLUME	100	EVAPORATION RATE (Butyl Acetate = 1)	2.1
APPEARANCE AND ODOR	Water-white liquid; sharp odor.		

II HAZARDOUS INGREDIENTS

MATERIAL	%	TLV (Units)
Formic Acid	90	5 ppm.
(See Sections III through VIII)		

III FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method)	141 °F. Tag, closed cup	AUTOIGNITION TEMPERATURE	1,114 °F.

FLAMMABLE LIMITS IN AIR, % by volume	LOWER	18.0	UPPER	57.0

EXTINGUISHING MEDIA	Use carbon dioxide or dry chemical for small fires. Use alcohol foam or water for large fires.
SPECIAL FIRE FIGHTING PROCEDURES	Air-supplied respirators should be available for fire fighters.
UNUSUAL FIRE AND OSION HAZARDS	None

EMERGENCY PHONE NUMBER

304/744-3487

This number is available days, nights, weekends, and holidays.

IV. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	5 ppm. – ACGIH (1975) 5 ppm. – (OSHA) CFR 29 § 1000 Table G 1
EFFECTS OF OVEREXPOSURE	Liquid causes skin and eye burns. Vapors are irritating and painful to breathe. Vapor exposure may cause nausea and vomiting.
EMERGENCY AND FIRST AID PROCEDURES	Immediately flush skin and eye contact with plenty of water for at least 15 minutes. Get medical care for eyes. If inhaled, remove to fresh air. Give oxygen if breathing is dif [illegible]it. Call a physician.

V. REACTIVITY DATA

STABILITY			
UNSTABLE	STABLE	CONDITIONS TO AVOID	None
—	√		

INCOMPATIBILITY (materials to avoid)	Strong alkalies.
HAZARDOUS DECOMPOSITION PRODUCTS	Thermal decomposition or burning may produce carbon monoxide and/or carbon dioxide.

HAZARDOUS POLYMERIZATION			
May Occur	Will not Occur	CONDITIONS TO AVOID	Contamination with alkalies.
—	√		

VI. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	Small spills should be flushed with large quantities of water. Large spills, if not neutralized, could have a toxic effect on activated sludge treatment system. Larger spills should be collected for disposal.
WASTE DISPOSAL METHOD	Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.

VII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type)		Air-supplied mask in confined areas.		
VENTILATION	LOCAL EXHAUST	Preferable	SPECIAL	—
	MECHANICAL (general)	Acceptable	OTHER	—
PROTECTIVE GLOVES		Rubber gloves	EYE PROTECTION	Coverall goggles
OTHER PROTECTIVE EQUIPMENT		Face shield, impervious apron, eye bath, and safety shower.		

100097

VII. SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING	FORMIC ACID, 90% – PM 4592 DANGER! CAUSES BURNS HARMFUL IF INHALED COMBUSTIBLE Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Keep away from heat and open flame. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. FOR INDUSTRY USE ONLY
OTHER HANDLING AND STORAGE CONDITIONS	--

W.I.N.100409,COMPONENT,fumaric acid(fine powde
W.I.N.100238,COMPONENT,fumaric acid(granular)

MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION
1145 CATALYN ST., SCHENECTADY, NY 12303 USA (518) 377-8854

MSDS # 545
FUMARIC ACID

Issued: July, 1985
Revised:

From Genium's MSDS Collection, to be used as a reference. R

SECTION 1. MATERIAL IDENTIFICATION

MATERIAL NAME: FUMARIC ACID
OTHER DESIGNATIONS: Allomaleic Acid; Boletic Aicd; trans-Butenedioic Acid; Butenedioic Acid, (E)-; 1,2-Ethenedicarboxylic Acid, trans-; trans-1,2-Ethylenedicarboxylic Acid; $C_4H_4O_4$; CAS# 000 110 178.
Manufacturer: Available from many suppliers including: Monsanto Company, 800 N. Lindbergh Blvd., St. Louis, MO 63167; Emergency Phone #: (314) 694-1000 (Call COLLECT).

SECTION 2. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Fumaric Acid Fumaric Acid is a nuisance dust. Limits for nuisance dusts are: OSHA PEL/TWA: Total 15 mg/m^3 Respirable 5 mg/m^3 ACGIH TLV/TWA: Total 10 mg/m^3 Respirable 5 mg/m^3.	ca 100	No TLV established Rat, oral LD50: 10,700 mg/kg Rabbit, dermal LD50: 20g/kg Rabbit, Eye irritation: 100 mg/24 hrs; severly irritating Rabbit, skin irritation: 500 mg/24 hrs; mildly irritating

SECTION 3. PHYSICAL DATA

Boiling point, deg F (C) ..... 554 (290) sealed tube
Melting point, deg F (C) ... 546.8 (286) sealed tube
Solubility in water @ 25C, % ... 0.63
Specific gravity, 20/4C 1.635
Molecular weight 116.07

Fumaric acid sublimes at 200°C at normal pressure and 165°C at 1.7mm pressure.

APPEARANCE & ODOR: White, odorless, crystalline powder.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
Combustible	1364°F (740°C)	N/A		

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, foam. Use water spray to cool tank/container.

Fumaric acid is combustible, but it does not ignite easily. The dust may form explosive mixtures in air.

Firefighters should wear self-contained breathing apparatus and full protective clothing.

SECTION 5. REACTIVITY DATA

Fumaric acid is stable under normal handling and storage conditions. It does not under hazardous polymerization.

Thermal decomposition or burning may produce irritating fumes of maleic anhydride, carbon monoxide, carbon dioxide.

W.I.N.100409,COMPONENT,fumaric acid(fine powder)
W.I.N.100238,COMPONENT,fumaric acid(granular)

MSDS # 545 Issued 7/85 FUMARIC ACID

SECTION 6. HEALTH HAZARD INFORMATION

TLV None established.

Inhalation of fumaric acid may cause irritation to the respiratory tract. The solid is irritating to the eyes and mildly irritating to the skin. Toxicity study indicates that it is practically non-toxic when ingested.

FIRST AID:

EYE CONTACT: Promptly flush eyes, including under eyelids, with running water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Promptly flush skin and wash with soap and water.

INHALATION: Remove to fresh air. Restore and/or support breathing as needed. Notify medical personal.

INGESTION: Contact physician or Poison Control Center if ingested (Inplant, Paramedic, Community).

SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES

Notify safety personnel of large spills. For powder spills, dampen carefully and scoop material into a suitable container. For spills of aqueous solution of fumaric acid, cover spill with sodium bicarbonate or soda ash mix and add water if necessary to form a slurry. Scoop slurry into a suitable container and neutralize with 6M NH_4 or 6M HCl as required. Flush neutralized waste down drain with large amounts of water. Wash spill area with soda ash solution and flush with water. Clean-up personnel should wear rubber gloves, an approved respirator and impervious clothing.

DISPOSAL: Place in a suitable container for disposal by licensed contractor or incinerate. Follow all federal, state and local regulations.

EPA (CWA) RQ is 5000 lb/2270 kg (40CFR117).

SECTION 8. SPECIAL PROTECTION INFORMATION

Provide general and local exhaust ventilation (explosion-proof) to keep dust level below the nuisance dust TLV (ACGIH: 10 mg/m^3; OSHA: 15 mg/m^3). For emergency or non-routine exposures where the TLV may be exceeded, wear an appropriate NIOSH approved respirator.

When handling this compound, wear gloves when prolonged or repeated contact is likely and safety goggles when dusting may occur.

Provide eyewash stations in use and handling areas.

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store in a cool, dry, well-ventilated area. Protect container from physical damage. Use only with adequate ventilation. Avoid generating dust. Wash thoroughly after handling.

Fumaric acid is designated as a hazardous substance by the EPA (40CFR116).

DOT CLASSIFICATION: ORM-E, NA9126.

DATA SOURCE(S) CODE (See Glossary) 1, 2, 4-9, 11, 12, 23, 48, 63, 78.

APPROVALS JO Accracco. 7/85

INDUST. HYGIENE/SAFETY DHW 7-85

MEDICAL REVIEW: Aug 85

GENIUM PUBLISHING

Western Petroleum Services

WIN 499696

COAL-SURF

Surfactant
Coal Dewatering Aid

Flash Point: 55 °F
Net Content: 476 pounds (216 kg)
55 gallons (208 liters) @ 77 °F

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.: 542.0 WG

SPECIFIC USAGE: 1-4 gallons per thousand

FOR INDUSTRIAL USE ONLY

WARNING!
FLAMMABLE LIQUID

FIRST AID:

FOR EYES:	In case of contact, immediately flush copiously with water for 15-20 minutes.
FOR SKIN:	In case of contact, wash with soap and water. Remove contaminated clothing and wash skin with soap and water. Launder clothing before reuse.
FOR INGESTION:	If swallowed, if victim is conscious, give 2 glasses of water and induce vomiting. Call a physician.
FOR INHALATION:	If breathed in, remove to fresh air. Give oxygen if breathing is labored. Call a physician.
FOR HANDLING:	Employees must wear neoprene gloves and safety goggles.
ATTENTION:	After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. DO NOT cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for: THE WESTERN COMPANY OF NORTH AMERICA

515 Post Oak Blvd., Houston, Texas 77027

Emergency Telephone: 817-731-5433

R-3G1 (1/86)

*****DOT PROPER SHIPPING NAME: Flammable Liquid, n.o.s., contains methanol, UN 1993*****

499696

TEXACO INC.
INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 5 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

100365

Trade Name and Synonyms

00456 TEXACO DIESEL 2 W.I.N. 100365 Solvent, Diesel-2

Manufacturer's Name | **Emergency Telephone No.**

Texaco Inc | (914) 831-3400 ext. 406

Address

P.O. Box 509 Beacon, NY 12508

Chemical Name and/or Family or Description

Diesel Fuel

THIS PRODUCT IS CLASSIFIED AS:

X HAZARDOUS BY DEFINITION NO.(S) 1,5,7

_____ NOT HAZARDOUS: ON ATTACHED EXPLANATION SHEET 4

WARNING STATEMENT:

DANGER: CAUSES SEVERE SKIN BURNS
MAY BE HARMFUL IF INHALED OR ABSORBED THROUGH SKIN
COMBUSTIBLE

OCCUPATIONAL CONTROL PROCEDURES

Protective Equipment (Type)

Eyes: Chemical type goggles or face shield optional.

Skin: Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly. Gloves resistant to chemicals and petroleum distillates recommended.

Inhalation: Supplied air respiratory protection for cleaning large spills or upon entry into tanks, vessels, or other confined spaces.

Ventilation Required: May be required if product is heated for use.

Permissible Concentrations:

Air: None established.

EMERGENCY AND FIRST AID PROCEDURES

First Aid

Eyes: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.

Skin: Wash exposed areas with soap and water.

Ingestion: Do NOT induce vomiting. May cause chemical pneumonitis.

Inhalation: Should symptoms noted under physiological effects occur, remove to fresh air. If not breathing, apply artificial respiration.

Other Instructions: None.

N.D. - Not Determined N.A. - Not Applicable
< Less Than > Greater Than

ATTACHMENT

PRODUCT NAME: WZ 499644, Crosslink Additive

HEALTH HAZARD INFORMATION:

OSHA Permissible Exposure Limit: See Section II

ACGIH Threshold Limit Value: See Section II

Primary Route(s) of Exposure/Entry: Eye, skin, inhalation

Acute Effects of Overexposure:

Ingestion:	May cause nausea, vomiting, cramping, headache, coma or death.
Inhalation:	May cause headache, nausea, giddiness, loss of consciousness.
Skin Contact:	May cause dryness and irritation.
Eye Contact:	May cause redness and irritation.

Chronic Effects of Overexposure: May cause skin burns and blistering. May be absorbed through skin.

Listed as Carcinogen or Potential Carcinogen by:

NTP No **IARC** No **OSHA** No

EMERGENCY AND FIRST AID PROCEDURES:

Ingestion:	Do not induce vomiting. Consult a physician.
Inhalation:	Remove to fresh air.
Skin:	Wash with soap and water. Launder contaminated clothes before reuse.
Eyes:	Flush with water for 15 minutes. Consult a physician.

We cannot anticipate all conditions under which this information and our products may be used.
Users may wish to make their own tests to determine the safety and suitability of each product or product combination.

ATTACHMENT TO AND CONTINUATION OF

MATERIAL SAFETY DATA SHEET

Date: February 3, 1992

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5433
ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS CL-30
CHEMICAL FAMILY Crosslink Additive	FORMULA W.I.N. 499644

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

FIRST AID:

FOR EYES : In case of contact, flush with water for 15 minutes. Consult a physician.

FOR SKIN : In case of contact, wash with soap and water. Launder contaminated clothes before reuse.

FOR INGESTION: If swallowed, do not induce vomiting. Consult physician.

FOR INHALATION: If breathed in, remove to fresh air.

FOR HANDLING: Employees must wear chemical resistant gloves, splash goggles. Also, chemical boots and apron as appropriate during use.

ATTENTION!! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture, or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

499373

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 12 Jan 87

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Proprietary blend	Clay stabilizer, Clay Master-4, W.I.N. 499545
CHEMICAL FAMILY: cationic polymer solution	FORMULA: Proprietary blend

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Combustible Liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Methanol
HAZARD CLASS	Combustible Liquid
IDENTIFICATION NUMBER	NA 1993
D.O.T. LABEL(S) REQUIRED	None
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Methanol	5-15	200 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1) @ 60°F	1.010
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	soluble	pH (100%)	6-8

APPEARANCE AND ODOR: Liquid; sweet odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
126°F(52°C) PMCC			

EXTINGUISHING MEDIA
Foam, dry chemical, CO_2, water fog or spray

SPECIAL FIRE FIGHTING PROCEDURES
Wear self-contained breathing apparatus. Cool exposed containers with water spray.
Avoid breathing vapors or fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Combustible. Do not store with strong oxidants. Vapors are heavier than air.
Do not use welding or cutting torch near drum. Explosion may result.

(Continued on reverse side)

TRADE NAME: W.I.N. 499545, Clay Stabilizer, Clay Master-4

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
See Section II

EFFECTS OF OVEREXPOSURE Inhalation may cause dizziness, headaches, or unconsciousness. Prolonged or repeated skin contact may result in dermatitis. Eye contact may cause severe irritation, tearing or blurred vision. Ingestion can cause nausea, vomiting or death.

EMERGENCY AND FIRST AID PROCEDURES If ingested, do not induce vomiting. Drink large quantities of water and call a physician. If overcome by vapors, remove to fresh air and call a physician. If breathing is irregular, start resuscitation. For skin contact, wash skin thoroughly with soap and water. Remove contaminanted clothes. For eye contact, flush eyes with large amounts of water for at least 15 minutes and call a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID use away from heat, sparks or open flames
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Avoid strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon monoxide, oxides of nitrogen and sulfur.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Eliminate ignition sources. Shut off leak. Wear appropriate protective clothing and respiratory protection. Dike and pump large spills into salvage containers. Soak up residue and small spills with absorbent clay, sand, or dirt, and place in salvage container.

WASTE DISPOSAL METHOD
Incinerate in an incinerator equipped with a afterburner and scrubber or bury in an approved industrial landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* Use with adequate ventilation. If ventilation is not adequate, use approved NIOSH vapor canister.

VENTILATION	LOCAL EXHAUST Normally sufficient	SPECIAL
	MECHANICAL *(General)* If local exhaust is not adequate	OTHER

PROTECTIVE GLOVES Chemical resistant	EYE PROTECTION Chemical goggles or face shield

OTHER PROTECTIVE EQUIPMENT
Chemical resistant apron

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Use proper protective clothing and equipment. Do not store near heat, sparks or open flames. Reseal container when not in use and do not add any foreign matter. Store in well ventilated area. Do not store with strong oxidizers. Make sure all electrical equipment is explosion-proof

OTHER PRECAUTIONS

WESTERN

Paceseters

Western Petroleum Services

W.I.N. 499545

CLAY MASTER-4

Clay Stabilizer

Flash Point: 126°F(52°C) PMCC

Net Contents: 460 pound(207 kg)
55 gallon(209 liter)@ 60°F

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 736.0 WG

SPECIFIC USAGE: Use at the rate of 0.5 to 5.0 gal/1000 gal of brine or acid based fracturing fluids. Use at the rate of 4 to 100 gal/1000 gal of brine or acid for matrix treatments.

FOR INDUSTRIAL USE ONLY

WARNING

MAY CAUSE IRRITATION OF THE SKIN AND EYES. AVOID CONTACT WITH EYES. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. AVOID PROLONGED INHALATION OF VAPOR. DO NOT TAKE INTERNALLY.

FIRST AID:
FOR EYES: In case of contact, flush eyes with large amounts of water for at least 15 minutes. Call a physician.
FOR SKIN: In case of contact, remove contaminated clothes. Wash skin thoroughly with soap and water.
FOR INGESTION: If swallowed, do not induce vomiting. Drink large quantities of water. Call a physician.
FOR INHALATION: If breathed in, remove from exposed area to fresh air. Call a physician. If breathing is irregular, start resuscitation.
HANDLING: Employees must wear chemical resistant gloves, chemical goggles and chemical resistant apron.
ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Donot cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for:

The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Emergency Telephone: (817) [illegible]5100 or 731-5433

Batch no.

R-3G1(01/88)

*****D.O.T. PROPER SHIPPING NAME: Combustible liquid, n.o.s., contains methanol (NA1933)*****

R-3E2(01/86)

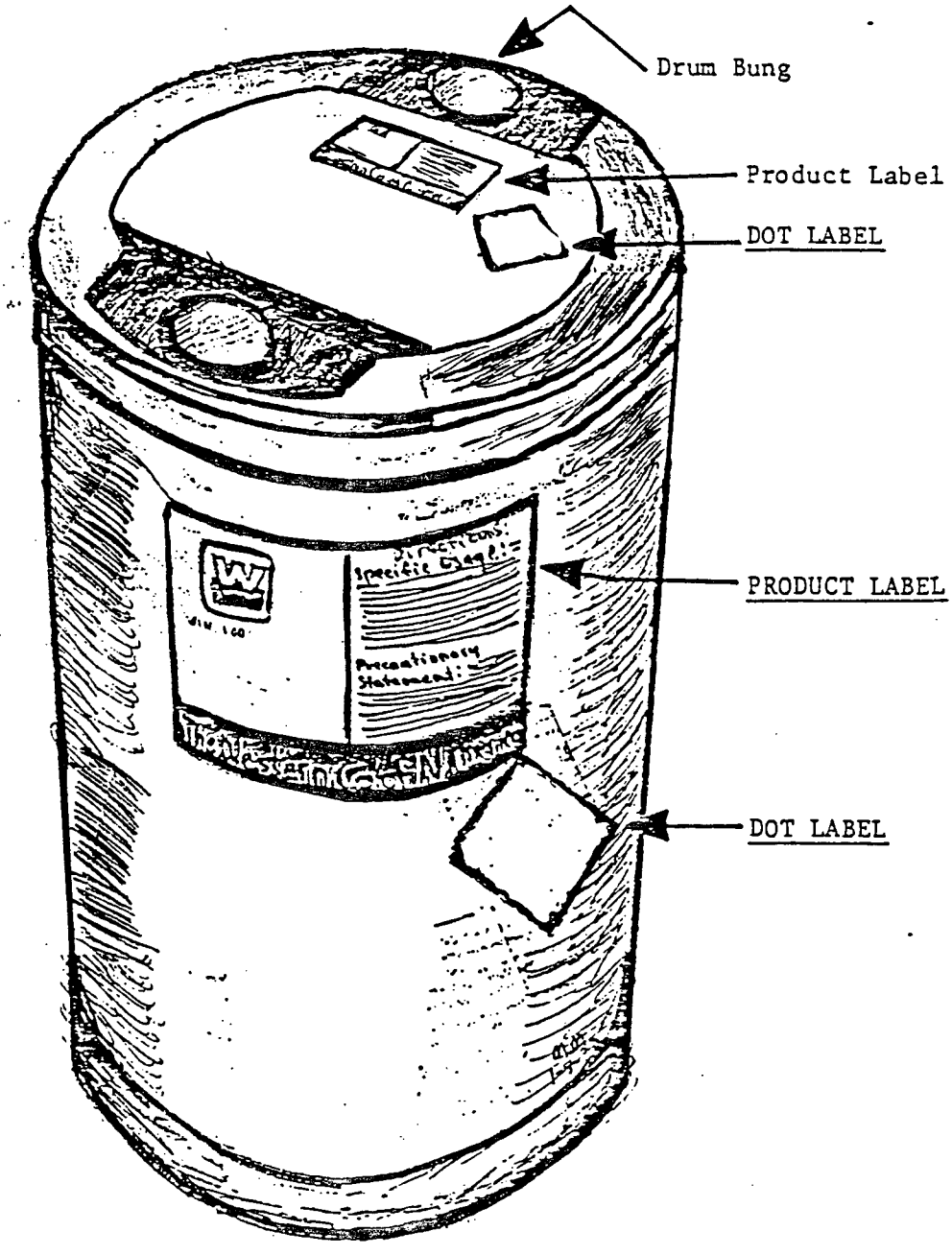
RECOMMENDED

DRUM LABELING

TYPICAL

(lettering size and color as per guidelines)

D001



7 7 7 7 7

PRECAUTIONARY LABELS
for
PROPRIETARY PRODUCTS

Drum Label*

Label Description: (see attached example)

material	- permanent vinyl
type	- "Crack & Peel"
size	- 8½ ± 1/16 x 11 ± 1/16"
color	- white
ink	- red on white as per attached example, this is the same crimson red as is used on DOT flammable liquid labels
print type	- silkscreen process
basic format	- as per attached example
specific directions	- supplied by WPS Product Development
specific precautionary wording	- supplied by Manufacturer/Vendor of specific product and approved by WPS Field Development

Label Manufacturer: the following Company has produced such labels.

Industrial Tape & Label, Inc.
7028 Burkett
P. O. Box 14206
Houston, TX 77021
(713) 748-3105

* To be supplied by Manufacturer/Vendor of product. This type label may be used on bags or other paper containers, in which case lesser quality paper labels are acceptable.

9 FEB 84
RWA
R-302(01/86)

6100 Western Place • P.O. Box 186 • Fort Worth, Texas 76101
Phone 817-232-7300 • TWX #910-893-4057

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: August 17, 1990

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary	TRADE NAME AND SYNONYMS Clay Treat
CHEMICAL FAMILY Organic	FORMULA Proprietary W.I.N. 499653

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable Liquid (RQ /)
NAME OF HAZARDOUS COMPONENT	Isopropanol
HAZARD CLASS	Flammable Liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable
PRECAUTIONARY LABEL	Flammable

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Isopropanol (CAS 67-63-0)	20-40	TWA-400 pp
		STEL- 500
		PEL-400 pp

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	0.991
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	complete		
APPEARANCE AND ODOR	Light, yellow liquid; odor - sweet		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
81°F (PMCC)		2.0	12.0

EXTINGUISHING MEDIA
Use water spray, "alcohol" foam, dry chemical or CO_2.

SPECIAL FIRE FIGHTING PROCEDURES
Wear self contained breathing apparatus. Fight fire from a safe distance. Heat may build pressure and rupture closed containers spreading the fire and increasing risk of burns and injuries.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Emit toxic fumes under fire conditions. Release flammable vapors which can ignite explosively upon contact with an ignition source.

(Continued on reverse side)

TRADE NAME: W.I.N. 499653, Clay Treat

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES
Eyes - immediately flush with H_2O for 15 min. Seek medical attention. Skin - immediately wash with soap and water. Remove contaminated clothing. Wash before reuse. Ingestion - keep at rest, get immediate medical attention. Inhalation - remove to fresh air. If not breathing, give artificial respiration.

SECTION VI - REACTIVITY DATA

STABILITY	**UNSTABLE**		**CONDITIONS TO AVOID** Heat, spearks, open flame
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
May produce carbon monoxide, CO_2, oxides of nitrogen and hydrogen chloride.

HAZARDOUS POLYMERIZATION	**MAY OCCUR**		**CONDITIONS TO AVOID**
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Stop the flow of chemical. Eliminate all ignition sources. Do not allow into water supply. Dike and contain to prevent spreading. Soak up spill with an inert absorbent and place in appropriate container.

WASTE DISPOSAL METHOD
Follow federal, state and local regulations for disposal of waste.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Wear an appropriate, properly fitted respirator for organic vapor NIOSH/MSHA approved.

VENTILATION	**LOCAL EXHAUST** OK	**SPECIAL**
	MECHANICAL *(General)* OK	**OTHER**

PROTECTIVE GLOVES Rubber or neoprene	**EYE PROTECTION** Chemical splash goggles and face shields.

OTHER PROTECTIVE EQUIPMENT
Emergency eye wash fountains and safety showers should be in the immediate vicinity of any potential exposure.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep away from heat, sparks and open flames. Store in a tightly closed, properly vented container. Use only non-sparking tools. Store drums with the bung up.

OTHER PRECAUTIONS Ground container before transfer of contents.

MATERIAL SAFETY DATA SHEET

DATE: August 17, 1990

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary	TRADE NAME AND SYNONYMS Clay Treat
CHEMICAL FAMILY Organic	FORMULA Proprietary W.I.N. 499653

SECTION IXA - - SPECIAL PRECAUTIONS

Hazard Class - Flammable liquid

DOT Shipping Name - Flammable liquid, n.o.s.
(contains isopropanol CAS #67-63-0)
UN 1993

Precautionary Measures: DANGER: Flammable liquid. WARNING: Highly toxic. Severe eye, skin and respiratory tract irritant. May be fatal if swallowed, inhaled or absorbed through the skin. Avoid prolonged or repeated exposure. Avoid contact with strong oxidizing agents.

Attachment to and continuation of

MATERIAL SAFETY DATA SHEET

DATE: August 17, 1990

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Proprietary	Clay Treat
CHEMICAL FAMILY	**FORMULA**
Organic	Proprietary W.I.N. 499653

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

FIRST AID:

FOR EYES: **In case of contact,** immediately flush with water for at least 15 minutes. Seek medical attention.

FOR SKIN: **In case of contact,** immediately wash with soap and plenty of water. Remove contaminated clothing and launder before reuse. Consult a physician.

FOR INGESTION: **If swallowed,** keep at rest. Get immediate medical attention.

FOR INHALATION: **If breathed in,** remove to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Get immediate medical attention.

HANDLING: **Employees must wear**
Splash goggles

ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Donot cut, puncture or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

R-6 (03/84) **INTER-OFFICE CORRESPONDENCE**

To: Bob Slaughter At: FW - Accident Prevention

From: Robert W. Anderson RWA At: FW - R&D Center, Product Services

Date: November 12, 1985

RE: Safety Information Update

This is to inform you of revisions, additions, deletions or replacement of products or chemicals and the relevant safety data.

Western Trade Name: **CLM**

Chemical Name (if not trade named): proprietary W.I.N.: 499521

Addition X Revision __ Replacement __ Deletion __ to product line

Western Product X Western System __

Cementing __ Stimulation X Used for Warehouse Blending Only __

DOT Proper Shipping Name & I.D. Number (SPM-04-02): Flammable liquid, n.o.s. (UN1993)

DOT Hazardous Material Class: flammable material

Label: flammable liquid

Chemical Storage Class (SPM-04-01): II.1.

Chemical First Aid Guide Class (SPM-04-04):

Eyes * Lungs A Skin G Mouth O

EPA Hazardous Waste Classification: ignitable, D001

Material Safety Data Sheet: Attached X Not Available ___

On File at Research X

Replace all previous data on WZ-499521 with this new update information on CLM.

cc: Product Specification File (original)
Legal Services

Attachments: MSDS
Label
Precautionary Statement

"A man's judgement is no better than his information"

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 7 NOV 85

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS GEL COMPLEXER, modifier, CLM
CHEMICAL FAMILY Ketone	FORMULA W.I.N. 499521

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable Liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Isopropanol
HAZARD CLASS	Flammable Liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Isopropanol	30	400 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	94.4°C	202	SPECIFIC GRAVITY (H_2O=1) @ 60°F	0.875
VAPOR PRESSURE (mm Hg.)			PERCENT, VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR=1)			EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER		insoluble		
APPEARANCE AND ODOR	clear to yellow or orange in color, alcoholic odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
54°F (12°C) PMCC			

EXTINGUISHING MEDIA
dry chemical, carbon dioxide, alcohol-type foam

SPECIAL FIRE FIGHTING PROCEDURES
flood with water

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

(Continued on reverse side)

TRADE NAME: W.I.N. 499521, GEL COMPLEXER, modifier, CLM

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Isopropanol - 400 ppm

EFFECTS OF OVEREXPOSURE
Irritant to skin, eyes, nose and throat. Repeated or prolonged exposure may cause nervous system depression, nausea, vomiting or narcosis.

EMERGENCY AND FIRST AID PROCEDURES
Skin: Rinse with water, remove contaminated clothing. Eyes: Flush with water and seek medical attention. Inhalation: Remove to fresh air. Call physician if symptoms persist. Ingestion: Give 2 glasses of water & induce vomiting. Call physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Avoid strong oxidizing agents and halogens (especially chlorine)

HAZARDOUS DECOMPOSITION PRODUCTS
Isopropanol, acetylacctone, carbon monoxide, carbon dioxide

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Contain spill with dry absorbent and sand. Eliminate all sources of ignition. Collect in containers for disposal.

WASTE DISPOSAL METHOD
Incinerate in a furnace where permitted under Federal, State and local regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Air-supplied mask in confined area

VENTILATION	LOCAL EXHAUST	preferred	SPECIAL
	MECHANICAL *(General)*	acceptable	OTHER

PROTECTIVE GLOVES	plastic	EYE PROTECTION	safety glasses or goggles

OTHER PROTECTIVE EQUIPMENT
eyebath, safety shower

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep containers tightly covered. Avoid heat, sparks and flame. Use with adequate ventilation.

OTHER PRECAUTIONS

WESTERN
Pacesetters

Western Petroleum Services

W.I.N.499521

CLM

Crosslink Time Modifier

Flash Point: 54°F(12°C) PMCC
Net Content: 380 lb(176 kg)
52 gal(196 L) @ 60°F

DIRECTIONS

For Proper Use, Refer to Service Bulletin No.(s) 375.0, 385.0, 500.0

SPECIFIC USAGE: Use at the rate of 0.1 to 2.5 gal/1000 gal of Apollo/Polaris/Mini-Max 3 Gels. T.I.C. or CL-15 must also be used at the rate of 1.2 gal/1000 gal.

FOR INDUSTRIAL USE ONLY

WARNING!

Keep away from heat, sparks and fire. Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

FIRST AID:

FOR EYES: In case of contact, immediately flush with plenty of water for at least 15 min. Call a physician.

FOR SKIN: In case of contact, flush with plenty of water. Wash clothing before reuse.

FOR INGESTION: If swallowed, give 2 glasses of water and induce vomiting by putting finger down throat. Call a physician.

FOR INHALATION: If breathed in, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

HANDLING: Employees must wear chemical goggles, plastic gloves.

FOR FIRE: Use water, carbon dioxide, dry chemical or "alcohol-type" foam.

FOR SPILL: Flush with water or cover with absorbent. Prevent runoff. Collect and dispose. Observe government regulations.

ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions liste for this product. Do not cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

anufactured for:

The Western Company of North America

Batch no.

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Emergency Telephone: (817)731-5100
(817)731-5433

*****D.O.T. PROPER SHIPPING NAME: Flammable liquid,n.o.s., contains isopropanol(UN1993)*****

49521

499696

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Date: February 1, 1991

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS Coal Surf
CHEMICAL FAMILY Oxyalkylated Amine Quat	FORMULA Proprietary W.I.N. 499696

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s. (RQ 25000 lbs)
NAME OF HAZARDOUS COMPONENT	Methanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Flammable

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Methanol	15-20	200 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	186	SPECIFIC GRAVITY (H_2O=1)	1.04
VAPOR PRESSURE (mm Hg)	ND	PERCENT, VOLATILE BY VOLUME (%)	ND
VAPOR DENSITY (AIR=1)	ND	EVAPORATION RATE (_____=1)	ND
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR	Light amber liquid with methanol odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	55°F (PMCC)	FLAMMABLE LIMITS	6.7 Lel	36.0 Uel
EXTINGUISHING MEDIA	Foam, dry chemical, CO_2 and water spray. Do not use alcohol foam.			
SPECIAL FIRE FIGHTING PROCEDURES	Use caution. Drums may explode in fire conditions.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	Flashback along vapor trail may occur.			

(Continued on next page)

TRADE NAME: W.I.N. 499696

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 200 ppm (methanol)

EFFECTS OF OVEREXPOSURE Eyes: Irritation, burning, itching and pain. Skin Contact: Irritation, redness. Sensitized skin may show signs of dermatitis. Inhalation: May irritate the nose and throat and cause coughing. Ingestion: Nausea, vomiting, light headedness and other symptoms of methanol poisoning.

EMERGENCY AND FIRST AID PROCEDURES Eyes: Immediately flush copiously with water for 15-20 minutes. Get medical treatment. Skin Contact: Remove contaminated clothing, and wash skin with soap and water. Launder clothing before reuse. Inhalation: Remove to fresh air. Give oxygen if breathing is labored. Call a physician. Ingestion: If victim is conscious, give 2 glasses of water and induce vomiting. Call a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Open flames
	STABLE	X	

INCOMPATABILITY (Materials to avoid) Strong oxidizer

HAZARDOUS DECOMPOSITION PRODUCTS Oxides of nitrogen and carbon

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID None known
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Stop the flow of liquid. Eliminate sources of ignition. Dike or prevent spreading of liquid. Wear NIOSH approved respirator or self-contained breathing apparatus. Vacuum up, absorb or scrape up contaminated soil and place into containers for disposal.

WASTE DISPOSAL METHOD Dispose by incineration under controlled conditions or put in chemical landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) NIOSH approved respirator recommended for use in closed area.

VENTILATION	LOCAL EXHAUST Recommended	SPECIAL Air supply recommended when entering tanks to clean up spills.
	MECHANICAL (General) Recommended	OTHER

PROTECTIVE GLOVES Neoprene

EYE PROTECTION Safety goggles

OTHER PROTECTIVE EQUIPMENT Longsleeve shirt

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Ground containers and liners during transfer to eliminate static electricity.

OTHER PRECAUTIONS Do not drink, eat or smoke in storage area.

(Continued on next page)

499696

ATTACHMENT TO AND CONTINUATION OF

MATERIAL SAFETY DATA SHEET

Date: February 1, 1991

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS Coal Surf
CHEMICAL FAMILY Oxyalkylated Amine Quat	FORMULA Proprietary W.I.N. 499696

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

FLAMMABLE LIQUID

FIRST AID:

FOR EYES:	In case of contact, immediately flush copiously with water for 15-20 minutes.
FOR SKIN:	In case of contact, wash with soap and water. Remove contaminated clothing and wash skin with soap and water. Launder clothing before re-use.
FOR INGESTION:	If swallowed, if victim is conscious, give 2 glasses of water and induce vomiting. Call a physician.
FOR INHALATION:	If breathed in, remove to fresh air. Give oxygen if breathing is labored. Call a physician.
FOR HANDLING:	Employees must wear neoprene gloves and safety goggles.

ATTENTION!! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture, or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

TEXACO

PHYSIOLOGICAL EFFECTS:

Code No. 00456

Effects of Exposure

Acute:

Eyes: N.D.Believed to be minimally irritating.

Skin: N.D. Believed to be a primary skin irritant; Believed to be extremely irritating to skin with burns and blistering possible. May be absorbed through the skin.

Respiratory System: May cause symptoms of drowsiness or narcosis.

Chronic: See Additional Comments,page 4.

Other: Teratogenesis testing negative for a similar product.

Sensitization Properties:

Skin: Yes ___ No X Unknown ___ Respiratory: Yes ___ No X Unknown ___

Median Lethal Dose ($LD_{50}LC_{50}$)(Species)

Oral: Similar product 9.0 ml/kg (rat); practically non-toxic

Inhalation: N.D.

Dermal: Similar product G.T. 5 g/kg (rabbit); practically non-toxic

Other: N. D.

Irritation Index, Estimation of Irritation (Species)

Skin: Similar product 6.9/8.0 (rabbit); extremely irritating

Eyes: Similar product L.T. 15/110 (rabbit); no appreciable effect

Symptoms of Exposure: See above

FIRE PROTECTION INFORMATION

Ignition Temp. F. N.D. Flash Point F. (Method) 140 F (PM)

Flammable Limits% Lower N.D. Upper N.D.

Products Evolved When Subjected to Heat or Combustion:

Carbon monoxide and carbon dioxide may be formed on burning in limited air supply.

Recommended Fire Extinguishing Agents And Special Procedures:

According to the National Fire Protection Guide 49, combustible liquid fires may be extinguished by water spray, dry chemical, foam or carbon dioxide. Use water to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.

Unusual or Explosive Hazards:

None.

TEXACO

ENVIRONMENTAL PROTECTION

Code No. 00456

Waste Disposal Method:

Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures and processes may change classification to non-hazardous or hazardous for reasons other than, or in addition to ignitability. (See Remarks for Waste Classification.)

Procedures in Case of Breakage or Leakage:

Avoid all personal contact. Ventilate area. Avoid breathing vapor. Use self-contained breathing apparatus or supplied-air mask for large spills in confined area. Contain spill if possible. Wipe up or absorb on suitable material and shovel up.

Remarks: Waste Classification: Product (as presently constituted) has the RCRA characteristic of ignitability and if discarded in its purchased form would have the hazardous waste number D001.

PRECAUTIONARY LABEL

DANGER: CAUSES SEVERE SKIN BURNS
MAY BE HARMFUL IF INHALED OR ABSORBED THROUGH SKIN
COMBUSTIBLE

Middle Distillates have caused cancer and kidney damage in laboratory animals.
Do not get on skin or clothing. Keep away from heat and flame. Use only in well-ventilated locations. Avoid breathing of mist or vapor. Keep head away from container when opening or dispensing. Wash thoroughly after handling.

Requirements for Transportation, Handling and Storage:

Store away from heat and open flame. Placard required only when material is contained in packaging or container that exceeds 110 gallons or in tank car or tank truck. Transport, handle and store in accordance with OSHA Regulation 1910.106 and applicable DOT Regulations.

DOT Proper Shipping Name: Fuel Oil, No. 2

DOT Hazard Class (if applicable): Combustible liquid NA1993

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (°F) 500 **Vapor Pressure** N.D. (mmHg)

Specific Gravity 0.8762 (H_2O=1) **Vapor Density** N.D. (Air=1)

Appearance and Odor Clear and bright liquid

pH of undiluted product N.A. **Solubility** Nil

Percent Volatile by Volume N.D. **Evaporation** N.D. ( )=1

Viscosity 2.8 cSt @ 100 F **Other** -

Hazardous Polymerizations ____ Occur X Do not occur

The Material Reacts Violently With: (If Others is checked below, see Additional Comments on Page 4 for further details)

Air	Water	Heat	Strong Oxidizers	Others	None of These
			X		

N.D. - Not Determined N.A. - Not Applicable
< Less Than > Greater Than

W.I.N.100365, Solvent, Diesel-2

COMPOSITION

Code No. 00456

Components Presenting a Significant Hazard	%
Diesel Fuel A complex mixture of hydrocarbons produced by the distillation of crude oil. Consists predominately of hydrocarbons ranging from C-9 to C-20, and boiling in the range of 325-675 F. Product also contains some hydrocarbons produced by the distillation of products from a catalytic cracking process. The latter materials contain bicyclic and tricyclic aromatic hydrocarbons. The product may be hydrotreated or hydrosulfurized.	100

Other Components	%
None	

ADDITIONAL COMMENTS

TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL ACT
STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1983)

No critical materials present.
Positive results in mouse skin carcinogenesis bioassays and mutagenesis assays have been found in products of similar composition, i.e., those containing high boiling aromatic components from catalytic cracking. Ash from combustion of heavy oils contains vanadium, which is toxic or irritating when inhaled. Protection is recommended for workers cleaning tubes and fire boxes of boilers. This should include NIOSH-approved dust mask, caps goggles and heavy long-sleeved coveralls which should be washed after use. Middle distillates can cause kidney damage in laboratory animals.

To determine applicability or effect of any law or regulation with respect to this product, user should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters.

By R. T. Richards Title Mgr. Env. Conservation & Toxicology

Date: 01-27-84 ☐ New ☒ Revised, Supersedes 01-12-83

N.D. - Not Determined N.A. - Not Applicable
< Less Than > Greater Than

NOTE: THIS DATA IS FURNISHED GRATUITOUSLY INDEPENDENT OF ANY SALE OF THE PRODUCT. ONLY FOR YOUR INVESTIGATION AND INDEPENDENT VERIFICATION. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, TEXACO INC. MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. TEXACO INC. SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATSOEVER NATURE DIRECTLY OR INDIRECTLY RESULTING FROM THE PUBLICATION OR USE OF OR RELIANCE UPON DATA CONTAINED HEREIN. NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTABILITY OR FITNESS OR OF ANY NATURE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS MADE HEREUNDER. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE, OR DISTRIBUTE, AND ENCOURAGED TO ADVISE ANYONE WORKING WITH OR EXPOSED TO SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

EXPLANATION OF THE INDUSTRIAL HYGIENE TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explanatory.

Chemical Name and/or Family or Description

Refers to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following characteristics: (1) has a flash-point below 200 degrees Farenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value below 500 ppm for gases and vapor, below 5 mg/m^3 for dusts, fumes and mist, and below 25 MPPCF for mineral dust; (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumonoconiosis; (9) in the course of normal operations may produce dusts, gases, fumes, vapors, mist, or smoke which have one or more of the above characteristics.

OCCUPATIONAL CONTROL PROCEDURES

Protective Equipment

Type of protective equipment that is necessary for the safe handling and use of this product.

Ventilation

Normal means adequate to maintain permissible concentrations.
Ventilation: type, i.e. local exhaust, mechanical, etc.

Permissible Concentrations

Indicates Threshold Limit Value (TLV) and / or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promugated by the Occupational Safety and Health Administration.

EMERGENCY AND FIRST AID PROCEDURES

Gives first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation which tested by the method described. If numbers are not available, a yes or no answer indicates whether or not the material is an irritant.

FIRE PROTECTION INFORMATION

Ignition Temperature

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite and burn continuously for 5 seconds.

Flash Point (State Method Used)

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite.

Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion.

The products evolved when this material is subjected to heat or combustion. Includes temperature at which oxidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unusual Fire or Explosive Hazards

Specific hazards to personnel in case of fire, explosive danger.

ENVIRONMENTAL PROTECTION

Specifies how this product can be successfully disposed of.

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire, explosion, etc.

PRECAUTIONARY LABEL

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC, DOT, or other regulations related to safety and health for transportation.

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (or Range)

In degrees Farenheit or Celsius Boiling Point at 760 mmHg.

Vapor Pressure

Refers to pressure of saturated vapor above the liquid expressed in mm of Hg. at 20 degrees Celsius or 68 degrees Farenheit

Specific Gravity

The ratio of the density of the product to the density of water.

Vapor Density

The ratio of the density of the vapor at saturation concentrations (20 degrees Celsius or 68 degrees Farenheit to the density of air at 760 mmHg.)

Appearance and Odor

Refers to the general characterization of the material, e.g. powder, colorless liquid, aromatic odor, etc.

pH

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - strongly acidic
pH5-7 - weakly acidic
pH7-9 - weakly basic
pH9-14 - strongly basic

Solubility

Refers to the solubility of a material by weight in water at room temperature. The terms negligible, less than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

Percent volatile by volume

Refers to the amount volatized at 20 degrees Celsius or 68 degrees Farenheit when allowed to evaporate.

Evaporation

Gives the rate of evaporation compared to a standard

Viscosity

Measure of flow characteristics in Kinematic viscosity of Saybolt Universal Seconds.

Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

Composition

Components of the product as manufactured.

Texaco Inc.
2000 Westchester Avenue
White Plains, New York 10650
Phone (914) 831-3400 (Beacon)

NOTE: THIS DATA IS FURNISHED GRATUITOUSLY INDEPENDENT OF ANY SALE OF THE PRODUCT. ONLY FOR YOUR INVESTIGATION AND INDEPENDENT VERIFICATION. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, TEXACO INC. MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. TEXACO INC. SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATSOEVER NATURE DIRECTLY OR INDIRECTLY RESULTING FROM THE PUBLICATION OR USE OF OR RELIANCE UPON DATA CONTAINED HEREIN. NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTABILITY OR FITNESS OR OF ANY NATURE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS MADE HEREUNDER. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE, OR DISTRIBUTE, AND ENCOURAGED TO ADVISE ANYONE WORKING WITH OR EXPOSED TO SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

EXPLANATION OF THE INDUSTRIAL HYGIENE TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explanatory.

Chemical Name and/or Family or Description

Refers to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following characteristics: (1) has a flash-point below 200 degrees Farenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value below 500 ppm for gases and vapor, below 5 mg/m^3 for dusts, fumes and mist, and below 25 MPPCF for mineral dust; (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumonoconiosis; (9) in the course of normal operations may produce dusts, gases, fumes, vapors, mist, or smoke which have one or more of the above characteristics.

OCCUPATIONAL CONTROL PROCEDURES

Protective Equipment

Type of protective equipment that is necessary for the safe handling and use of this product.

Ventilation

Normal means adequate to maintain permissible concentrations.
Ventilation: type, i.e. local exhaust, mechanical, etc.

Permissible Concentrations

Indicates Threshold Limit Value (TLV) and / or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promugated by the Occupational Safety and Health Administration.

EMERGENCY AND FIRST AID PROCEDURES

Gives first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation which tested by the method described. If numbers are not available, a yes or no answer indicates whether or not the material is an irritant.

FIRE PROTECTION INFORMATION

Ignition Temperature

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite and burn continuously for 5 seconds.

Flash Point (State Method Used)

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite.

499593

MATERIAL SAFETY DATA SHEET

NALCO

PRODUCT

DRYOCIDE

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

499593

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: DRYOCIDE
DESCRIPTION: A mixture of carbamates

NFPA 704M/HMIS RATING: 2/2 HEALTH 1/1 FLAMMABILITY 2/2 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX.%
Sodium dimethyldithiocarbamate	128-04-1	40
NABAM (disodium ethylene bisdithiocarbamate)	142-59-6	40
Ethylene thiourea	96-45-7	0-2

SECTION 3 PRECAUTIONARY LABEL INFORMATION

WARNING: Causes eye and skin irritation. Do not get in eyes, on skin or on clothing. Wear goggles or face shield, rubber gloves and protective clothing (hats, long sleeve shirt, long pants and boots) when handling. Harmful or fatal if swallowed. Avoid contamination of food and foodstuffs.

SECTION 4 FIRST AID INFORMATION

EYES: Immediately flush for at least 15 minutes while holding eyelids open. Call a physician at once.

SKIN: Wash affected skin with soap and water Call a physician.

INGESTION: Drink promptly a large quantity of milk, egg whites, gelatin solution or if these are not available, drink large quantities of water. Call a physician at once.

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin

EYE CONTACT: May cause transient irritation.
SKIN CONTACT: May cause transient irritation with prolonged contact.
INGESTION: Can cause nausea and vomiting.

SYMPTOMS OF EXPOSURE:
ACUTE: Ingestion of carbamates can produce signs and symptoms of toxicity characterized by excessive tearing, salivation, dilation of pupils and convulsions.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions not previously mentioned, or identified in Section 6 or 14.

CANCER EVALUATION:
The National Toxicology Program's (NTP) Annual Report On Carcinogens and The International Agency for Research on Cancer (IARC) Monographs have identified the following substance(s): Ethylene thiourea: As a suspect cancer-causing agent based on sufficient evidence in experimental animals but inadequate human evidence. Ethylene thiourea has also been reported to be an animal teratogen.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: Acute toxicity studies have been conducted on a more concentrated form of this product (85% actives versus 80% actives). The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS): LD50 = 0.62 g/kg

95% Confidence limits = 0.42 - 0.92 g/kg

ACUTE DERMAL TOXICITY (ALBINO RABBITS): LD50 = Greater than 2.0 g/kg

ACUTE INHALATION TOXICITY (ALBINO RATS): LC50 = Greater than 3.4 mg/l (4-hour exposure)

PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):
SKIN IRRITATION INDEX DRAIZE RATING: 0.0/8.0 Non-irritating

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):
EYE IRRITATION INDEX DRAIZE RATING: 16.5/110.0 Mildly irritating (1-hour exposure)

SECTION 6 TOXICOLOGY INFORMATION (CONTINUED)

SKIN SENSITIZATION: Modified Buehler method = Skin sensitizer

OTHER TOXICITY RESULTS: Ethylene thiourea has been found to be teratogenic in rats at dosages that produce no fetal deaths or apparent maternal toxicity.

CHRONIC TOXICITY RESULTS: Ethylene thiourea was administered in the diet of Charles River CD rats for 18 months followed by a control diet for 6 months. Dosages of 175 and 350 ppm of ethylene thiourea produced hyperplastic goiters in the majority of the experimental animals. Thyroid carcinomas were also evident in the high-dosage group aminals and to a lesser extent in the rats in the low-dosage group. Carcinomas were not found in the control group aminals. In addition, hyperplastic liver nodules were noted in several of the test animals. Two strains of mice that were given ethylene thiourea in the diet for 82 - 83 weeks displayed an increased incidence of hepatomas.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Yellow/green	FORM: Powder	ODOR: Sulfur
SPECIFIC GRAVITY:	0.7	ASTM D-1298
MELTING POINT:	Approximately 120 Degrees C Decomposes between 120-135 Degrees C	ASTM D-2117
FLASH POINT:	Not applicable	
PERCENT VOLATILE BY WEIGHT:	3	

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: Not applicable

EXTINGUISHING MEDIA: Product has slight flammability as supplied. Exposure to heat for prolonged duration could release flammable fumes. Use water foam to extinguish fire.

UNUSUAL FIRE AND EXPLOSION HAZARD: Dust may be ignitable if mixed with air. Exposure to temperatures above 120 degrees C could release flammable and toxic gases. Wear self-contained breathing apparatus while extinguishing fire.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Avoid contact with strong acids (eg. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) which can generate

SECTION 9 REACTIVITY INFORMATION (CONTINUED)

heat, splattering or boiling and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO2, NOx, SOx, amines and carbon disulfide may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: If it is possible to generate dust, wear a NIOSH approved or equivalent dust respirator, (ANSI Z 88.2, 1980 for requirements and selection).

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: Use general ventilation with local exhaust ventilation to maintain dust levels to within the TLV (see Section 14).

PROTECTIVE EQUIPMENT: Wear gloves, boots, protective clothing (hats, long sleeve shirt, long pants) and a face shield with chemical splash goggles (ANSI Z 87.1 requirements and selection of gloves, goggles, shoes, etc.). A full slicker suit is recommended if gross exposure is possible.

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Solid spills: Sweep or vacuum up and reclaim into recovery or salvage drums for disposal. Wear the protective equipment specified in Section 10. Refer to CERCLA in Section 14.

DISPOSAL: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under the Resources Conservation and Recovery Act (RCRA) 40 CFR 261.

SECTION 11 SPILL AND DISPOSAL INFORMATION (CONTINUED)

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

Pesticide Disposal: Pesticide, spray mixture or rinse water that cannot be used according to label instructions must be disposed of according to Federal or approved state procedures under Subtitle C of the Resource Conservation and Recovery Act.

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Consult federal, state or local disposal authorities for approved alternative rates.

SECTION 12 ENVIRONMENTAL INFORMATION

Environmental Hazards: This pesticide is toxic to fish. Do not apply (or use) in estuarine oil fields where drilling fluids (muds) are discharged in the surface water. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not discharge treated effluent into lakes, streams, ponds or public waters unless in accordance with an NPDES permit. For guidance contact your regional office of the Enviromental Protection Agency.

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - HAZARDOUS SUBSTANCE, SOLID, N.O.S.
ORM-E NA 9188

CONTAINS - ETHYLENE THIOUREA

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
Based on our hazard evaluation, the following ingredient in this product is hazardous and the reason is shown below.

SECTION 14 REGULATORY INFORMATION (CONTINUED)

Ethylene thiourea - Possibility of birth defects based on tests with laboratory animals. Suspect cancer-causing agent (refer to Section 6).

Ethylene thiourea, sodium dimethyldithiocarbamate, disodium ethylene bis-dithiocarbamate = 5 mg/m3 (respirable dust) TLV

CERCLA/SUPERFUND, 40 CFR 117, 302:
This product contains ethylene thiourea, a Reportable Quantity (RQ) substance and if 500 pounds of product are released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D. C. (1-800-424-8802). NOTE: Based on RQ of 10 and 2% in product.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):
This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:

XX Immediate (acute) health hazard
XX Delayed (chronic) health hazard
-- Fire hazard
-- Sudden release of pressure hazard
-- Reactive hazard

Under Section 311, submittal of MSDS's or a list of product names to the local emergency planning commission, state emergency response commission and local fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever is less, of an extremely hazardous substance.

After October 17, 1989, MSDS(s), or a list of product names for all hazardous substances between zero (0) and 10,000 pounds, not previously reported, must be submitted.

SECTION 14 REGULATORY INFORMATION (CONTINUED)

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):
This product contains the following ingredient(s), (with CAS # and % range) which appear(s) on the List of Toxic Chemicals.

Ethylene thiourea	96-45-7	0-2

TOXIC SUBSTANCES CONTROL ACT (TSCA):
The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA):
EPA Reg. No. 31910-20-10349.
This product is registered for use as a microorganism control chemical used in drilling fluids.
In all cases follow instructions on the product label.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
If this product becomes a waste, it does meet the criteria of a hazardous waste as defined under RCRA 40 CFR 261 (consult Section 11).

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15/ formerly Sec. 307, 40 CFR 116/formerly Sec. 311:
None of the ingredients are specifically listed.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:
This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:
This product contains ethylene thiorurea, known to the State of California to cause cancer (refer to Section 2 and 3 of the MSDS).

MICHIGAN CRITICAL MATERIALS:
This product contains the following substance(s) identified on the Michigan Critical Materials Register:

Ethylene thiourea

STATE RIGHT TO KNOW LAWS:
The following states identify the ingredient(s) shown below as hazardous:

Pennsylvania, New Jersey, Illinois, California, Massachusetts - Ethylene thiourea

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Admur, M. O., eds., Macmillian Publishing Company, Inc., N. Y., 2nd edition, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.

PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE

SECTION 17 BIBLIOGRAPHY (CONTINUED)

WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist
DATE CHANGED: 10/11/89 DATE PRINTED: 01/14/92

052-1063 R-6 (03/84)

INTER-OFFICE CORRESPONDENCE

To Bob Slaughter At FW - Accident Prevention

From Jim Westbrook JW At FW - Research & Development Center

Date March 9, 1984

RE: Safety Information Update

This is to inform you of revisions, additions, deletions or replacement of products or chemicals and the relevant safety data.

Western Trade Name: Emulsifier, Cement, EE-200

Chemical Name (if not trade named): W.I.N.: 100293

Addition X Revision X Replacement __ Deletion __ to product line

Western Product X Western System ____

Cementing X Stimulation __ Used for Warehouse Blending Only __

DOT Proper Shipping Name & I.D. Number (SPM-04-02): Not regulated

DOT Hazardous Material Class: Not regulated

Label: L-1

Chemical Storage Class (SPM-04-01): II.1

Chemical First Aid Guide Class (SPM-04-04):

Eyes * Lungs B Skin F Mouth V

EPA Hazardous Waste Classification:

Material Safety Data Sheet: Attached X Not Available ____

On File at Research ____

cc: Product Specification File (original)
Legal Services

Attachments: MSDS
Label
Precautionary Statement

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: July 9, 1984

SECTION I

Supplier's Name: The Western Company of North America	EMERGENCY TELEPHONE NO.: (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code): P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS: Proprietary Blend	TRADE NAME AND SYNONYMS: EE-200
CHEMICAL FAMILY: Surfactant	FORMULA: Emulsifier, Cement, EE-200, W.I.N.100293

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Combustible Liquid n.o.s.
NAME OF HAZARDOUS COMPONENT	Heavy aromatic naphtha
HAZARD CLASS	Combustible
IDENTIFICATION NUMBER	NA 1993
D.O.T. LABEL(S) REQUIRED	Combustible
PRECAUTIONARY LABEL	

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Heavy aromatic solvent (mixed aromatic petroleum solvent, mostly alkyl benzenes except Toluene and Napthalenes. BP=350-750°F)	30-33	200ppm
Isopropyl Amine	1-2	5ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	350-750	SPECIFIC GRAVITY (H_2O=1)	1.027
VAPOR PRESSURE (mm Hg.)	unknown	PERCENT, VOLATILE BY VOLUME (%)	30
VAPOR DENSITY (AIR=1)	unknown	EVAPORATION RATE (butylacetate=1)	<1
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR	Dark Liquid - Hydrocarbon Odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	176°F (PMCC)	FLAMMABLE LIMITS	Lel / Uel
EXTINGUISHING MEDIA	Water spray, Foam, Dry Chemical or CO_2		
SPECIAL FIRE FIGHTING PROCEDURES	wear self - contained breathing apparatus		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Combustible, keep heat, sparks & fire away, Thermal decomopsition produces toxic gases.		

(Continued on reverse side)

TRADE NAME: Surfactant, WZ-100293

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: Not available

EFFECTS OF OVEREXPOSURE: Liquid is irritating to eyes. Maybe harmful if swallowed or absorbed through skin.

EMERGENCY AND FIRST AID PROCEDURES: Flush eyes for 15 minutes and get medical attention. Wash skin thoroughly with soap and water and get medical attention if irritation or redness develops. Wash clothing before reuse.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	XX	Keep away from heat, sparks, & open flame.

INCOMPATABILITY *(Materials to avoid)*: Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Produces toxic oxides of sulphur & Nitrogen when burned.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	XX	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Extinguish all sources of ignition. Soak up on sand and dispose of in an approved industrial landfill.

WASTE DISPOSAL METHOD: Incinerate in an incinerator equipped with an after burner and scrubber or bury in an approved industrial landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: None required in normal use.

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES: Rubber	EYE PROTECTION: Face shield or goggles

OTHER PROTECTIVE EQUIPMENT: Rubber boots, apron if possibility of contact during use exits.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid contact with eyes, skin, & clothing. Avoid breathing vapors. Store away from heat, sparks, & open flame.

OTHER PRECAUTIONS: Do not transfer to improperly marked containers. Keep container closed when not in use.

100462

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 18DEC85

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS SURFACTANT, Flo Back 10
CHEMICAL FAMILY ethyoxylated surfactant	FORMULA W.I.N.100462

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
isopropanol	38	400ppm
heavy aromatic petroleum solvent, mostly alkylbenenes except toluene and napthalenes	3-9	100ppm
methylisobutylcarbinol	1	15ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1) @ 15°C	0.934
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	63
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR	alcoholic odor, amber liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
55°F (PMCC)			
EXTINGUISHING MEDIA: Water, foam, dry chemical			
SPECIAL FIRE FIGHTING PROCEDURES: Self-contained breathing apparatus			
UNUSUAL FIRE AND EXPLOSION HAZARDS: Produces toxic fumes when burned			

(Continued on reverse side)

TRADE NAME: W.I.N. 100462, SURFACTANT, Flo-Back 10

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
N/A

EFFECTS OF OVEREXPOSURE
Eyes: irritant, toxic if inhaled or ingested.

EMERGENCY AND FIRST AID PROCEDURES
Eyes: flush with water for 15 minutes; seek medical attention. Skin: wash skin with soap and water, wash clothes before wearing. Internal: drink large volumes of water; induce vomiting call physician.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	XXX	

INCOMPATABILITY *(Materials to avoid)*
Avoid strong oxidants

HAZARDOUS DECOMPOSITION PRODUCTS
none

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	XXX	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Absorb on sand, bury in approved landfill

WASTE DISPOSAL METHOD
Incinerate or bury in land fill

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
none with adequate ventillation

VENTILATION		
	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)* XXX	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
rubber	goggles or face shield

OTHER PROTECTIVE EQUIPMENT
rubber boots and apron

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid contact with body, store away from ignition sources

OTHER PRECAUTIONS

WESTERN
Paceseltters

W.I.N. 100462

FLO BACK 10

WATER CLEANING AGENT

Flash Point: 54°F(12°C) PMCC
Net Content: 389 lb(177 kg)
50 gal(189 L) @ 60°F

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 530.0

SPECIFIC USAGE: Use at a concentration of 2 gallons per 1000 gallons in water-based fracturing fluids.

When Handling This Product Employees MUST WEAR: Chemical goggles, rubber apron and boots.

FOR INDUSTRIAL USE ONLY

WARNING

FLAMMABLE. CAUSES EYE INJURY AND SKIN IRRITATION, MAY BE HARMFUL IF INHALED, INGESTED OR ABSORBED THROUGH SKIN.

Do not get in eyes. Avoid contact with skin and clothing. Wear goggles or face shield when handling. Avoid breathing vapor. Use with adequate ventilation. Do not take internally. Keep away from heat and open flames. Keep container closed when not in use.
In case of contact, wash skin with soap and water. for eyes. flush with large amounts of water for at least 15 min. and get medical attention. Remove contaminated clothing and wash before reuse. If inhaled. remove to fresh air. If not breathing, give artificial respiration. preferably mouth to mouth. If breathing is difficult, give oxygen, get medical attention.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for
The Western Company of North America
P.O. BOX 186 · FORT WORTH, TEXAS 76101
Emergency Telephone: (817)731-5100
(817)731-5433

batch no.

*****D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o.s., contains isopropanol (UN1993)*****

100362

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

WESTERN

MATERIAL SAFETY DATA SHEET

WPS
MAY 1 0 1991
Human Resources

Date: May 8, 1991

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. 1-800-424-9300
ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS Foamer, Frac Foam 1
CHEMICAL FAMILY Amphoteric Surfactant	FORMULA W.I.N. 100362

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Combustible Liquid (RQ 41,000 lbs)
NAME OF HAZARDOUS COMPONENT	Methanol, CAS # [67-56-1]
HAZARD CLASS	Combustible Liquid
IDENTIFICATION NUMBER	NA 1993
D.O.T. LABEL(S) REQUIRED	If material in containers 110 gallons or larger
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Methanol	12.5	200 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	174	SPECIFIC GRAVITY (H_2O=1) at 60°F	1.03
VAPOR PRESSURE (mm Hg)	141	PERCENT, VOLATILE BY VOLUME (%)	70
VAPOR DENSITY (AIR=1)	3.38	EVAPORATION RATE (n-Bu Acetate=1)	1.8
SOLUBILITY IN WATER	Soluble	VISCOSITY at 100 (Cannon-Fenske)	10
APPEARANCE AND ODOR	Transparent yellow liquid with a slight sweet odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	116 (Seta CC)	FLAMMABLE LIMITS	6.7 Lel	36.0 Uel
EXTINGUISHING MEDIA	Carbon dioxide, dry chemical, foam, water spray			
SPECIAL FIRE FIGHTING PROCEDURES	Water spray may be used to cool fire-exposed metal containers to prevent reignition from hot surfaces. Do not breathe smoke or hot fumes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None known.			

(Continued on next page)

TRADE NAME: W.I.N. 100362, Foamer, Frac Foam 1

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	None established for product.
EFFECTS OF OVEREXPOSURE	Eyes: Irritation, itching, excessive tearing, swelling, pain. Skin Contact: Irritation, redness, dry skin. Sensitized skin may show dermatitis. Inhalation: Nausea, dizziness, pneumonia if aspirated. If Swallowed: Nausea, vomiting, other symptoms of methanol poisoning.
EMERGENCY AND FIRST AID PROCEDURES	Eyes: Flush eyes with clear water immediately for 15 minutes and see an eye doctor. Skin: Wash skin with soap and water. Remove and launder clothing before wearing. If skin irritation persists, see a physician. If inhaled: Remove to fresh air and give artificial respiration if needed. If ingested: Give milk or water to dilute. Induce vomiting. Get emergency medical treatment for methanol ingestion.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Sources of ignition
	STABLE	X	
INCOMPATABILITY (Materials to avoid)	Caustic, oxidizers such as chromates or chlorine.		
HAZARDOUS DECOMPOSITION PRODUCTS	Smoke, fumes, carbon monoxide, carbon dioxide, oxides of nitrogen.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Contain spill and soak up waste. Flush area with water.
WASTE DISPOSAL METHOD	Chemical incineration or land disposal according to federal, state, and local statutes.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	None required in normal use.	
VENTILATION	LOCAL EXHAUST Recommended	SPECIAL Entering tanks or cleaning spills: Air supply recommended.
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES	Neoprene or latex rubber	
EYE PROTECTION	Chemical safety goggles	
OTHER PROTECTIVE EQUIPMENT	Eye bath stations or water supply; showers.	

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Spills that drain into waterways will generate foam and probably kill fish. This should be avoided. Keep containers closed. Keep away from sparks and excessive heat. Avoid contact.
OTHER PRECAUTIONS	Know and be able to use first aid and fire fighting procedures.

100167

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 26 SEP 84

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code): P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS: Proprietary blend	TRADE NAME AND SYNONYMS: SURFACTANT, FS-2
CHEMICAL FAMILY: Surfactant	FORMULA: W.I.N. 100167

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol: Rat oral LD_{50} 12.88 g/kg, LC_{50} 64,000 ppm 4 hours	30-35	300ppm
isopropanol	0-3	400ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	150°F	SPECIFIC GRAVITY (H_2O=1) @ 60°F	0.960
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	35-40%
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR	Clear to amber, alcoholic odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
62°F PMCC			

EXTINGUISHING MEDIA
CO_2, dry chemicals, alcohol type foams

SPECIAL FIRE FIGHTING PROCEDURES
Dilution of burning liquid with 22 to 25 volumes of water will effect extinguishment. Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Combustion products may contain hydrofluoric acid and must not be breathed.

(Continued on reverse side)

100167

TRADE NAME: W.I.N. 100167, SURFACTANT, FS-2

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
400 ppm (skin) - ACGIH (1975)

EFFECTS OF OVEREXPOSURE
None expected except for giddiness. Low toxicity. Approxmimately lethal dose = 17,000 mg/kg (rats).

EMERGENCY AND FIRST AID PROCEDURES
Skin: Wash with soap and water. Eyes: Flush with water for at leas 15 min and call a physician. Inhalation: Move to fresh air. Ingestion: Induce vomiting and call a physician.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Excessive heat, sparks and open flames.
	STABLE	XXXX	

INCOMPATABILITY *(Materials to avoid)*
Anhydride, isocyanate, monomer, and organometallic contamination.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon monoxide, carbon dioxide, hydrofluoric acid.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	XXX	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Eliminate all sources of ignition. Flush small spills to the sewer with water. Large spills should be collected for disposal.

WASTE DISPOSAL METHOD
Dispose of in a sanitary landfill according to local, state and fereral regulations

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Air supplied masks in closed area.

VENTILATION		
	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber	goggles

OTHER PROTECTIVE EQUIPMENT
Eye bath and safety shower

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep away from heat, sparks and open flames. Keep container closed

OTHER PRECAUTIONS
Use with adequate ventilation. Do not take internally.

WESTERN
Pacesetters

Western Petroleum Services

W.I.N. 100167

FS-2

Surfactant

Flash Point: 62°F PMCC
Net Content: 429 lb(195 kg)
54 gal(204 L) @ 60°F

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 531.0 WG

SPECIFIC USAGE: Use at the rate of 1/2 to 4 gal/1000 gal of treatment fluid.

When Handling This Product Employees MUST WEAR: Rubber gloves, goggles.

FOR INDUSTRIAL USE ONLY

WARNING !

FLAMMABLE LIQUID Keep away from heat, sparks and open flames. Keep container closed when not in use. Use with adequate ventilation. Do not take internally. *FIRST AID:* Skin: wash with soap and water. Eyes: Flush with water for at least 15 minutes and call a physician. Inhalation: Move to fresh air. Ingestion: Induce vomiting and call a physician. *SPILL OR LEAK:* Eliminate all sources of ignition. Flush small spills to the sewer with water. Large spills should be collected for disposal. Dispose of in a sanitary landfill according to local, state and federal regulations. *FIRE FIGHTING:* Dilution of burning liquid with 22 to 25 volumes of water will effect extinguishment. Wear self contained breathing apparatus. Use CO_2, dry chemical or alcohol type foams. Combustion products may contain hydrofluric acid and must not be breathed.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured by

The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Batch no.

.....D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o.s. ,contains methanol, UN1993*****

1691001

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

499641

MATERIAL SAFETY DATA SHEET

DATE: August 8, 1990

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Blend	HS-2

CHEMICAL FAMILY	FORMULA
Aldehyde	Proprietary Blend W.I.N. 499641

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	None (RQ /)
NAME OF HAZARDOUS COMPONENT	None
HAZARD CLASS	None
IDENTIFICATION NUMBER	None
D.O.T. LABEL(S) REQUIRED	None
PRECAUTIONARY LABEL	None

CAS 75715-12-6

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
None		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	219	SPECIFIC GRAVITY (H_2O=1)	1.27
VAPOR PRESSURE (mm Hg.)	24	PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Miscible		
APPEARANCE AND ODOR	Colorless liquid	Odor: None	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
N/A		N/A	N/A

EXTINGUISHING MEDIA
Use water fog, CO_2 or dry chemical extinguishing media

SPECIAL FIRE FIGHTING PROCEDURES
Firefighters should be equipped with self-contained breathing apparatus and turnout gear

UNUSUAL FIRE AND EXPLOSION HAZARDS
Non-explosive

(Continued on reverse side)

Form OSHA-20

TRADE NAME: W.I.N. 499641 HS-2

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE
Contact with the liquid or its vapors causes irritation of the eyes, skin and respiratory tract. Ingestion of small amounts causes severe disturbances including nausea and vomiting.

EMERGENCY AND FIRST AID PROCEDURES
Eyes - immediately wash eyes with running water for 15 min, get immediate medical attention. Skin - wash affected areas with water while removing clothing. Launder contaminated clothing before reuse. Ingestion - if swallowed, do not induce vomiting. Dilute with water or milk. Inhalation - move to fresh air, aid in breathing if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY	**UNSTABLE**		**CONDITIONS TO AVOID** N/A
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)* N/A

HAZARDOUS DECOMPOSITION PRODUCTS N/A

HAZARDOUS POLYMERIZATION	**MAY OCCUR**		**CONDITIONS TO AVOID**
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Spills should be contained, solidified and placed in suitable containers for disposal in a RCRA licensed facility. This material is RCRA hazardous due to its properties.

WASTE DISPOSAL METHOD
Incinerate in a RCRA licensed facility. Do not discharge into waterways or sewer systems without proper authority.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
If vapors or mists are generated, wear a NIOSH/MSHA approved organic vapor/mist respirator

VENTILATION	**LOCAL EXHAUST** Use local exhaust to control vapors.	**SPECIAL**
	MECHANICAL *(General)*	**OTHER**

PROTECTIVE GLOVES Use gloves, overalls, aprons and boots to prevent skin contact

EYE PROTECTION Chemical goggles, wear a full face shield if splashing hazard exists.

OTHER PROTECTIVE EQUIPMENT
Eyewash, fountains and safety showers should be easily accessible.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

MATERIAL SAFETY DATA SHEET

DATE: August 8, 1990

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Blend	TRADE NAME AND SYNONYMS HS-2
CHEMICAL FAMILY Aldehyde	FORMULA Proprietary Blend W.I.N. 499641

SECTION IXA - - SPECIAL PRECAUTIONS

IN CASE OF SPILLS OR LEAKS: Material is a RCRA regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA licensed facility.

IN CASE OF FIRE: Use water foam, CO_2 or dry chemical extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

ATTENTION: This product is sold for use by industrial institutions.

Attachment to and continuation of

MATERIAL SAFETY DATA SHEET

DATE: August 8, 1990

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Blend	HS-2

CHEMICAL FAMILY	FORMULA
Aldehyde	Proprietary Blend W.I.N. 499641

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

WARNING: Contact with the liquid or its vapors causes irritation of the eyes, skin and respiratory tract. Ingestion may result in acute poisoning, characterized by severe abdominal disturbances, central nervous system depression and possible respiratory or renal failure. Prolonged inhalation of the vapors may result in irritation or unconsciousness. Chronic overexposure may lead to liver and kidney damage. This product contains trace amounts of a chemical known to the State of California to be a carcinogen. Use with local exhaust. Wear an approved organic vapor respirator when vapors are generated. Wear chemical goggles, protective gloves and clothing as necessary to prevent contact. Wear a full face shield if splashing may occur. Eyewash fountains and safety showers must be easily accessible.

FIRST AID:

FOR EYES: In case of contact, immediately wash with running water for 15 minutes. Get immediate medical attention.

FOR SKIN: In case of contact, wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.

FOR INGESTION: If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.

FOR INHALATION: If breathed in, move to fresh air. Aid in breathing if necessary and get immediate medical attention.

HANDLING: Employees must wear

ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Donot cut, puncture or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

499617

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Date: July 25, 1991

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5433
ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS I-8A
CHEMICAL FAMILY	FORMULA W.I.N. 499617

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Corrosive Liquid, n.o.s. (RQ 200 lbs) Thiourea
NAME OF HAZARDOUS COMPONENT	Hydrochloric Acid
HAZARD CLASS	Corrosive
IDENTIFICATION NUMBER	UN 1760
D.O.T. LABEL(S) REQUIRED	Corrosive
PRECAUTIONARY LABEL	

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Thiourea	1-5	None
Formaldehyde	< 1	1 ppm*
Orthotoluidine	< 1	2 ppm (skin)
Substituted Triazine	40-50	None
Hydrochloric Acid	> 15	C-5 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	> 212°F	SPECIFIC GRAVITY (H_2O=1)	1.06-1.08
VAPOR PRESSURE (mm Hg)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	Complete		
APPEARANCE AND ODOR	Aromatic odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	Carbon dioxide, water, foam or dry chemical			
SPECIAL FIRE FIGHTING PROCEDURES	Wear positive pressure self-contained breathing apparatus and full protective clothing.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

(Continued on next page)

TRADE NAME: W.I.N. 499617

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE Inhalation: Inhalation of mist can cause injury (burns) to the respiratory tract. Ingestion: Toxic. Can cause shock and loss of consciousness. May be fatal if swallowed. Eyes: Contact with eyes can cause burns and eye damage. Skin: Contact with skin can cause burns. May cause allergic skin reaction/dermatitis. Chronic: Contains O-Toluidine – may cause cyanosis, abnormal blood forming system function with anemia or red blood cell destruction. CARCINOGENICITY: Formaldehyde: Listed by the International Agency for Research of Cancer as a probable carcinogen to humans on the basis of animal evidence, but human data is inadequate (IARC Group 2B). Listed by the National Toxicology Program as reasonably anticipated to be carcinogenic. Listed by ACGIH as an A2 Industrial Substance Suspect of Carcinogenic Potential for Man. O-Toluidine: Listed by the International Agency for Research on Cancer (IARC Group 2A) as a probable carcinogen to humans on the basis of at least limited human data. Listed by the National Toxicology Program as reasonably anticipated to be carcinogenic. Listed by the ACGIH as an Industrial Substance of Carcinogenic Potential for Man. Thiourea: Listed by the International Agency for Research on Cancer (IARC Group 2B). Listed by the National Toxicology Program (NTP) as an anticipated human carcinogen.

EMERGENCY AND FIRST AID PROCEDURES Eyes: Immediately flush eyes in a directed stream of water for at least 15 minutes while forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. GET MEDICAL ATTENTION. Skin: Immediately remove contaminated clothing and shoes. Flush skin thoroughly with water for at least 15 minutes. Rinse clothing. If irritation persists, GET MEDICAL ATTENTION. Ingestion: DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION. (Medical personnel – use cautious lavage to avoid aspiration.) Inhalation: Remove to fresh air and remove contaminated clothing. If breathing is difficult, administer oxygen. If respiration stops, give mouth to mouth resuscitation. GET MEDICAL ATTENTION.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Keep from freezing.
	STABLE	X	

INCOMPATABILITY (Materials to avoid) Alkalies, strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID None known.
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wear protective clothing. Dike to contain spill. Absorb or otherwise collect spill and place in suitable drum for disposal.

WASTE DISPOSAL METHOD Either incinerate or put in a landfill with approval of regulatory agency.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION	LOCAL EXHAUST X	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES Neoprene or polyvinyl gloves and appropriate protective clothing

EYE PROTECTION Chemical goggles or face shield

OTHER PROTECTIVE EQUIPMENT NIOSH approved respirator where TLV/PEL may be exceeded. Eye wash station should be in close proximity.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Protect from freezing. Do not get in eyes, on skin or clothing. Material is toxic. Use with adequate ventilation. Avoid breathing vapors.

OTHER PRECAUTIONS Wash thoroughly after handling. For industrial use only.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 17FEB86

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Acetylenic alcohols, amine quats, methanol	TRADE NAME AND SYNONYMS INHIBITOR, acid, I-10D
CHEMICAL FAMILY amines and acetylenic alcohols	FORMULA W.I.N. 499618

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	flammable liquid, corrosive, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol, acetylenic alcohols, organic amines
HAZARD CLASS	Flammable Liquid, Corrosive
IDENTIFICATION NUMBER	UN2924
D.O.T. LABEL(S) REQUIRED	Flammable liquid and corrosive
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
methanol	65	ppm 200
propargyl alcohol		1
formamide		20
heavy aromatic naptha - 100 ppm; ethyl octynol - 1 ppm; isopropanol		400

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	192	SPECIFIC GRAVITY (H_2O=1) (@ 25°C)	0.800
VAPOR PRESSURE (mm Hg.) (MeOH @ 21.2°C)	100	PERCENT, VOLATILE BY VOLUME (%)	80
VAPOR DENSITY (AIR=1)	1.20	EVAPORATION RATE (n-butylac =1)	2.07
SOLUBILITY IN WATER	dispersible		
APPEARANCE AND ODOR	dark brown liquid, pine odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
52°F PMCC, ASTM D93-73			

EXTINGUISHING MEDIA: CO_2, alcohol foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES: Use water spray to cool fire-exposed surfaces and to protect personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Respiratory protection required. Full body protection needed if fumes, mist or liquid may be contacted.

(Continued on reverse side)

TRADE NAME: W.I.N. 499618 INHIBITOR, acid, I-10D

SECTION V · HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE ethyl octynol - 1 ppm - propargyl alcohol, formamide, methanol, naphtha, isopropanol (1,20,200,100,400 ppm)

EFFECTS OF OVEREXPOSURE anesthesia,nausea,headache,dizziness,blindness,convulsions,death - may be fatal if inhaled/absorbed via skin - severe irritant to skin -chronic:liver,lung,kidney -Eye Contact - permanent blindness-

EMERGENCY AND FIRST AID PROCEDURES flush skin and eyes with water for 15 min and remove to fresh air - call a doctor; artificial respiration; if swallowed, induce vomiting if victim is conscious - 100-200 ml usually fatal; no known antidote - treat symptoms

SECTION VI · REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		conditions - open flames, sparks, heat
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)* strong oxidizers, mineral acids, olefins, esters, alkylene oxides, cyanohydrides

HAZARDOUS DECOMPOSITION PRODUCTS Does not decompose unless burned, but vapors are very toxic. Decomposes, when burned, into HCl acid and toxic smoke and fumes

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII · SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED eliminate ignition sources; keep public away - vapors can be fatal; avoid contact and evacuate occupants fromdownwind areas; prevent from entering sewers, water sources, low areas - advise authorities of contact with sewer, water, soil, vegetation

WASTE DISPOSAL METHOD DANGER! contain liquid with sand/earth; recover by pumping or with suitable absorbent - consult expert on disposal

SECTION VIII · SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* Use NIOSH/MSHA approved self-contained or respirator with amine cartridges.

VENTILATION	LOCAL EXHAUST	SPECIAL
	greater than 60 fpm hood/face velocity	explosion proof
	MECHANICAL *(General)* equal to outdoors	OTHER N/A

PROTECTIVE GLOVES	EYE PROTECTION
rubber	splash goggles

OTHER PROTECTIVE EQUIPMENT chemical-resistant suit and boots

SECTION IX · SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING close container when not in use - containers hazardous when empty - observe all precautions given in this sheet - wear protective equipment

OTHER PRECAUTIONS keep away from heat, sparks, flames - contains acetylenic alcohols, no known antidote - permanent blindness

499620

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 19SEP85

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Acetylenic alcohols, amine quats, methanol	TRADE NAME AND SYNONYMS INHIBITOR, acid, I-17A
CHEMICAL FAMILY amines and acetylenic alcohols	FORMULA W.I.N. 499620

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	flammable liquid, corrosive, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol, acetylenic alcohols, organic amines
HAZARD CLASS	Flammable Liquid, Corrosive
IDENTIFICATION NUMBER	UN2924
D.O.T. LABEL(S) REQUIRED	Flammable liquid and corrosive
PRECAUTIONARY LABEL	Attached

SECTION II · HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol	50	ppm 200
propargyl alcohol		1
formamide		20
heavy aromatic naptha - 100 ppm; ethyl octynol - 1 ppm; isopropanol		400

SECTION III · PHYSICAL DATA

BOILING POINT (°F.)	192	SPECIFIC GRAVITY (H_2O=1) (@ 25°C)	0.820
VAPOR PRESSURE (mm Hg.) (MeOH @ 212°C)	100	PERCENT, VOLATILE BY VOLUME (%)	63
VAPOR DENSITY (AIR=1)	1.20	EVAPORATION RATE (n-butylac =1)	2.07
SOLUBILITY IN WATER	dispersible		
APPEARANCE AND ODOR	dark brown liquid, pine odor		

SECTION IV · FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
12.2° C, PMCC, ASTM D93-73			

EXTINGUISHING MEDIA
CO_2, alcohol foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES
Use water spray to cool fire-exposed surfaces and to protect personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Respiratory protection required. Full body protection needed if fumes, mist or liquid may be contacted.

(Continued on reverse side)

TRADE NAME: W.I.N. 499620 ; INHIBITOR, acid, I-17A

SECTION V · HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE ethyl octynol - 1 ppm - propargyl alcohol, formamide, methanol, naphtha, isopropanol (1,20,200,100,400 ppm)

EFFECTS OF OVEREXPOSURE
anesthesia,nausea,headache,dizziness,blindness,convulsions,death - may be fatal if inhaled/absorbed via skin - severe irritant to skin -chronic:liver,lung,kidney -Eye Contact - permanent blindness-

EMERGENCY AND FIRST AID PROCEDURES
flush skin and eyes with water for 15 min and remove to fresh air - call a doctor; artificial respiration; if swallowed, induce vomiting if victim is conscious - 100-200 ml usually fatal; no known antidote - treat symptoms

SECTION VI · REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		conditions - open flames, sparks, heat
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
strong oxidizers, mineral acids, olefins, esters, alkylene oxides, cyanohydrides

HAZARDOUS DECOMPOSITION PRODUCTS Does not decompose unless burned, but vapors are very toxic. Decomposes, when burned, into HCl acid and toxic smoke and fumes

HAZAROOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII · SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
eliminate ignition sources; keep public away - vapors can be fatal; avoid contact and evacuate occupants fromdownwind areas; prevent from entering sewers, water sources, low areas - advise authorities of contact with sewer, water, soil, vegetation

WASTE DISPOSAL METHOD DANGER!
contain liquid with sand/earth; recover by pumping or with suitable absorbent - consult expert on disposal

SECTION VIII · SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Use NIOSH/MSHA approved self-contained or respirator with amine cartridges.

VENTILATION	LOCAL EXHAUST	SPECIAL
	greater than 60 fpm hood/face velocity	explosion proof
	MECHANICAL *(General)* equal to outdoors	OTHER N/A

PROTECTIVE GLOVES	EYE PROTECTION
rubber	splash goggles

OTHER PROTECTIVE EQUIPMENT
chemical-resistant suit and boots

SECTION IX · SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
close container when not in use - containers hazardous when empty - observe all precautions given in this sheet - wear protective equipment

OTHER PRECAUTIONS
keep away from heat, sparks, flames - contains acetylenic alcohols, no known antidote - permanent blindness

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

RECEIVED

DATE: 15 October 1991

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS Corrosion Inhibitor, I-18A
CHEMICAL FAMILY Corrosion Inhibitor	FORMULA Proprietary blend WIN 499621

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable Liquid, Corrosive, n.o.s.
NAME OF HAZARDOUS COMPONENT	Methanol, Propargyl Alcohol
HAZARD CLASS	Flammable Liquid, Corrosive Liquid
IDENTIFICATION NUMBER	UN2924
D.O.T. LABEL(S) REQUIRED	Flammable Liquid, Corrosive Liquid
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Methanol		200 ppm
Propargyl alcohol		1 ppm
Quaternary amine salt		-
Heavy aromatic naphtha		100 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	145(calc.)	SPECIFIC GRAVITY (H2O=1) @ 60°F	0.99
VAPOR PRESSURE (mm Hg.) @ 100°F	165	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1) @ 1 atm	4.0	EVAPORATION RATE (n-Butyl acetate=1)	2.05(calc.)
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR	Dark red-amber; pungent/alcoholic		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LEL	UEL
70° Setn CC			

EXTINGUISHING MEDIA
Alcohol-type foam or dry chemical

SPECIAL FIRE FIGHTING PROCEDURES
Use water spray to cool fire exposed surfaces and disperse ignited vapors. Extinguish with alcohol-type foam or dry chemical. Cover unignited liquid with foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Flammable. Toxic gases will form upon combustion. Do not pressurize, cut, heat,

TRADE NAME: W.I.N. 499621., Corrosion Inhibitor, I-18 A

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
See Section II

EFFECTS OF OVEREXPOSURE
Corrosive. Will cause eye burns and permanent skin damage. Vapors may cause headach[e] and dizziness and are anesthetic. Inhalation or skin absorption can cause blindness. Ingestion can cause irritation to mouth, esophagus and stomach, loss of vision or de[ath]

EMERGENCY AND FIRST AID PROCEDURES
Flush eyes or skin with water for 15 min. and call a physician. If available, use so[ap] on skin. If overcome by vapors, remove immediately to fresh air and call a physician. Administer artificial respiration if breathing is stopped. Do not induce vomiting. If individual is conscious, give milk or water to dilute contents of stomach. Keep warm and quiet and call a physician.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		N/A
	STABLE	X	

INCOMPATABILITY (Materials to avoid)
Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS
None

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		N/A
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Eliminate sources of ignition. Warn occupants of downwind areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust. Recover by pumping or with a suitable absorbent.

WASTE DISPOSAL METHOD
Dispose of in an approved industrial waste landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
Where concentrations in air exceed safe limits, use NIOSH/MSHA approved respirator.

VENTILATION	LOCAL EXHAUST	SPECIAL
	Recommended	
	MECHANICAL (General)	OTHER
	For confined spaces	

PROTECTIVE GLOVES	EYE PROTECTION
Chemical resistant	Face shield and chemical resistant goggles

OTHER PROTECTIVE EQUIPMENT
Chemical apron

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid contact with eyes, skin and clothing. Make sure all electrical equipment is explosion-proof. Store away from heat, sparks and open flames. Do not store with strong oxidizers. Use proper grounding procedures.

OTHER PRECAUTIONS

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: August 17, 1990

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
	I-22

CHEMICAL FAMILY	FORMULA
Surfactant Blend	Proprietary W.I.N. 499655

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid (n.o.s.) (RQ /)
NAME OF HAZARDOUS COMPONENT	Methanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable
PRECAUTIONARY LABEL	Flammable

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Methanol (67561)	15-25	200 ppm
Heavy Aromatic Naptha (64742945)	3-6	100 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	ND	SPECIFIC GRAVITY (H_2O=1)	0.94
VAPOR PRESSURE (mm Hg.)	ND	PERCENT, VOLATILE BY VOLUME (%)	25
VAPOR DENSITY (AIR=1)	ND	EVAPORATION RATE (_____ =1)	ND
SOLUBILITY IN WATER	Dispersible		
APPEARANCE AND ODOR	Dark liquid with methanol/alkyl amine odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
62 °F (PMCC)		6.7	36.0

EXTINGUISHING MEDIA
Foam, dry chemical, CO_2, water spray.

SPECIAL FIRE FIGHTING PROCEDURES
Water spray may be used to cool fire exposed metal containers to prevent re-ignition from hot surfaces. Do not breathe smoke or hot fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE
Eyes - irritation, burning, itching and pain. Skin contact - irritation, redness.

Inhalation - may cause nausea, vomiting. Ingestion - nausea, vomiting, light headedness.

EMERGENCY AND FIRST AID PROCEDURES
Eyes - flush copiously with water immediately for 15-20 min. Get medical treatment.

Skin contact - wash with soap and water. Remove clothing and launder before reuse.
Inhalation - remove from exposure. Control delirium, avoid respiratory delirium.
Ingestion - drink water to dilute. Induce vomiting. Get emergency medical treatment for ingestion of methanol.

SECTION VI - REACTIVITY DATA

STABILITY	**UNSTABLE**		**CONDITIONS TO AVOID** Open flames
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Strong oxidizers, mineral acids.

HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of carbon and nitrogen.

HAZARDOUS POLYMERIZATION	**MAY OCCUR**		**CONDITIONS TO AVOID** N/A
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Stop the flow of liquid, eliminate sources of ignition. Dike or prevent spreading of liquid. Vacuum up. Absorb or scrape up contaminated soil and place into container for later disposal.

WASTE DISPOSAL METHOD
Dispose waste by incineration under controlled conditions or put in chemical landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
In closed areas, use NIOSH approved organic vapor respirator.

VENTILATION	**LOCAL EXHAUST** Recommended	**SPECIAL**
	MECHANICAL *(General)* With explosion proof circuits	**OTHER**

PROTECTIVE GLOVES Neoprene	**EYE PROTECTION** Safety goggles

OTHER PROTECTIVE EQUIPMENT
Eye wash stations, ample water supply, showers, protective clothing.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store in cool, dry area. Ground containers and lines during transfer to eliminate static electricity.

OTHER PRECAUTIONS
Do not ingest.

Attachment to and continuation of

MATERIAL SAFETY DATA SHEET

DATE:

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS I-22
CHEMICAL FAMILY Surfactant Blend	FORMULA Proprietary W.I.N.499655

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

FIRST AID:
FOR EYES: **In case of contact,** flush copiously with water immediately for 15 to 20 minutes. Get medical treatment.
FOR SKIN: **In case of contact,** wash with soap and water. Remove contaminated clothing and wash skin with soap and water. Launder clothing before re-use.
FOR INGESTION: **If swallowed,** drink water to dilute. Induce vomiting. Get emergency medical treatment for ingestion of methanol.
FOR INHALATION: **If breathed in,** remove from exposure. Control delirium, avoid respiratory depression.
HANDLING: Employees must wear

ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Donot cut, puncture or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 60CT86

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary formulation	TRADE NAME AND SYNONYMS GELLING AGENT, water, WZ-499572
CHEMICAL FAMILY galacto - mannans, guar derivative	FORMULA W.I.N. 499572

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	not regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
CAS[39421-75-5]Guar gum, 2-hydroxypropyl ether, Acute oral LD_{50}(rats)>5g/kg	95	15mg/m^3 total
proprietary nonionic surfactant		limits not established
Quartz, CAS[1480-60-7]	respirable	0.1mg/m^3

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	~1.3
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	forms gel		
APPEARANCE AND ODOR	off-white powder, bean like odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
solid - not applicable	See Section IXA		

EXTINGUISHING MEDIA
Use water carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES
Wear self-contained positive pressure breathing apparatus and full fire fighting protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS
See Section IXA on page 3

(Continued on reverse side)

TRADE NAME: W.I.N. 499572, GELLING AGENT, water, WZ-499572

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE No specific information available for this product.
Ingestion(swallowing) Contains materials that may be slightly toxic.
Inhalation(breathing) No specific information available for this product; however contains ingredients which may cause irritation to the respiratory tract if inhaled
Skin(contact and absorption) No specific information available for this product; however, contains ingredients which may cause skin irritation with repeated and/or prolonged contac
Eye(contact) No specific information available for this product; however, contains ingredients which may cause severe eye injury. Damage reversible.
Chronic effects of exposure No specific information available. See Section IX "Other Precautions" for further details.

Emergency and First Aid Procedures: See Section IXA on Page 3

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Fire, excessive heat
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)* none known

HAZARDOUS DECOMPOSITION PRODUCTS carbon dixoide, carbon monoxide

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Avoid creating dust clouds and breathing dust. Wet material is slippery.
Dry powder: Carefully scoop up or vacuum and place in disposal container.
Wet material: Dike spill to prevent spreading. Absorb with inert material, collect and place in disposal container. Flush area with water to remove any residue; direct washings to sanitary sewer (if permitted).

WASTE DISPOSAL METHOD Dispose by incineration or in landfill in accordance with federal, State and local regulations. Not defined by U.S. EPA as hazardous waste under RCRA.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION		
	LOCAL EXHAUST: Recommended when appropriate to control exposure	SPECIAL
	MECHANICAL *(General)*: Not recommended as a means of control	OTHER: none required

PROTECTIVE GLOVES: impervious gloves
EYE PROTECTION: safety glasses
OTHER PROTECTIVE EQUIPMENT: safety shown & eyewash facility

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in dry place. Keep container closed to avoid moisture pickup. Practice reasonable care and cleanliness. Avoid creating dust clouds and breathing dust when emptying container.

OTHER PRECAUTIONS This is essentially a HPG product treated with minor ingredients, in which the combined effects are not fully known; however, based on medical study of exposed workers, some individuals may develop a respiratory allergenic response to guar dust. Persons with a history of respiratory allergies may have those conditions aggravated by esposure to guar dust. Precautionary measures should be strictly followed to avoid breathing dus

Attachment to and continuation of

MATERIAL SAFETY DATA SHEET

DATE: 60CT86

SECTION I	
Supplier's Name The Western Company of North America	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary formulation	TRADE NAME AND SYNONYMS GELLING AGENT, water, W2-499572
CHEMICAL FAMILY galacto-mannan, guar gum derivative	FORMULA W.I.N. 499572

SECTION IXA - - SPECIAL PRECAUTIONS

Unusual Fire and Explosion Hazards (from page 1)

Like all dry carbohydrate and most dry organic chemicals, guar gum dust carries a potential explosion hazard if the dust concentration in the air is too high. Good housekeeping procedures are required to reduce this potential hazard. The following are data taken from tests run for Celanese on guar and guar derivatives.

	Guar Gum	Guar Derivatives
Minimum Oxygen Concentration (%)	19	18
Minimum Ignition Energy (mJ)	840	40,000(1)
Minimum Ignition Temperature: Cloud (^{o}F)	950	950
Layer (^{o}F)	420	390
Minimum Explosive Concentration (oz./ft.^{3})(2)	.8	.29

(1) This material would not ignite at energies up to 40 joules, the highest tried. The material would ignite when subjected to a 24 watt continuous arc.

(2) In larger vessels explosions may occur at lower dust concentrations.

Emergency and First Aid Procedures (from page 2)

EYE (contact)	Flush with large amounts of water for at least 15 minutes. If any irritation persists, seek medical attention.
SKIN (contact)	Wash with soap and water. If any irritation occurs, seek medical attention.
INGESTION (swallowing)	If large quantities are swallowed, seek medical attention.
INHALATION (breathing)	In case of exposure to high concentration of dust, remove to fresh air. Restore breathing. Seek medical attention.
OTHER HEALTH HAZARDS	No specific information available.

Western Petroleum Services

W.I.N. 499572

WZ-499572

SSB NO. 681.5

GELLING AGENT

Emergency Phone No.

817-731-5433

LOT NO. E7316AS1

NET WET LB

Manufactured For

The Western Company
of North America

P.O. BOX 186

FORT WORTH, TEXAS 76101

SAFETY INFORMATION

HANDLING PRECAUTIONS-FIRST AID RECOMMENDATIONS

Skin & Eye Contact - Considered to be non-irritating to eyes and skin based on animal tests.

Inhalation - Considered to be non-hazardous but use with proper care and handling precautions to prevent unnecessary contact with or inhalation of product dusts.

PROTECTIVE EQUIPMENT

Safety glasses; Nuisance dust mask if use causes dusting.

SPILL CLEANUP/WASTE DISPOSAL

Observing noted special precautions, pick up spilled material and containerize. Vacuum or sweep area to remove residues. Use water with caution; product becomes slippery when wet.

This product, if disposed of as shipped, is not a hazardous waste as defined in 40 CFR 261. Dispose of in an approved landfill in accordance with state and local regulations.

FIRE EXTINGUISHING MEDIA

Water, CO_2, Foam, Dry Chemical

SPECIAL PRECAUTIONS

Powders may form explosive mixtures with air. Do not store or handle in the presence of heat or an ignition source. Do not allow powder or dust to accumulate in work or storage areas.

Product becomes slippery when wet.

11/87

Refer to MSDS and SPM-04-04 for additional Safety Information.

For Industrial Use Only

DOT HAZARD CLASS - NOT RESTRICTED

HAZARD CLASSIFICATION			
Health	Fire	Reactivity	Specific
1	1	0	-

WCNA-10 R36 (05/86)

MSDS

INTER-OFFICE CORRESPONDENCE

To Vince Whelan At FW - Accident Prevention

From Robert W. Anderson RWA At FW - Chemical Technology Development

Date 14APR89

RE: Safety Information Update

This is to inform you of revisions, additions, deletions or replacement of products or chemicals and the relevant safety data.

Western Trade Name: Maxioil W W.I.N.: 100256

Chemical Name (if not trade named):

Addition __ Revision X Replacement __ Deletion __ to product line

Western Product X Western System __

Cementing __ Stimulation X

DOT Proper Shipping Name & I.D. Number (SPM-04-02): Combustible liquid,n.o.s.

DOT Hazardous Material Class: combustible material (NA1993)

Label: combustible liquid

Chemical Storage Class (SPM-04-01): II.1.

Chemical First Aid Guide Class (SPM-04-04):

Eyes * Lungs B Skin G Mouth Y

EPA Hazardous Waste Classification: Ignitable waste, D001; corrosive waste, D002

Reportable Quantity: RQ 20,000 / 9091

Material Safety Data Sheet: Attached XXX Not Available ____

On File at Research XXX

cc: Legal Services
Product Specification File (original)

Attachments: MSDS
Label
Precautionary Statement

Note: If deletion, attach copy of page(s) to be deleted, write delete across the page(s) attached.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 14APR89

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS GELLING AGENT,oil,Maxioil W(J-257W)
CHEMICAL FAMILY Organic phosphate ester	FORMULA W.I.N. 100256

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Combustible liquid, n.o.s. RQ 20000/9091
NAME OF HAZARDOUS COMPONENT	Aromatic naphtha
HAZARD CLASS	Combustible liquid
IDENTIFICATION NUMBER	NA 1993
D.O.T. LABEL(S) REQUIRED	Combustible
PRECAUTIONARY LABEL	attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
heavy aromatic naphtha CAS#[64742-94-5]	50-60	
naphthalene CAS#[91-20-3]	<3	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1) @ 60°F	0.986
VAPOR PRESSURE (mm Hg.)	0.2	PERCENT, VOLATILE BY VOLUME (%)	50%
VAPOR DENSITY (AIR=1)	6.1	EVAPORATION RATE (_____ =1)	475
SOLUBILITY IN WATER	emulsifiable	pH of 10% solution	1-2
APPEARANCE AND ODOR	Brown liquid with hydrocarbon odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
130°F (PMCC)		0.9%	6.0%

EXTINGUISHING MEDIA
CO_2, dry chemical, foam

SPECIAL FIRE FIGHTING PROCEDURES
Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

(Continued on reverse side)

TRADE NAME: W.I.N. 100256, GELLING AGENT,oil,Maxioil W(J-257W)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
None established for the product. See appendix B3 of the 1976 TLV guide.

EFFECTS OF OVEREXPOSURE
May cause severe eye or skin irritation.

EMERGENCY AND FIRST AID PROCEDURES
Eyes: Flush thoroughly with water for at least 15 minutes. Call a physician. Skin: Wash thoroughly with soap and water. Breathing: Remove to fresh air. Treat symptoms. Ingestion: Do not induce vomiting. Give milk. Call a physician immediately, pump stomach.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	XXXX	

INCOMPATABILITY *(Materials to avoid)*
Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS
CO_2, CO_2 if incomplete combustion occurs.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	XXXX	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Contain on absorbent material. Do not allow spilled liquid to get near very strong oxidizers or sources of heat or flame.

WASTE DISPOSAL METHOD
Complete inceneration according to air pollution regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
None normally required

VENTILATION	LOCAL EXHAUST: preferred	SPECIAL: none
	MECHANICAL *(General)*: Acceptable	OTHER: none

PROTECTIVE GLOVES
Rubber recommended; must not dissolve in solvents.

EYE PROTECTION
Goggles

OTHER PROTECTIVE EQUIPMENT
None

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep away from sparks, heat and open flames.

OTHER PRECAUTIONS
Avoid eye and prolonged skin contact. Do not take internally.

WESTERN
Pacesetters

Western Petroleum Services

W.I.N. 100256

MAXIOIL W

OIL GELLING AGENT

Net Content: 406 lb(185 kg)
54 gal(204 L) @ 76°F

For Proper Use, Refer to Service Bulletin No. 260.0

SPECIFIC USAGE: Use at the rate of 10 to 30 gal/1000 gal of oi

USE MAXIOIL ACTIVATOR AS A COMPLEXER AT 6 - 9 PERCENT RATIOS OF MAXIOI

NOTE: AMINES PRESENT IN OILS MAY PREVENT GELLATION.
H2S PRESENT IN OILS MAY PREVENT GELLATION.
FINELY DIVIDED SOLIDS SUCH AS PARAFFINS OR ASPHALTINES PRESENT IN OILS MAY PREVENT GELLATION.

When Handling This Product Employees MUST WEAR: RUBBER GLOVES, RUBBER APRON, SAFETY GOGGLES AND APPROVED RESPIRATOR.

FOR INDUSTRIAL USE ONLY

WARNING!

CAUSES IRRITATION TO SKIN AND EYES.

DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. WEAR GOGGLES OR FACE SHIELD WHEN HANDLING. AVOID PROLONGED OR REPEATED BREATHING OF VAPOR. USE WITH ADEQUATE VENTILATION. DO NOT TAKE INTERNALLY. KEEP AWAY FROM HEAT AND OPEN FLAME. KEEP CONTAINER CLOSED WHEN NOT IN USE.

IN CASE OF CONTACT, WASH SKIN WITH SOAP AND WATER; FOR EYES, IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES, AND GET MEDICAL ATTENTION. REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE. CONSULT A PHYSICIAN IF CHEMICAL CAUSES BURN OR IRRITATION. IF INGESTED, CONSULT A PHYSICIAN AT ONCE.

ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Donot cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for:

The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Emergency Telephone: (817)731-5100
(817)731-5433

Batch no.

*****D.O.T. PROPER SHIPPING NAME: Combustible liquid, n.o.s., contains aromatic naphtha, NA1993*****

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 20JUN88

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS Deemulsifier, LT-22
CHEMICAL FAMILY Surfactant	FORMULA W.I.N.100135

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s. RQ 5500/2500
NAME OF HAZARDOUS COMPONENT	Methanol
HAZARD CLASS	Flammable Liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Methanol	10-20	200ppm
Isopropanol	≤5	400ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1) @ 60°F	0.968
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Soluble		
APPEARANCE AND ODOR	Light amber liquid; nonspecific odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
93°F(34°C) PMCC			

EXTINGUISHING MEDIA
Water spray, dry chemical, carbon dioxide, or foam

SPECIAL FIRE FIGHTING PROCEDURES
Wear self-contained breathing apparatus. Dilute rapidly with large volumes of water. Avoid breathing vapors or fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Flammable. Keep heat, sparks, and fire away. Produces toxic fumes when burned. Do not store with strong oxidants. Vapors are heavier than air.

(Continued on reverse side)

TRADE NAME: W.I.N. 100135, DE-EMULSIFIER, LT-22

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
See Section II

EFFECTS OF OVEREXPOSURE
Liquid is corrosive to eyes and skin. Harmful if ingested or absorbed through skin. Inhalation may cause dizziness, headaches, or unconsciousness. Ingestion can cause nausea, vomiting, or death.

EMERGENCY AND FIRST AID PROCEDURES
Flush eyes or skin with water for 15 min. and call a physician. If ingested, drink large quantities of water and call a physician. Do not induce vomiting. Launder clothes before reuse. If overcome by vapors, remove immediately to fresh air and call a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
Produces toxic oxides of carbon and HCl when burned.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Extinguish all sources of ignition. Wash down with water or soak up on sand and dispose of in an approved industrial waste landfill. Do not wash down with water where runoff will contaminate important water sources.

WASTE DISPOSAL METHOD
Incinerate in an incinerator equipped with an afterburner and scrubber or bury in an approved industrial landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
None required in normal use, assuming adequate ventilation

VENTILATION	LOCAL EXHAUST: Normally sufficient	SPECIAL
	MECHANICAL *(General)*: If local exhaust is not adequate	OTHER

PROTECTIVE GLOVES: Chemical resistant	EYE PROTECTION: Face shield or goggles

OTHER PROTECTIVE EQUIPMENT
Chemical resistant boots and apron, if possibility of contact during use exists.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid contact with eyes, skin and clothing. Make sure all electrical equipment is explosion-proof. Store away from heat, sparks and open flames. Do not store with strong oxidizers.

OTHER PRECAUTIONS
Do not transfer to improperly marked containers. Keep container closed when not in use. Do not add any foreign material to container.

Western Petroleum Services

W.I.N. 100135

LT-22

De-emulsifier

Flash Point: 93°F(34°C) PMCC
Net Content: 440 lb. (200 kg)
55 gal. (208 L) @ 60°F (15.6°C)

DIRECTIONS:

FOR PROPER USE, REFER TO SERVICE BULLETIN NOS.: 10.0, 85.0, 130.0, 529.0
SPECIFIC USAGE: Use at the rate of 0.5 to 5.0 gal/1000 gal. of water, acid, brine or oil-based stimulation fluids.

FOR INDUSTRIAL USE ONLY

WARNING

FLAMMABLE LIQUID: Keep away from heat, sparks, and open flame. Wear appropriate protective clothing and eye protection. Use with adequate ventilation. Keep container closed when not in use. May cause irritation of the eyes and skin. May be harmful if inhaled or swallowed.

FIRST AID: For eye contact flush eyes with water for at least 15 minutes and get medical attention. For skin contact wash skin thoroughly with soap and water. Remove contaminated clothing. If irritation develops get medical attention. If overcome by vapors remove to fresh air. If breathing is effected give oxygen and call a physician. If breathing has stopped start resuscitation and call a physician. If swallowed do not induce vomiting. Drink large amounts of water and call a physician.

FIRE ACTION: Use waterspray to cool fire exposed surfaces and protect personnel. Extinguish preferentially with dry chemical, foam, waterspray or waterfog. Full protective clothing and NIOSH/OSHA approved self-contained breathing apparatus required for fire fighting personnel. May explode in heat of fire. Flammable vapors may spread away from spill. Incomplete thermal decomposition may produce toxic gases.

SPILL OR LEAK ACTION: Use protective equipment. In confined spaces wear self-contained breathing apparatus. Remove ignition sources. Isolate area. Stop leak where safe. Contain and absorb spill with sorbent material. Dispose in accordance with local, state and federal regulations.

STORAGE AND DISPOSAL: Store away from heat sparks and open flame with closures in place. If empty container retains product residues, all hazard precautions must be observed. Insure that reconditioner and disposer are aware of the hazards associated with this product. Dispose of according to local, state and federal regulations.

REFER TO MSDS AND SPM-04-04 FOR SAFETY REQUIREMENTS.

Manufactured for:
The Western Company of North America
P.O. BOX 186 • FORT WORTH, TEXAS 76101
Emergency Telephone: (817) 731-5100
(817) 731-5433

★ ★ ★ ★ ★ D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o.s. (contains methanol) UN1993 ★ ★ ★ ★ ★

INTER-OFFICE CORRESPONDENCE

R-6 (03/84)

To Bob Slaughter At FW - Accident Prevention

From Robert W. Anderson RWA At FW - Research & Development Center

Date December 18, 1985

RE: Safety Information Update

This is to inform you of revisions, additions, deletions or replacement of products or chemicals and the relevant safety data.

Western Trade Name: LT-21

Chemical Name (if not trade named): W.I.N.: 100138

Addition __ Revision X Replacement X Deletion __ to product line

Western Product X Western System __

Cementing __ Stimulation X Used for Warehouse Blending Only __

DOT Proper Shipping Name & I.D. Number (SPM-04-02): Flammable liquid, n.o.s. (UN1993)

DOT Hazardous Material Class: flammable material

Label: flammable liquid

Chemical Storage Class (SPM-04-01): II.1.

Chemical First Aid Guide Class (SPM-04-04):

Eyes * Lungs B Skin G Mouth O

EPA Hazardous Waste Classification: Ignitable D001

Material Safety Data Sheet: Attached X Not Available ___

On File at Research X

cc: Product Specification File (original)
Legal Services

Attachments: MSDS
Label
Precautionary Statement

"A man's judgement is no better than his information"

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 14JUN85

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS SUSPENDING AGENT, LT-21
CHEMICAL FAMILY ethoxylated fatty compounds	FORMULA W.I.N.100138

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol UN1	20	200ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	162°F	SPECIFIC GRAVITY (H_2O=1) @ 60°F	1.06
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	30
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR	Clear amber liquid; odor of varnish		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
54°F (PMCC)			

EXTINGUISHING MEDIA
Dry chemical, carbon dioxide, alcohol foam

SPECIAL FIRE FIGHTING PROCEDURES
Addition of water will reduce the intensity of the flame.

UNUSUAL FIRE AND EXPLOSION HAZARDS

(Continued on reverse side)

TRADE NAME: W.I.N.100138,SUSPENDING AGENT, LT-21

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
200 ppm for methanol

EFFECTS OF OVEREXPOSURE
Swallowing the liquid causes inebration, headache, nausea, and vomiting leading to severe illness, blindness or perhaps death.

EMERGENCY AND FIRST AID PROCEDURES
Skin: flush with plenty of water. Eyes: flush with water and get medical attention Inhalation: remove to fresh air and give artificial respiration. If breathing has stopped, call a physician. If swallowed, induce vomiting at once. Then give 2 tablespoons of baking soda in a glass of water. Call a physician.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Sparks, heat and fires.
	STABLE	XXX	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	XXX	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Eliminate all sources of ignition. Flush spilled material with large volumes of water. Dike large spills and dump to salvage tank.

WASTE DISPOSAL METHOD
Incinerator.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Self-contained breathing apparatus

VENTILATION		
	LOCAL EXHAUST: Preferred	SPECIAL
	MECHANICAL *(General)*: Acceptable	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Impervious gloves	Chemical safety goggles or face shield

OTHER PROTECTIVE EQUIPMENT
Impervious apron and boots; eye bath and safety shower

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
May be fatal or cause blindness if swallowed. Keep away from heat, sparks and fires. Do not leave container open.

OTHER PRECAUTIONS

WESTERN

Paceseltters

W.I.N. 100138

LT-21

SILT SUSPENDING AGENT

Flash Point: 54°F(12°C) PMCC
Net Content: 466 lb(212 kg)
54 gal(204 L) @ 77°F

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 85.0, 721.0

SPECIFIC USAGE: Use at a concentration of 1 to 10 gallons per 1000 gallons of acid.

When Handling This Product Employees MUST WEAR: Chemical safety goggles or face shield, impervious gloves, impervious boots and apron.

FOR INDUSTRIAL USE ONLY

WARNING

MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.

Keep away from heat, sparks and open flames.

FIRST AID: Swallowing the liquid causes inebriation, headache, nausea and vomiting, leading to severe illness, blindness or even death. Skin: flush with plenty of water. Eyes: flush with water and get medical attention. Inhalation: remove to fresh air and give artificial respiration. If breathing has stopped call a physician. If swallowed, induce vomiting at once. Then give 2 tablespoons of baking soda in a glass of water. Call a physician.

SPILL OR LEAK: Eliminate all sources of ignition. Flush spilled material with large volumes of water. Dike large spills and dump to salvage tank. Incinerate.

FIRE FIGHTING: Self-contained breathing apparatus and protective clothing. Dry chemical, carbon dioxide, alcohol foam.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for
The Western Company of North America
P.O. BOX 186 · FORT WORTH, TEXAS 76101
Emergency Telephone: (817)731-5100
(817)731-5433

batch no.

*****D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o.s., contains methanol (UN1993)*****

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 15 March 78

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
	LT-17 100136

CHEMICAL FAMILY	FORMULA
Surfactant	Proprietary blend

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Isopropanol	22	400ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1)	0.97
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	insoluble		

APPEARANCE AND ODOR Liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
76°F (T.O.C.)			

EXTINGUISHING MEDIA
Water, dry chemical or CO_2

SPECIAL FIRE FIGHTING PROCEDURES
Use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Flammable - Emits toxic fumes.

(Continued on reverse side)

TRADE NAME: LT-17

SECTION V - HEALTH HAZARD DATA 100136

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE
Not available

Corrosive to eyes and skin. Isopropyl alcohol vapors are harmful.

EMERGENCY AND FIRST AID PROCEDURES
For eyes, flush with water for 15 min. and get medical attention if redness or irritation persists. For skin, wash thoroughly with soap and water. Launder clothes before reuse.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Avoid heat, flames and sparks
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Avoid contact with strong oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Eliminate sources of ignition. Flush spill area with water spray or absorb on sawdust and incinerate.

WASTE DISPOSAL METHOD
Incinerate in incinerator equipped with afterburner and scrubber.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
None required under normal use.

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES Rubber	EYE PROTECTION Face shield or goggles

OTHER PROTECTIVE EQUIPMENT
Rubber boots and apron for direct handling.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid contact with eyes, skin and clothing. Avoid breathing vapors. Store away from heat and open flames.

OTHER PRECAUTIONS
Do not transfer to improperly marked containers.

WESTERN

Pacesetters

Western Petroleum Services

LT-17

SPECIAL WETTING AGENT

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s): 20.0 WG & 140.0 WG

SPECIFIC USAGE:

Use at the rate of 1 to 5 gallons per 1000 gallons of hydrochloric acid.

NOTE: LT-17 is cationic.

When Handling This Product Employees MUST WEAR:

Chemical goggles, rubber apron and rubber gloves

FOR INDUSTRIAL USE ONLY

KEEP OUT OF REACH OF CHILDREN

PRECAUTIONARY STATEMENT: WARNING!

HAZARDOUS LIQUID AND VAPOR. IF ABSORBED THROUGH THE SKIN OR INHALED, HARMFUL IF SWALLOWED. Avoid contact with skin, eyes and clothing. Avoid breathing mist or vapor. Do not take internally. FIRST AID: In case of contact with eyes or skin, immediately flush with plenty of water for 15 minutes; for eyes get medical attention. Remove contaminated clothing and shoes at once. Wash thoroughly before re-use.

Refer to Stimulation Services Technical Bulletin No. 1020.0W for safety requirements.

IMPORTANT! The physical, chemical and toxicological properties of this product have not been thoroughly investigated; exercise due care in its use and handling.

Manufactured for:

The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

NET CONTENTS SHOWN ELSEWHERE ON CONTAINER

*****D.O.T. PROPER SHIPPING NAME: FLAMMABLE LIQUID N.O.S. (CONTAINS ISOPROPANOL) *****

92101

1063 (9/82)-6 (03/84) **INTER-OFFICE CORRESPONDENCE**

To Bob Slaughter At FW - Accident Prevention 100144

From Robert W. Anderson RWA At FW - Research & Development Center

Date 26SEP84

RE: Safety Information Update

This is to inform you of revisions, additions, deletions or replacement of products or chemicals and the relevant safety data.

Western Trade Name: SURFACTANT, LT-25

Chemical Name (if not trade named): W.I.N.: 100144

Addition __ Revision X Replacement X Deletion __ to product line

Western Product X Western System _____

Cementing __ Stimulation X Used for Warehouse Blending Only __

DOT Proper Shipping Name & I.D. Number (SPM-04-02): Flammable liquid, n.o.s. (UN1993)

DOT Hazardous Material Class: Flammable material

Label: Flammable liquid

Chemical Storage Class (SPM-04-01): II.1.

Chemical First Aid Guide Class (SPM-04-04):

Eyes * Lungs B Skin G Mouth O

EPA Hazardous Waste Classification: Ignitable waste, D001

Material Safety Data Sheet: Attached X Not Available ___

On File at Research X

Replace all previous data with this new information.

cc: Product Specification File (original)
Legal Services

Attachments: MSDS
Label
Precautionary Statement

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 26 SEP 84

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS SURFACTANT, LT-25
CHEMICAL FAMILY Surfactant	FORMULA W.I.N. 100144

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Isopropanol	30	400ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1) @ 25°C	1.08
VAPOR PRESSURE (mm Hg.) @ 100°F	<16 psia	PERCENT, VOLATILE BY VOLUME (%)	15
VAPOR DENSITY (AIR=1) IPA/H_2O		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	miscible	PH	8.5
APPEARANCE AND ODOR	Light amber clear liquid - isopropanol odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
67°F PMCC	Not known		
EXTINGUISHING MEDIA CO_2, dry chemical, foam			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS May evolve toxic SO_x fumes.			

(Continued on reverse side)

TRADE NAME: W.I.N. 100144, SURFACTANT, LT-25

SECTION V · HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Not established for the product

EFFECTS OF OVEREXPOSURE
See attached Section IXA

EMERGENCY AND FIRST AID PROCEDURES
Wash spills from skin with water. If eye contact occurs, flush with plenty of water and consult a physician if irritation persists. If ingested, consult a physician.

SECTION VI · REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS
SO_x

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII · SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Absorb large spills with sawdust or other absorbant material and transfer to a container for disposal. Small spills and residue may be flushed to the drain with water.

WASTE DISPOSAL METHOD
Complete incineration in accordance with local ordinances.

SECTION VIII · SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
none normally required

VENTILATION		
	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber	Chemical goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX · SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
See attached Section IXA

OTHER PRECAUTIONS

Attachment to and continuation of

MATERIAL SAFETY DATA SHEET

DATE: 26 SEP 84

SECTION I	
Supplier's Name The Western Company of North America	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS SURFACTANT, LT-25
CHEMICAL FAMILY Surfactant	FORMULA W.I.N. 100144

SECTION IXA - - SPECIAL PRECAUTIONS

SECTION V - HEALTH HAZARD DATA

Effects of overexposure - Specific laboratory toxicity information on LT-25 has not been obtained. From its chemical nature, toxicity problems are not expected; but, since it is an excellent wetting agent, there is the possibility that some individuals may be allergic to it. LT-25 has been manufactured for more than twenty-five years and no toxicity problems have been encountered to our knowledge, either at our plant or in customers' plants.

LT-25 is not intended for internal consumption. It is assumed that it is irritating to eyes and that it could cause corneal injury if left in contact. Repeated exposure or prolonged contact with skin may cause irritation or chapping by removal of natural oils.

SECTION IX - SPECIAL PRECAUTIONS

Handling and Storing - LT-25 is handled similarly to concentrated solutions of other common detergents and wetting agents and no special precautions are taken. Avoid contact of the skin and eyes with the concentrated product. In accordance with good industrial hygiene wear elbow-length gloves, goggles or side-shield spectacles and normal protection for the body and head when handling LT-25 in large quantities. Wash spills from the skin without undue delay and wash the face and hands after exposure. If contact with the eyes occurs, flush with water using an eye cup or eye fountain; secure medical attention if irritation persists. Soiled clothing is readily cleaned by laundering.

LT-25 may be stored in its shipping container at normal indoor or outdoor temperatures. Freezing will affect the physical condition of this product, but will not damage it. Thaw and mix before using.

WESTERN
Pacesetters

Western Petroleum Services

WIN 100144

LT-25

ACID RETARDER

Flash Point: 79°F PMCC
Net Contents: 440 lb(200 kg)
53.3 gal(202 L) @ 60°F

DIRECTIONS

FOR PROPER USE, REFER TO SERVICE BULLETIN NO.: 170.0WG, 537.0 WG

LT-25 MUST BE ADDED "ON THE FLY" TO ANY INHIBITED ACID.

HANDLING LT-25 REQUIRES THE USE OF RUBBER APRON, RUBBER GLOVES, SAFETY GOGGOLES AND AN APPROVED RESPIRATOR.

FOR INDUSTRIAL USE ONLY

WARNING!

FLAMMABLE. MAY CAUSE IRRITATION TO SKIN AND EYES. DO NOT USE, STORE, SPILL OR POUR NEAR HEAT, SPARKS OR OPEN FLAME. KEEP CONTAINER CLOSED WHEN NOT IN USE. AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. AVOID PROLONGED OR REPEATED BREATHING OF VAPORS. USE WITH ADEQUATE VENTILATION. DO NOT TAKE INTERNALLY.

IN CASE OF CONTACT, WASH SKIN WITH SOAP AND WATER; FOR EYES, IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES AND GET MEDICAL ATTENTION. REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE. CONSULT A PHYSICIAN IF CHEMICAL CAUSES BURNS OR IRRITATION. IF INGESTED CONSULT A PHYSICIAN AT ONCE.

ATTENTION: SINCE EMPTY CONTAINERS CAN STILL CONTAIN PRODUCT RESIDUES, CONTINUE TO OBSERVE LABEL EVEN WHEN EMPTY. DO NOT REUSE EMPTY CONTAINER FOR ANY PURPOSE.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for

The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Batch no.

D.O.T. PROPER SHIPPING NAME: FLAMMABLE LIQUID, N. ., CONTAINS ISOPROPANOL, UN 1993

499684

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Date: February 28, 1991

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Blend	TRADE NAME AND SYNONYMS LT-32
CHEMICAL FAMILY Nonionic Surfactant	FORMULA Proprietary Blend W.I.N. 499684

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid (RQ /)
NAME OF HAZARDOUS COMPONENT	Isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Flammable liquid

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Isopropyl Alcohol		
Oxyalkylated Alcohol		

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	157	SPECIFIC GRAVITY (H_2O=1)	0.9
VAPOR PRESSURE (mm Hg)		PERCENT, VOLATILE BY VOLUME (%)	N/A
DENSITY (lbs/gal) 60°F	7.5	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	emulsifiable, slightly soluble		
APPEARANCE AND ODOR	Clear, colorless liquid; strong		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	155°F (68°C) Seta CC	FLAMMABLE LIMITS Not available	Lel	Uel
EXTINGUISHING MEDIA	Use water spray, alcohol foam, dry chemical or carbon dioxide.			
SPECIAL FIRE FIGHTING PROCEDURES	Use water spray to cool fire exposed surfaces and water spray to disperse the vapors. Full protective clothing and full piece positive pressure self-contained breathing apparatus for fire fighters.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	Flammable liquid can release vapors that form flammable mixtures at temperatures at or above the flashpoint. Toxic gases will form upon combustion.			

(Continued on next page)

TRADE NAME: W.I.N. 499684, LT-32

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE Eye Contact: Causes noticeable pain, moderate irritation, and transient cornea injury. Skin Contact: Causes slight irritation; readily absorbs through skin in toxic amounts. Inhalation: Causes respiratory tract irritation, liver & kidney damage, and central nervous system effects. Ingestion: May cause headache, dizziness, nausea, vomiting, liver and kidney injury.

EMERGENCY AND FIRST AID PROCEDURES Eyes: Immediately flush with large amounts of water for at least 15 minutes. Get prompt medical attention. Skin: Flush with large amounts of water. Use soap if available. Remove grossly contaminated clothing and launder before reuse. Inhalation: Immediately remove affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Seek medical attention. Ingestion: If conscious, give 1 or 2 glasses of water to drink and induce vomiting by sticking finger down throat. Take immediately to hospital. If vomiting cannot be induced, take immediately to hospital.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Heat or flame
	STABLE	X	

INCOMPATABILITY (Materials to avoid) Avoid chlorine, flourine, and other strong base oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS Acrid smoke and irritating fumes when heated to decomposition. Products of combustion include carbon monoxide and carbon dioxide.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Eliminate sources of ignition. Prevent additional discharge of material. Prevent liquid from entering sewers, water courses, or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust. Recover by pumping (use an explosion proof pump or hand pump) or with a suitable absorbent.

WASTE DISPOSAL METHOD Consult an expert on disposal of recovered materials and ensure conformity to local disposal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) NIOSH/OSHA approved respirators may be necessary to prevent overexposure by inhalation.

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General) Recommended	OTHER

PROTECTIVE GLOVES Chemical resistant gloves

EYE PROTECTION Chemical goggles

OTHER PROTECTIVE EQUIPMENT Eyewash fountains and safety showers should be easily accessible.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition.

(Continued on next page)

499684

ATTACHMENT TO AND CONTINUATION OF

MATERIAL SAFETY DATA SHEET

Date: February 28, 1991

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Blend	TRADE NAME AND SYNONYMS LT-32
CHEMICAL FAMILY Nonionic Surfactant	FORMULA Proprietary Blend W.I.N. 499684

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

FIRST AID:

FOR EYES:	In case of contact, immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.
FOR SKIN:	In case of contact, flush with large amounts of water; use soap if available. Remove grossly contaminated clothing and launder before reuse.
FOR INGESTION:	If swallowed and conscious, give 1 or 2 glasses of water to drink and induce vomiting by sticking finger down throat. Seek medical attention. Do not attempt to induce vomiting or give anything by mouth to an unconscious person.
FOR INHALATION:	If breathed in, immediately remove affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Seek medical attention.
FOR HANDLING:	Employees must wear long sleeves, chemical resistant gloves, and chemical goggles.

ATTENTION!! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture, or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

CHEMICALS USED AT THE FARMINGTON, NEW MEXICO FACILITY

PRODUCT	TYPE	STORED	WESTERN CONTAINER	WIN NO.	HAZ NO.	LB/GAL. QUANTITY
MAXIOIL	L	WAREHOUSE	5 GAL PLASTIC PAIL	100162	26	182 G
MAXIOIL 2	L	WAREHOUSE	55 GAL PLASTIC DRUM	499606		425 G
METHANOL	L	WAREHOUSE	55 GAL STEEL DRUM	100102	28	100 G
NINE 40	L	WAREHOUSE	55 GAL STEEL DRUM	100472	27	110 G
NITROGEN	L	TANK	ABOVEGROUND	100225	21	228,710 G
PARATROL L	L	WAREHOUSE	55 GAL STEEL DRUM	100463	26	220 G
PERLITE	S	WAREHOUSE	30 LB BAG	100436	NA	730 L
POZ	S	SILO		100317	NA	105,825 L
SALT	S	WAREHOUSE	50 & 80 LB BAG	100112,100114,100116,100404	NA	22,824 L
SAND	S	SILO		100002-100013,100122,100419	NA	2,797,917 L
SAND	S	SILO		100421	NA	50,000 L
SAPP	S	WAREHOUSE	50 LB BAG	100323	NA	774 L
SF-3	S	WAREHOUSE	50 LB BAG	499648	NA	9,000 L
SFLA	S	WAREHOUSE	30 LB BAG	499649		60 L
SILICA FLOUR	S	WAREHOUSE	50 LB BAG	100121		9,000 L
SODIUM BICARBONATE	S	WAREHOUSE	50 LB BAG	100080	NA	5,350 L
SS-1	S	WAREHOUSE	30 LB BAG	100335		60 L
TF-4	S	WAREHOUSE	50 LB BAG	100290	NA	929 L
THIXAD	S	WAREHOUSE	100 LB BAG	100318	NA	2,008 L
THRIFTY LITE	S	WAREHOUSE	100 LB BAG	100275	NA	1,726 L
TIC	L	WAREHOUSE	55 GAL STEEL DRUM	100151	26	378 G
WAX BEADS	S	WAREHOUSE	65 LB BAG	100134		311 L
WE-1L	L	WAREHOUSE	55 GAL STEEL DRUM	100273	NA	453 G
WESTBLOCK	S	WAREHOUSE	50 LB BAG	100219		600 L
WESTPROP 4	L	WAREHOUSE	55 GAL STEEL DRUM	499594		55 G
WR-6, WR-15	S	WAREHOUSE	50 LB BAG	100284,100287	NA	380 L
WZ-499576	S	WAREHOUSE	50 LB BAG	499576		267 L
WZ-499625	S	WAREHOUSE	30 LB BAG	499625		520 L
WZ-499673	S	WAREHOUSE	225 LB FIBER DRUM	499673		675 L
WZ-499683	L	WAREHOUSE	55 GAL STEEL DRUM	499683		110 G
XR-2L	L	WAREHOUSE	55 GAL PLASTIC DRUM	100091	NA	210 G
XYLENE	L	WAREHOUSE	55 GAL STEEL DRUM	100105	27	55 G

BAUGH.LST

MATERIAL SAFETY DATA SHEET

(APPROVED BY THE U.S. DEPARTMENT OF LABOR AS - "essentially similar" to form OSHA-20)

100162

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for legal action.

Section 1 NAME & PRODUCT

MANUFACTURER'S NAME	CITY, STATE, ZIP CODE	EMERGENCY PHONE NUMBERS
DOWELL	TULSA, OKLAHOMA 74102	MEDICAL: 517-636-2243
DATE THIS FORM WRITTEN	PREPARED BY (Signature)	CHEMICAL: 918-582-0101
July 14, 1975	Patrick J. Gill Patrick J. Gill	NIGHT: 918-627-3899; 918-742-2623
TRADE NAME	SYNONYMS	
	J242	

Section 2 INGREDIENTS

INGREDIENTS	%	TLV (units)
An aqueous solution of sodium aluminate		

Section 3 PHYSICAL DATA

BOILING POINT (°F.)	240	SOLUBILITY IN WATER	Completely Miscib
VAPOR PRESSURE (mmHg at 20°c)	Not applicable	SPECIFIC GRAVITY (H_2O=1)	1.46 @ 60°F
VAPOR DENSITY (air = 1)	Not applicable	% VOLATILE BY VOLUME	Approx. 60

APPEARANCE Light amber liquid

Section 4 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (AND METHOD USED): None °F Non-combustible

FLAMMABLE LIMITS (STP IN AIR): L.F.L. Not applicable U.F.L. Not applicabl

EXTINGUISHING MEDIA → ☐ WATER FOG ☐ FOAM ☐ ALCOHOL FOAM ☐ CO_2 ☐ DRY CHEMICAL ☐ OTHER Not applicable

SPECIAL FIRE FIGHTING PROTECTION EQUIPMENT AND HAZARDS

None

Section 5 REACTIVITY DATA

STABILITY (NORMAL CONDITIONS): [X] STABLE [ ] UNSTABLE

CONDITIONS TO AVOID: May produce large amounts of heat on contact with strong acid.

INCOMPATIBILITY — MATERIALS TO AVOID: ☐ WATER ☒ ACID ☐ BASE ☐ CORROSIVE ☐ OXIDIZING MATERIAL

OTHER: ☐

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS POLYMERIZATION: [ ] MAY OCCUR [X] WILL NOT OCCUR

CONDITIONS TO AVOID:

Section 6 SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Using proper protective equipment, cover the spill with an absorbent material such as sand and scoop or shovel into waste containers for disposal. Flush residual away with excess water.

DISPOSAL METHOD

Landfill in accordance with local regulations.

MATERIAL SAFETY DATA SHEET (CONT.)

DOW CHEMICAL U.S.A.
MIDLAND, MICHIGAN 48640

J242

Section 7 HEALTH HAZARD DATA 00162

Probably toxic, however greatest hazard is corrosion of tissues.

EYE CONTACT

May cause a burn and sufficient corneal injury to result in some permanent loss of vision.

SKIN CONTACT

Prolonged or repeated contact may cause appreciable irritation, even a moderate burn.

SKIN ABSORPTION

Not likely to be absorbed through the skin in acutely toxic amounts.

INHALATION

TLV: None suggested. Not likely to be a problem.

EFFECTS OF OVEREXPOSURE

FIRST AID PROCEDURES

EYE

FLUSH WITH FLOWING WATER AT LEAST 15 MINUTES

EYES: Immediately flush with plenty of water for at least 15 minutes and get medical help immediately.

SKIN: Promptly flush skin with plenty of water. Promptly remove contaminated clothing and wash before reuse.

INHALATION: Not likely a problem. If ill effects occur, get person to fresh air and get medical help.

INGESTION: Not likely a problem. If ingested, immediately give large amounts of water (or milk if immediately available) then induce vomiting and get medical help.*

NEVER GIVE FLUIDS OR INDUCE VOMITING IF PATIENT IS UNCONSCIOUS OR HAVING CONVULSIONS

Section 8 SPECIAL PROTECTION INFORMATION

VENTILATION

Good room ventilation usually adequate for most operations.

RESPIRATORY PROTECTION (Specify type)

None likely to be needed.

PROTECTIVE CLOTHING

Clean, body-covering clothing, rubber gloves and apron, boots, face shield depending upon the circumstances.

EYE PROTECTION

☐ NOT NORMALLY NECESSARY ☐ SAFETY GLASSES WITHOUT SIDE SHIELDS ☐ SAFETY GLASSES WITH SIDE SHIELDS ☒ CHEMICAL WORKERS GOGGLES

☐ GAS TIGHT GOGGLES OR EQUIVALENT OTHER ☒ Eye fountain and washing facilities in the work area.

Section 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Prevent eye and skin contact. Avoid breathing vapors or mists if generated. Launder contaminated clothing before reuse. Store at temperatures above 45°F.

Do not swallow. Keep out of reach of children.

NOTE TO PHYSICIAN: No specific antidote known. Treatment depends upon the sound judgment of the physician and upon the individual reactions of the patient. Nearly corrosive material. Gastric lavage may be hazardous. If done, it should be under esophagoscopic control.

MATERIAL SAFETY DATA SHEET

ISSUED: 21JUN89
REVISED:

SUPPLIER'S NAME: THE WESTERN COMPANY OF NORTH AMERICA
ADDRESS: P.O. BOX 186, FORT WORTH, TEXAS 76101
EMERGENCY TELEPHONE: (817)731-5433

SECTION I - PRODUCT IDENTIFICATION

TRADE NAME: Maxioil 2 W.I.N.:499606
MMIS DESCRIPTION: GELLING AGENT,oil, Maxioil 2
CHEMICAL FAMILY: phosphate ester CHEMICAL NAME: proprietary blend
NFPA 704M RATING: 3 HEALTH 2 FLAMMABILITY 0 REACTIVITY 0 OTHER
0=insignificant 1=slight 2=moderate 3=high 4=extreme
DISCLAIMER: Information contained in this report is furnished without charge or obligation and is accepted at recipient's full risk. In so providing this report, The Western Company makes no warranties, express or implied, regarding the merchantability or fitness of anything contained therein.

SECTION II - HAZARDOUS INGREDIENTS by 29CFR1910.1200

CHEMICAL NAME	CAS #	APPROX. %	TLV (UNITS)
petroleum distillate	1330-20-7	<28%	PEL = 100 ppm TWA = 100 ppm STEL = 150 ppm
phosphoric acid	7664-38-2	<1%	1mg/m^3

SECTION III - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM: liquid
SOLUBILITY IN WATER: insoluble
ODOR: hydrocarbon
COLOR: bright light amber
DENSITY: 0.97 g/cm^3 @ 60°F(16°C)
VISCOSITY(cP):
VAPOR PRESSURE(mm Hg): <1 est
VAPOR DENSITY(air = 1): >1.0
pH (@ 5%): 1.5-2.0
MELTING POINT: N/A°F(°C)
EVAPORATION RATE(butyl acetate = 1): <1
NOTE:

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT/method used: >120°F(49°C)TCC
FLAMMABLE LIMITS: ND LEL: UEL:
EXTINGUISHING MEDIA: Foam, dry chemical, CO_2, water fog or spray
SPECIAL FIRE FIGHTING PROCEDURES: Do not enter a fire area without proper protective equipment, including NIOSH/MSHA approved, self-contained breathing apparatus. Cool exposed containers with water spray. Avoid vapors.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Material is combustible. Vapors are heavier than air and may travel along ground to ignition source.

NA = not applicable
ND = not determined

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE:	TLV (ACGIH)	OSHA PEL
petroleum distillate	100 ppm(TWA)	100 ppm
phosphoric acid	1 mg/m^3	1 mg/m^3

target organs (29CFR1910.1200,Appendix A,Target organs):
Eye hazard and skin hazard

EFFECTS OF OVEREXPOSURE: INHALATION: Material is corrosive. Inhalation of vapor may cause severe irritation of respiratory system.
EYE CONTACT: Eye contact may cause corneal damage resulting in permanently impaired vision.
SKIN CONTACT: Material is absorbed through skin and may cause systemic poisoning.
INGESTION: May be harmful if ingested.
EMERGENCY AND FIRST AID PROCEDURES:
EYES: Flush immediately with large amounts of water for at least 15 minutes. Call a physician if irritation persists.
SKIN: Immediately wash with large amounts of water while removing contaminated clothing and shoes. Contact a physician. Discard clothing and shoes.
INGESTION: DO NOT induce vomiting. If conscious/drink large amounts of water and contact a physician.
INHALATION: Remove immediately to fresh air. Call a physician. If breathing is irregular or stopped, administer artificial respiration, and call a physician.
NOTE TO PHYSICIAN:

CAUTION: This petroleum distillate can produce irritating and a burning sensation.

SECTION VI - REACTIVITY DATA

STABILITY: UNSTABLE _____ STABLE X
CONDITIONS TO AVOID: heat, sparks and open flame
INCOMPATIBILITY (materials to avoid): oxidizers
HAZARDOUS DECOMPOSTION PRODUCTS: carbon monoxide, oxides of phosphorous

HAZARDOUS POLYMERIZATION: MAY OCCUR _____ WILL NOT OCCUR X
CONDITIONS TO AVOID: NA
COMMENTS: NA

SECTION VII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION(specify type): as needed air purifying, half facepiece with cartridge/canister - organic vapor w/dust mist prefilters.
VENTILATION: Use mechanical ventilation whenever product is used in a confined space, is heated or is agitated.
PROTECTIVE GLOVES: chemical resistant
EYE PROTECTIONS: goggles
OTHER PROTECTIVE EQUIPMENT: If used at elevated temp; lower atmos. pressure or at high altitude respiratory protection may be required.

SECTION VIII - SPILL AND DISPOSAL INFORMATION

Resource Conservation and Recovery Act/RCRA, 40CFR 261, Subpart C&D(Appendix 8):
Hazardous Waste Classification: corrosive & ignitable Code No:D002 & D001
Comprehensive Emergency Response,Compensation and Liability Act/CERCLA,40CFR302:

Hazardous Substance(s)	Reportable Quantity, lbm(kg)
phosphonic acid, petroleum distillate	30,000 gal(243900 lbm/110612)

Refer to Section XI for more regulatory information.
SPILL CONTROL AND RECOVERY:
SMALL LIQUID SPILLS: Soak up residue and small spills with absorbent clay, sand, or dirt and place in salvage containers.
LARGE LIQUID SPILLS: Don appropriate protective clothing and respiratory protection prior to entering a spill/leak area. Eliminate ignition sources Approach area upwind if possible. Shut off leak if it can be done safely. Dike and pump large spills into salvage containers.
DISPOSAL: Dispose of all waste and/or containers in accordance with federal, state and local regulations.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in well-ventilated area. Store in cool, dry area. Control ignition source; keep away from heat, sparks and open flame.

WPS CHEMICAL STORAGE CLASSIFICATION SPM 04-01: II.1.
OTHER PRECAUTIONS: NA

SECTION X - PRECAUTIONARY LABEL INFORMATION

FOR INDUSTRIAL USE ONLY

Avoid inhalation of vapors or mists. Do not get in eyes, or skin or on clothing Keep container closed when not in use. Wear suitable protection for eyes and skin when handling. Use with adequate ventilation. Avoid contact with oxidizers.

SECTION XI - REGULATORY INFORMATION

The Govermental Regulations, not covered elsewhere in this MSDS, which apply to this product are:

U.S. FEDERAL REGULATIONS:

DOT HAZARDOUS MATERIAL REGULATIONS, 49CFR172:

DOT Proper Shipping Name: corrosive liquid, n.o.s. RQ: 243900 (110612)
Hazardous Component(s): phosphoric acid
Identification Number: UN1760 Label Required: corrosive
Hazard Classification: corrosive Placard: corrosive

TOXIC SUBSTANCES CONTROL ACT/TSCA, 40CFR710:The chemical ingredients in this product are either on the Inventory List(8b) or have been cleared by premanufacturing notification (PMN).

FEDERAL AIR POLLUTION CONTROL ACT/Clean Air Act, 40CFR60.111 and 40CFR61.112:
This product does not contain ingredients covered by this Act.

FEDERAL WATER POLLUTION CONTROL ACT/Clean Water Act, 40CFR401.15 and 40CFR116:
This product does not contain ingredients covered by this Act.

SUPERFUND AMENDMENTS and REAUTHORIZATION ACT (1986)/SARA Title III:
List of Toxic Chemicals, 40CFR372.313:

Substance	CAS Number	Weight Percent, %
phosphoric acid	7664-38-2	<1
xylene	1330-20-1	<28%

Extremely Hazardous Substances, 40CFR355, Appendix A & B:
This product does not contain ingredients covered by this Act.

MATERIAL SAFETY SHEET REQUIREMENTS, 40CFR370.311 & 312: Our hazard evaluation has found this product to be hazardous. The EPA hazard categories are:

X Immediate (acute) health hazard
___ Delayed (chronic) health hazard
X Fire hazard
___ Sudden release of pressure hazard
___ Reactive hazard

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y.

MATERIALS INFORMATION SERVICES

NO. 354

METHYL ALCOHOL

Revision A

Date November 1977

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: METHYL ALCOHOL

OTHER DESIGNATION: Methanol, Wood alcohol, GE Material D5B51, ASTM D1152, CH_3OH, CAS# 000 067 561

MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Methyl Alcohol ----------	ca 100	TLV 200 ppm*(Skin) or 260 mg/m^3
*Current OSHA TLV; ACGIH (1977) TLV adds (skin) notation which indicates a potential contribution to overall exposure via absorption through the skin.		
NIOSH has recommended a 10-hr TWA of 200 ppm with a ceiling of 800 ppm (15 minute sample).		Human, oral LDLo 340 mg/kg

SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C --- 64.5
Vapor density (Air=1) ---------- 1.1
Vapor pressure @ 21.2°C, mm Hg - 100
Water solubility ---- Totally miscible

Specific gravity (20°/4°C) ---- 0.791
Volatiles, % ---------- ca 100
Evaporation rate (CCl_4=1) ----- 1
Molecular weight ---------- 32.04

Appearance & Odor: A clear, colorless liquid with a characteristic alcohol odor which is detectable at 50 to 100 ppm and above in air.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air % by Volume	LOWER	UPPER
52°F (11 C) (closed cup)	867°F (465°C)		6	36.5

Extinguishing media: CO_2, dry chemical, alcohol foam, and water mist or fog. Methyl alcohol fires are Class B fires, use a blanketing effect to smother fire.

It is a moderate explosion hazard and dangerous fire hazard when exposed to heat, sparks or flames and can react vigorously with oxidizing agents.

Firefighters should use self-contained breathing apparatus with full facepiece and full protective clothing where this material is involved in a fire in an enclosed place.

SECTION V. REACTIVITY DATA

Methyl alcohol is a flammable material, but it is stable under normal storage and use conditions. It does not undergo hazardous polymerization.

Avoid contact with strong oxidizing agents such as nitrates, perchlorates or sulfuric acid.

Oxidation products in air include oxides of carbon and nitrogen.

W.I.N. 100102, ALCOHOL, Methanol, absolute

NO. 354

SECTION VI. HEALTH HAZARD INFORMATION	TLV 200 ppm (Skin) or 260 mg/m^3

Methanol is a poisonous, narcotic chemical that may exert its effects through inhalation, skin absorption or ingestion. Body elimination of methanol is slow, and the toxic effects can be compounded by repeated excessive exposures over several days. Toxic effects are exerted upon the nervous system, especially the optic nerve. Ingestion can produce blindness. Symptoms of overexposure include dizziness, blurring of vision, nausea, cardiac depression, muscular incoordination and narcosis. Solvent action can dry the skin and cause dermatitis.

FIRST AID:

Inhalation: Remove victim to fresh air and prevent further exposure for 7 days. Obtain medical assistance if victim is not fully normal within 10 minutes.

Skin Contact: Wash affected area with soap and water; apply skin lotions.

Eye Contact: Irrigate with running water for 15 minutes. Get medical help.

Ingestion: Drink 3 glasses milk, water or 4% sodium bicarbonate. Obtain immediate medical aid for gastric lavage. (NIOSH recommends inducing vomiting if victim is conscious).

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel. Remove all sources of ignition; provide adequate ventilation. Absorb on vermiculite, paper or other absorbent. Burn in an approved incinerator or open pit away from buildings and people.

Dispose of large quantities of waste via a licensed waste solvent disposal company, or reclaim via filtration and distillation procedures. It can be incinerated.

Spills in sensitive areas may be diluted and flushed to ground with a water spray. Do not flush to sewer. Follow Federal, State and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide adequate ventilation to meet TLV requirements. Exhaust ventilation with 100 lfm minimum should be used where vapor exposure is likely.

Prevent skin contact by wearing rubber gloves. Protective aprons, boots and face shields should be used where splashing may occur. Use safety glasses in other areas of use. Remove methanol contaminated clothing promptly.

Eye wash stations and safety showers should be available in areas of use. Exhaust fans should be explosion proof.

No smoking in areas of use.

Respirator protection for emergency:
Use air-supplied or self-contained respirators above TLV. A full facepiece is required above 2000 ppm.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Prevent skin contact! Do not breathe vapors! This material is poisonous when introduced into the body metabolism. Do not ingest!

Store in a well-ventilated, fire proof area. Ground and electrically interconnect containers for transfer. Use spark-proof tools. Keep away from heat and ignition sources. No smoking in areas of storage or use.

NIOSH recommends preplacement medical exams for industrially exposed workers, periodic medical surveillance, and prompt eye examinations for eye contact with methanol or for any overexposure.

APPROVALS: MIS, CRD J. M. Nielsen

Industrial Hygiene and Safety

MEDICAL REVIEW:

GENERAL ELECTRIC

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT
SCHENECTADY, N. Y. 12305
Phone: (518) 385-4085 DIAL COMM 8*235-4085

MATERIALS INFORMATION SERVICES

NO. 318

XYLENE
(mixed isomers)

Revision C

Date November 1980

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: XYLENE (mixed isomers)
OTHER DESIGNATIONS: Xylol, Dimethylbenzene, $C_6H_4(CH_3)_2$; ASTM D843, D845 and D846; GE Material D5B9, CAS #001 330 207.
MANUFACTURER: Available from many suppliers, including EXXON Company USA and Shell Chemical Company.

SECTION II. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Xylene (o, m, p-isomers)	>90	8-hr TWA 100 ppm (skin)**
Other C_7 to C_9 Hydrocarbons*	<10	or 435 mg/m^3
		Xylene Typical
		Human, inhalation
		TCLo 200 ppm
		(Irritation Effects)
		Rat, oral
		LD_{50} 4.3 g/kg
		Human, oral
		LDLo 50 mg/kg

*Material may contain ethylbenzene (8-hr TWA 100 ppm) and traces of toluene and C_9 aromatic and aliphatic hydrocarbons. Some commercial products may contain over 10% non-xylene hydrocarbons, mostly ethylbenzene.

**Current OSHA standard and ACGIH (1980) TLV. NIOSH has proposed a 10-hr TWA of 100 ppm with a 200 ppm ceiling level (10 min. sample).

STATUS: NCI bioassay for carcinogenesis study 9/78. TLV set to prevent irritant effects and CNS depression.

SECTION III. PHYSICAL DATA

Boiling range, 1 atm, deg C	135-145*	Specific gravity (H_2O=1)	0.86-0.87
Vapor pressure at 20 C, mm Hg	ca 6	Volatiles, %	ca 100
Vapor density (Air=1)	3.7	Evaporation rate (BuAc=1)	0.6
Solubility in water	Negligible	Molecular weight	106.18

Appearance & Odor: Light colored or colorless, mobile liquid with an aromatic odor. The recognition threshold (100% of test panel) is about 0.3 ppm in air (unfatigued) for xylene.

*Wider and narrower boiling range materials are commercially available.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air Volume %	LOWER	UPPER
>77 F (TCC)	867 F		1	7

Extinguishing Media: Use dry chemical, foam, CO_2, and water fog or steam to provide a smothering effect on fire. A water stream can scatter flames. A spray of water may be used to cool fire-exposed containers.

This flammable liquid is a dangerous fire hazard and a moderate explosion hazard when exposed to heat or flame. Heavier-than-air vapors can flow along surfaces to distant ignition sources and flash back.

Firefighters should use self-contained breathing apparatus.

SECTION V. REACTIVITY DATA

This material is stable in closed containers at room temperature. It does not polymerize.

It is flammable (OSHA Class ~~IC~~ liquid) and can form explosive mixtures with air. Keep away from sources of heat, sources of ignition and strong oxidizing agents. Thermal-oxidative degradation in air can produce toxic vapors and gases, including carbon monoxide and oxides of nitrogen.

W.I.N. 100105, SOLVENT, Xylene

No. 318

SECTION VI. HEALTH HAZARD INFORMATION

TLV 100 ppm or 435 mg/m^3

Inhalation of xylene at the TLV may cause mild irritation and dizziness in sensitive persons. Concentrations from 100-200 ppm may cause nausea, headache and depression. Vapor levels >200 ppm can have an anesthesic effect. Skin contact may produce mild irritation and skin defatting. Eye contact may cause burning and irritation. Ingestion of xylene may cause poisoning. One ounce or more may be fatal. Aspiration can be a hazard if this material is swallowed.

FIRST AID:

Eye Contact: Irrigate with water for 15 minutes. Get medical attention!

Skin Contact: Wash with soap and water. Remove contaminated clothing promptly. Replace lost skin oils with approved lotions or creams.

Inhalation: Remove victim to fresh air. Restore breathing if required. Get medical attention if symptoms persist or if nausea or collapse has occurred.

Ingestion: Get medical attention immediately! Give white mineral oil demulcent and saline cathartic, but do not induce vomiting unless directed by a physician.

Maintain observation of patient for possible delayed onset of pulmonary edema.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel. Remove all ignition sources. Provide adequate ventilation. Use vermiculite or sand to absorb spill; scrape up with nonsparking tools and place in a covered metal container. The absorbed material may be burned in an open pit, or placed in cardboard boxes and burned in an incinerator. Spilled liquid can be flushed away from sensitive locations with a water stream; flush to open area not to sewer!

DISPOSAL: Scrap liquid may be atomized into an approved incinerator, or it may be disposed of via a licensed solvent disposal company. When large amounts are involved reclaimation procedures may prove economical. Follow Federal, State, and Local regulations.

Aquatic toxicity rating TLm 96: 100-10 ppm.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general ventilation and efficient exhaust ventilation (explosion-proof equipment) to meet TLV requirements and to control heavier-than-air vapors. Use >100 lfm face velocity for exhaust hoods. Use approved organic vapor canister respirators for short periods of nonroutine work or emergency situations at up to 1000-2000 ppm and approved self-contained respirators for higher and unknown vapor levels. Full facepiece required. Buna-N rubber gloves and aprons should be worn to prevent contact of xylene with the skin. Safety glasses or goggles should be used for eye protection and eyewash stations should be readily accessible to use areas.

Comprehensive preplacement and biennial medical examinations to be directed toward, but not limited to, liver, kidney, gastrointestinal disorders, skin irritation, and the central nervous system.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a clean, cool, well-ventilated area, away from sources of heat, sources of ignition and strong oxidizing agents. Protect containers from physical damage. Bond and ground metal containers when transferring liquid. Use metal safety cans for small amounts. Use nonsparking tools for work in solvent areas. No Smoking in areas of use or storage.

Prevent skin contact and remove contaminated clothing promptly. Avoid repeated or prolonged breathing of vapor. Do not ingest!

DATA SOURCE(S) CODE: 1-12,19-21,23,26,31,34,37-39

APPROVALS: MIS CRD J.M. Ruden

Industrial Hygiene and Safety 11-26-80

MEDICAL REVIEW: December 5, 1980

GENERAL ELECTRIC

100412

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: September, 1984

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS De-emulsifier, Nine-40
CHEMICAL FAMILY Surfactant	FORMULA W.I.N. 100472

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable Liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Methanol
HAZARD CLASS	Flammable Liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable Liquid
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Xylene	2	100ppm
Methanol		200ppm
Isopropanol		400ppm
Heavy Aromatic Naphtha		100ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	162	SPECIFIC GRAVITY (H_2O=1)	0.881
VAPOR PRESSURE (mm Hg.)	200	PERCENT, VOLATILE BY VOLUME (%)	62
VAPOR DENSITY (AIR=1) @ 100°F	>5	EVAPORATION RATE (n-Butyl Acetate=1)	2.03
SOLUBILITY IN WATER	Dispersible		
APPEARANCE AND ODOR	light yellow liquid, hydrocarbon odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
52°F Seta CC-ASTM		0.8	36.0

EXTINGUISHING MEDIA
Dry chemical, foam, water spray or water fog

SPECIAL FIRE FIGHTING PROCEDURES
Use water spray to cool fire exposed surfaces and to protect personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Respiratory protection required for fire-fighting personnel.

(Continued on reverse side)

TRADE NAME: W.I.N. 100472, De-emulsifier, Nine-40

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Isopropanol, Methanol, Xylene, heavy aromatic naphtha (400, 200, 100, 100 ppm)

EFFECTS OF OVEREXPOSURE
Acute: Liquid is irritating to skin and eyes

Chronic: Prolonged or repeated skin contact may cause dermatitis

EMERGENCY AND FIRST AID PROCEDURES
Remove to fresh air. If not breathing, apply artificial respiration and call a physician. Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. If skin contact occurs, wash with soap and water.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID None
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS
burning will emit smoke, fumes, CO and CO_2

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Keep public away. Eliminate source of ignition. Shut off source, if possible to do so safely. Prevent liquid from entering sewers, watercourses, or low areas. Advise authorities if material has entered a watercourse, or sewer or has contaminated soil or vegetation.

WASTE DISPOSAL METHOD
Contain spilled liquid with sand or earth. Recover by pumping or with suitable absorbent. Consult an expert on disposal of recovered material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* Use NIOSH/MSHA approved respiratory protection such as air-supplied mask if used in confined spaces or other poorly ventilated areas.

VENTILATION	LOCAL EXHAUST Provide >60 fpm hood or face velocity for confined spaces.	SPECIAL Explosion-proof ventilation equipment.
	MECHANICAL *(General)* To provide ventilation equal to outdoors.	OTHER Not Applicable

PROTECTIVE GLOVES Chemical resistant gloves	EYE PROTECTION Chemical splash goggles

OTHER PROTECTIVE EQUIPMENT
Usually not needed.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep container closed when not in use. Containers used for this material may be hazardous when emptied. Observe all hazard precautions outlined in this sheet. Emptied containers retain product residues (vapor, liquid, etc.).

OTHER PRECAUTIONS
Keep away from heat, sparks and open flames.

WESTERN PETROLEUM SERVICES
W.I.N. 100472

NINE-40

De-emulsifier

FLASH POINT: 52'F(11'C) SETAFLASH

DANGER!

EXTREMELY FLAMMABLE
MAY CAUSE FLASH FIRE
MAY CAUSE EYE BURNS
CAUSES SKIN IRRITATION ON PROLONGED CONTACT
MAY BE A SKIN SENSITIZER

MANUFACTURED FOR:
THE WESTERN COMPANY OF NORTH AMERICA
P. O. BOX 186
FORT WORTH, TEXAS 76101

BATCH NO.

MADE IN U.S.A.

PRECAUTIONS:

KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME. DO NOT GET IN EYES. WEAR CHEMICAL SAFETY GOGGLES. AVOID CONTACT WITH SKIN OR CLOTHING. AVOID BREATHING MISTS OR VAPORS. USE WITH VENTILATION EQUAL TO UNOBSTRUCTED OUTDOORS IN MODERATE BREEZE. KEEP CONTAINER CLOSED. WASH THOROUGHLY AFTER HANDLING.

FIRST AID:

IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN. WASH SKIN WITH SOAP AND WATER.

*** D. O. T. PROPER SHIPPING NAME***

FLAMMABLE N. O. S.

FIRE FIGHTING:

USE WATERSPRAY TO COOL FIRE EXPOSED SURFACES AND PROTECT PERSONNEL. EXTINGUISH WITH DRY CHEMICAL OR ALCOHOL-TYPE FOAM. WATERSPRAY MAY BE INEFFECTIVE AS AN EXTINGUISHING AGENT.

USE INSTRUCTIONS:

FOR PROPER USE, REFER TO SERVICE BULLETIN NUMBER 552.0 WC
SPECIFIC USAGE
0.5-10.0 GAL/1000 GAL HCL, HCL/HF BLENDS, AND HCL/ACETIC ACID BLENDS.

SPILL CONTROL:

KEEP PUBLIC AWAY. ELIMINATE SOURCES OF IGNITION. WARN OCCUPANTS OF DOWNWIND AREAS OF FIRE AND EXPLOSION HAZARD. SHUT OFF SOURCE IF POSSIBLE TO DO SO SAFELY. PREVENT LIQUID FROM ENTERING SEWERS, WATERCOURSES, OR LOW AREAS. ADVISE AUTHORITIES IF MATERIAL HAS ENTERED A WATERCOURSE OR SEWER OR HAS CONTAMINATED SOIL OR VEGETATION. CONTAIN SPILLED LIQUID WITH SAND OR EARTH, AND DILUTE WITH WATER. RECOVER BY PUMPING OR WITH SUITABLE ABSORBENT. CONSULT AN EXPERT ON DISPOSAL OF RECOVERED MATERIAL AND ENSURE CONFORMITY WITH LOCAL DISPOSAL REGULATIONS.

WARNING: EMPTY CONTAINER HAZARDOUS

OBSERVE ALL PRECAUTIONARY MEASURES ON THIS LABEL. CONTAINER MAY BE HAZARDOUS WHEN EMPTY. STORE EMPTY CONTAINERS AWAY FROM HEAT AND FLAME WITH DRUM PLUGS CLOSED. DO NOT CUT OR WELD. ENSURE COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS IN DISPOSING OF THIS CONTAINER, RESIDUAL CONTENTS, OR RINSING. TRIPLE RINSE CONTAINER AND OFFER FOR RECYCLING, RECONDITIONING, OR DISPOSAL IN AN APPROVED MANNER. ENSURE RECONDITIONERS, RECYCLERS, OR DISPOSAL ARE AWARE OF HAZARDS ASSOCIATED WITH CONTENTS.

NET CONTENTS: 55 U.S. GALLONS 208.2 LITERS

7-8537

W.I.N.100225,GAS,cryogenic liquid,Nitrogen

LIQUID AIR CORPORATION
INDUSTRIAL GASES DIVISION

Material Safety Data Sheet

PRODUCT NAME	Liquid Nitrogen
TELEPHONE (415) 977-6500 EMERGENCY RESPONSE INFORMATION ON PAGE 2	

LIQUID AIR CORPORATION
INDUSTRIAL GASES DIVISION
One California Plaza, Suite 350
2121 N. California Blvd.
Walnut Creek, California 94596

TRADE NAME AND SYNONYMS	Please see last page.	CAS NUMBER 7727-37-9
CHEMICAL NAME AND SYNONYMS	Liquid Nitrogen	
ISSUE DATE OCTOBER 1, 1985 AND REVISIONS CORPORATE SAFETY DEPT.	FORMULA Liquefied N_2 MOLECULAR WEIGHT 28.013	CHEMICAL FAMILY Inert

HEALTH HAZARD DATA (SEE NOTE ON LAST PAGE)

TIME WEIGHTED AVERAGE EXPOSURE LIMIT Nitrogen is defined as a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial pressure of 135 mm Hg (ACGIH, 1984-85).

SYMPTOMS OF EXPOSURE *

Effects of exposure to high concentrations so as to displace the oxygen in air necessary for life may include any, all or none of the following:

- o Loss of balance or dizziness;
- o Tightness in the frontal area of the forehead;
- o Tingling of the tongue, fingertips or toes; (Continued on last page.)

TOXICOLOGICAL PROPERTIES

Nitrogen is nontoxic but the liberation of a large amount in a confined area could displace the amount of oxygen in air necessary to support life.

Frostbite effects are a change in color of the skin to gray or white possibly followed by blistering.

Listed as Carcinogen or Potential Carcinogen	National Toxicology Program	Yes ☐ No ☒	I.A.R.C. Monographs	Yes ☐ No ☒	OSHA	Yes ☐ No ☒

RECOMMENDED FIRST AID TREATMENT

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO NITROGEN. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Medical assistance should be sought immediately.

For dermal contact or frostbite, flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

W.I.N.100225,GAS,cryogenic liquid,Nitrogen

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

None

PHYSICAL DATA

BOILING POINT -320.445°F (-195.803°C)	LIQUID DENSITY AT BOILING POINT 50.48 lb/ft^3 (808.607 kg/m^3)
VAPOR PRESSURE @ 70°F (21.1°C) above the critical temp. of -232.51°F (-146.95°C)	GAS DENSITY AT 70°F 1 atm .07245 lb/ft^3 (1.1605 kg/m^3)
SOLUBILITY IN WATER @ 68°F (20°C) Bunsen coefficient = .01557	FREEZING POINT -346.004°F (-210.002°C)
APPEARANCE AND ODOR Clear, colorless, odorless liquid	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) N/A	AUTO IGNITION TEMPERATURE N/A	FLAMMABLE LIMITS % BY VOLUME N/A
EXTINGUISHING MEDIA Nonflammable, inert		ELECTRICAL CLASSIFICATION Nonhazardous
SPECIAL FIRE FIGHTING PROCEDURES N/A		
UNUSUAL FIRE AND EXPLOSION HAZARDS N/A		

REACTIVITY DATA

STABILITY Unstable		CONDITIONS TO AVOID
Stable	X	
INCOMPATIBILITY (Materials to avoid) None		
HAZARDOUS DECOMPOSITION PRODUCTS None		
HAZARDOUS POLYMERIZATION May Occur		CONDITIONS TO AVOID
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

See note on last page.

WASTE DISPOSAL METHOD

See note on last page.

EMERGENCY RESPONSE INFORMATION
IN CASE OF EMERGENCY INVOLVING THIS MATERIAL, CALL DAY OR NIGHT (800) 231-1366
OR CALL CHEMTREC AT (800) 424-9300

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

VENTILATION	LOCAL EXHAUST	SPECIAL
See Local Exhaust on last page.	See last page.	
	MECHANICAL (Gen.)	OTHER

PROTECTIVE GLOVES
Loose fitting, insulated

EYE PROTECTION
Safety goggles or glasses plus face shield

OTHER PROTECTIVE EQUIPMENT
Safety shoes

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION
DOT Shipping Name: Nitrogen, refrigerated liquid (cryogenic liquid) I.D. No.: UN 1977
DOT Shipping Label: Nonflammable Gas DOT Hazard Class: Nonflammable gas

SPECIAL HANDLING RECOMMENDATIONS

See note on last page re Spill or Leak Procedures. Also see CGA Safety Bulletin SB-2 and CGA pamphlets P-9, P-12 and P-14.

SB-2 Oxygen Deficient Atmospheres

P-9 The Inert Gases - Argon, Nitrogen and Helium

P-12 Safe Handling of Cryogenic Liquids

P-14 Accident Prevention in Oxygen-Rich and Oxygen-Deficient Atmospheres

For additional handling recommendations consult L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Association Pamphlet P-1.

SPECIAL STORAGE RECOMMENDATIONS

See note on last page re Spill or Leak Procedures. Also see CGA Safety Bulletin SB-2 and CGA pamphlets P-9, P-12 and P-14.

Do not store cylinders in sub-surface or closed (poorly ventilated) areas. Nitrogen gas can cause suffocation without warning.

For additional storage recommendations consult L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Association Pamphlet P-1.

SPECIAL PACKAGING RECOMMENDATIONS

Liquid nitrogen cannot be handled in carbon or low alloy steels. Eighteen-eight and 18-10 stainless steels are acceptable as are copper and its alloys, nickel and its alloys, brass, bronze, silicon alloys, Monel®, Inconel®, and beryllium. Also see CGA Safety Bulletin SB-2 and CGA pamphlets P-9 and P-12.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Liquefied gas cylinders should not be refilled except by qualified producers of these products. Shipment of a compressed gas container which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

*Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which may not be contained herein. The customer or user of this product should be familiar with these regulations.

LIQUID AIR CORPORATION
INDUSTRIAL GASES DIVISION

ADDITIONAL DATA

TRADE NAME AND SYNONYMS: (Continued)

Liquid Nitrogen; LIN; Nitrogen, refrigerated liquid (cryogenic liquid)

HEALTH HAZARD DATA: (Continued)

Note: Except where specified, the health hazard data and most of the other data in this material safety data sheet are for gaseous nitrogen. One volume of liquid nitrogen at its boiling point and atmospheric pressure will vaporize into approximately 695 volumes of gaseous nitrogen at 70°F (21.1°C) and 1 atmosphere.

SYMPTOMS OF EXPOSURE: (Continued)

- o Weakened speech leading to the inability to utter sounds;
- o Rapid reduction in the ability to perform movements;
- o Reduced consciousness of the surroundings;
- o Loss of tactile sensations;
- o Heightened mental activity.

It should be recognized that it is possible that none of the above symptoms may occur in nitrogen asphyxia so that there are no definite warning symptoms.

Contact with the cryogenic liquid or cold piping containing the liquid can cause tissue freezing or frostbite on dermal contact or if splashed into the eyes.

* For additional information, refer to L'Air Liquide's Encyclopedie des Gaz.

NOTE re SPILL OR LEAK PROCEDURES:

Liquid nitrogen is delivered to a customer into stationary vacuum-jacketed vessels at the customer's location or in portable vacuum-jacketed "liquid" cylinders.

Stationary customer-site vessels should be operated in accordance with the manufacturer's and Liquid Air Corporation's instructions. Do not attempt to repair, adjust, or in any other way modify the operation of these vessels. If there is a malfunction or other type of operational problem with the vessel, contact the closest Liquid Air Corporation location immediately.

Liquid nitrogen cylinders should be used only in well-ventilated areas and in accordance with the manufacturer's and Liquid Air Corporation's instructions. These cylinders must always be kept in an upright position. Specialized hand trucks are needed for their movement. A "first in-first out" inventory system should be used with these cylinders.

LOCAL EXHAUST: (Continued)

To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 molar percent.

100463

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: July 1,1984

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS Paraffin Control, Paratrol L
CHEMICAL FAMILY resin solution	FORMULA W.I.N. 100463

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Combustible liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Contains light aromatic naphtha
HAZARD CLASS	Combustible material
IDENTIFICATION NUMBER	NA 1993
D.O.T. LABEL(S) REQUIRED	Combustible material
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
light aromatic naphtha		25 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1) @ 60°F	0.90
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	65
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	114°F SFCC	FLAMMABLE LIMITS	Lel / Uel
EXTINGUISHING MEDIA	CO_2 or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

(Continued on reverse side)

TRADE NAME: W.I.N. 100463, Paraffin Control, Paratrol L

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	not established
EFFECTS OF OVEREXPOSURE	See Attachment
EMERGENCY AND FIRST AID PROCEDURES	See Attachment

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Dike to prevent entering any waterway. Cover with sand, dirt of suitable chemical adsorbent.

WASTE DISPOSAL METHOD

After material is adsorbed pick up sand, dirt or chemical adsorbent and take to an approved hazardous waste disposal site. Dispose of residue in accordance with applicable waste management regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* When exposure exceeds TLV, the use of a chemical respirator with organic cartridge is recommended.

VENTILATION	LOCAL EXHAUST Recommended	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES synthetic	EYE PROTECTION chemical goggles

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid contact with skin and eyes. Avoid breathing vapor or spray mist. Keep container tightly closed when not in use.

OTHER PRECAUTIONS

Attachment to MSDS
TRADE NAME: W.I.N. 100463, Paraffin Control, Paratrol L

Effects of overexposure

Inhalation: Vapor is a respiratory and mucous membrane irritant and may cause severe systemic injury. High concentrations cause nausea, headaches, dizziness, vertigo, narcosis and possible CNS depression. In extreme cases unconsciousness and pulmonary edema may result. Prolonged or repeated exposure of high vapor concentrations may cause kidney and liver damage.

Skin and eye contact: A primary skin irritant. On repeated or prolonged skin contact, may cause dermatitis owing to dehydrating and defatting properties. May be readily absorbed through the skin. Contact with eyes causes severe irritation and may lead to persistent corneal opacity.

Ingestion: May cause severe gastrointestinal distress. Aspiration into lungs may cause pulmonary edema and chemical pneumonitis.

Emergency and First Aid Procedures

For Skin: Wash skin with soap and water. If rash or irritation develops, seek first aid.

For Eyes: Flush eyes with plenty of water for 15 minutes. Consult a physician.

For Inhalation: Remove to fresh air. Administer oxygen if necessary. Get medical attention if symptoms persist or exposure was severe.

For Ingestion: Do not induce vomiting. Get medical attention immediately. Administer activated carbon and perform gastric lavage if indicated.

WESTERN

Pacesetters

Western Petroleum Services

W.I.N. 100463

PARATROL L

Paraffin Inhibitor

batch#012345

Flash Point: 114° F(46° C) SFCC

Net Contents: 414 lb(187.8 kg)

55 gal(208.2liter)@60° F

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s)

SPECIFIC USAGE: Use at the rate of 5-10 gal per 1000 gallon of water frac.

FOR INDUSTRIAL USE ONLY

CAUTION!

AVOID contact with eyes, skin and clothing.
WASH thoroughly after handling.
KEEP container closed.
AVOID breathing vapor. Use with adequate ventilation at elevated temperatures, this product may burn.

Fire Fighting:	Use foam, dry chemical or CO_2.
FIRST AID:	
For eyes:	In case of contact, wash eyes with plenty of water for at least 15 minutes. Call physician.
For skin:	In case of contact, flush skin with water. Wash clothing before reuse.
For ingestion:	If swallowed, do not induce vomiting. Get immediate medical attention. Administer activated carbon and perform gastric lavage, if indicated.
Handling:	Employees must wear synthetic gloves and chemical goggles.
ATTENTION:	After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for:

The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

batch no.

Combustible liquid, n.o.s. contains aromatic naphtha (NA 1993)

R.E.F.C.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 28MAY86

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Proprietary blend	GEL COMPLEXER, water, T.I.C.
CHEMICAL FAMILY: metal chelate	FORMULA: W.I.N. 100151

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

SECTION II - HAZARDOUS INGREDIENTS

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
isopropanol	80	400ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H_2O=1) @ 25°C	0.842
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	80%
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	364
SOLUBILITY IN WATER	insoluble		

APPEARANCE AND ODOR: Clear red liquid, acetyl acetone odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
54 F (PMCC)			

EXTINGUISHING MEDIA
Any type CO_2, dry chemical or water

SPECIAL FIRE FIGHTING PROCEDURES
None

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

(Continued on reverse side)

TRADE NAME: W.I.N.100151,GEL COMPLEXER,water,T.I.C.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Unknow, isopropanol component, 400 ppm

EFFECTS OF OVEREXPOSURE
See attached

Is this material a sensitizer? No report of sensitization during 10 years of com-

EMERGENCY AND FIRST AID PROCEDURES
Wash spills from skin with soap and water. If contact with eyes occurs, flush then thoroughly with plenty of water and consult a physician if irritation persists.

If the product is ingested, consult a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	XXX	Hydrolyzed slowly by water.

INCOMPATABILITY *(Materials to avoid)*
May cause rapid corrosion of ferrous metals.

HAZARDOUS DECOMPOSITION PRODUCTS
None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	XXX	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Collect large spills with sawdust or other absorbent solid. Small spills and residures may be flushed to the drain with water.

WASTE DISPOSAL METHOD
Pour waste on the ground in a protected dumping area. Bury or burn in accordance with local ordinances.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES Elbow length	EYE PROTECTION Goggles or face shield

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
See attached

OTHER PRECAUTIONS
See attached

Attachment to and continuation of

MATERIAL SAFETY DATA SHEET

DATE: 28MAY86

SECTION I	
Supplier's Name The Western Company of North America	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS GEL COMPLEXER, water, T.I.C.
CHEMICAL FAMILY metal chelate	FORMULA W.I.N. 100151

SECTION IXA - - SPECIAL PRECAUTIONS

SECTION V - HEALTH HAZARD DATA - Effects of Overexposure

"T.I.C." appears to be slightly toxic when administered to rats in single doses. The ALD was 5,000 mg/kg of body weight. Ten daily doses of 1,000 mg/kg over a two-week period caused depressed rate of weight gain, salivation and restlessness during the period of treatment. One animal died two days after the tenth dose. The others showed no pathological lesions attributable to "T.I.C." when sacrificed after the tenth treatment of ten days later. There was definite indication of cumulative toxicity when fed repeatedly at a high dose level.

Laboratory studies of the effect of "T.I.C." on the skin and eyes have not been made. The material is assumed to be an irritant.

SECTION IX - SPECIAL PRECAUTIONS - handling and Storage

Handle "T.I.C." in accordance with good industrial hygiene. Avoid unnecessary personal contact and wear goggles and protective gloves when handling substantial quantities. Wash spills from the skin with soap and water without undue delay. Wash the face and hands after exposure.

"T.I.C." is classified as a flammable liquid and shipping containers carry the I.C.C. red label. This classification arises from the 80% isopropanol content in the product. Do not expose "T.I.C." to flames or sparks.

"T.I.C." may be stored in its original shipping container at normal indoor or outdoor temperatures. Containers must be kept tightly closed to prevent the loss of isopropanol and to prevent contact with water or water vapors. "T.I.C." may cause rapid corrosion of some metals, particularly ferrous metals.

WESTERN
Pacesetters

Western Petroleum Services

W.I.N. 100151

T.I.C.

GEL COMPLEXER

Flash Point: 54°F(12°C)
Net Content: 364 lb(165kg)
54 gal(196 L)@ 60°F

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 380.0, 381.0, 381.1, 384.0, 385.0, 386.0

SPECIFIC USAGE: Use at the rate of 1 to 3 gal. per 1000 gal. of frac fluid.

NOTE: Moisture degrades product. Keep from moisture. Use with T.I.C. Injector only. Do not batch mix into frac fluid.

When Handling This Product Employees MUST WEAR: Chemical goggles, rubber apron, and rubber gloves.

FOR INDUSTRIAL USE ONLY

WARNING

FLAMMABLE. MAY CAUSE IRRITATION. Keep away from heat, sparks and flames. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated breathing of vapors. Use with adequate ventilation. Keep container closed. Wash thoroughly after handling.

FIRST AID: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. Wash clothing before reuse.

FIRE: In case of fire, flood with water or "alcohol" foam or use dry chemical or CO_2.

SPILL OR LEAK: Contain or soak up with sand or earth. Flush balance to a waste water treatment system.

ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Donot cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for:

The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Emergency Telephone: (817)731-5100
(817)731-5433

batch no.

D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o. contains isopropanol (UN1993)*****

R-341(01/86

100219

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 15 Mar. 78

SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)
P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Benzoic Acid	Westblock III-X
CHEMICAL FAMILY: Organic Acid	FORMULA: C_6H_5 COOH (well gradded)

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	ORM-E, n.o.s. (RQ5000/2270)
NAME OF HAZARDOUS COMPONENT	Benzoic acid X
HAZARD CLASS	ORM-E
IDENTIFICATION NUMBER	NA9094
D.O.T. LABEL(S) REQUIRED	None
PRECAUTIONARY LABEL	

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
X		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	480°	SPECIFIC GRAVITY (H_2O=1) 28°F	1.316
VAPOR PRESSURE (mm Hg.) solid		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1) butyl acetate=1	1
SOLUBILITY IN WATER @ 25°C = 0.34%	slight		

APPEARANCE AND ODOR: White flakes or crystals - slight odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
250°F (CC)			

EXTINGUISHING MEDIA
Dry chemical, CO_2, foam, water fog

SPECIAL FIRE FIGHTING PROCEDURES
None

UNUSUAL FIRE AND EXPLOSION HAZARDS
None

(Continued on reverse side)

TRADE NAME: WESTBLOCK III-X 100219

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Not available

EFFECTS OF OVEREXPOSURE
Liquid is irritating to eyes. May be harmful if swallowed or absorbed through skin.

EMERGENCY AND FIRST AID PROCEDURES
Flush eyes for 15 min. and get medical attention. Wash skin thoroughly with soap and water and get medical attention if irritation or redness develops. Launder clothes before reuse.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Keep away from heat, sparks and open flames.
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*
Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
None

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Extinguish all sources of ignition. Wash down with water or soak up on sand and dispose of in an approved industrial waste landfill. Do not wash down with water where runoff will contaminate important water sources.

WASTE DISPOSAL METHOD
Incinerate in an incinerator equipped with an afterburner and scrubber or bury in an approved industrial landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
None required in normal use.

VENTILATION		
	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber	Face shield or goggles

OTHER PROTECTIVE EQUIPMENT
Rubber boots and apron, if possibility of contact during use exists.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid contact with eyes, skin and clothing. Avoid breathing vapors. Store away from heat, sparks and open flames.

OTHER PRECAUTIONS
Do not transfer to improperly marked containers. Keep container closed when not in use.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Date: April 6, 1992

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. 1-800-732-9876
ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027	
CHEMICAL NAME AND SYNONYMS Isopropyl Alcohol Solution	TRADE NAME AND SYNONYMS Westprop 4 Activator
CHEMICAL FAMILY Isopropyl Alcohol Solution	FORMULA W.I.N. 499504

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME Flammable Liquid, n.o.s.	(RQ /)
NAME OF HAZARDOUS COMPONENT Contains isopropyl alcohol	
HAZARD CLASS Flammable Liquid	
IDENTIFICATION NUMBER UN 1993	
D.O.T. LABEL(S) REQUIRED Flammable	
PRECAUTIONARY LABEL	

SECTION II - HAZARDOUS INGREDIENTS*	%	TLV (Units)
Isopropanol (67-63-0)	30 - 50	400 ppm
Alcohols C11-15-Secondary, Ethoxylated (68131-40-8)	40 - 70	
* This product contains no chemicals subject to the reporting requirements of Section 313		
of Title III of the Superfund Amendments and Reauthorization Act of 1986.		

SECTION III - PHYSICAL DATA

BOILING POINT (°F)		SPECIFIC GRAVITY (H_2O=1)	0.907
VAPOR PRESSURE (mm Hg)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	Soluble	FREEZING POINT	15°F

APPEARANCE AND ODOR clear liquid, isopropyl alcohol odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 53°F (T.C.C.)	FLAMMABLE LIMITS	Lel	Uel

EXTINGUISHING MEDIA water spray, dry chemical, foam or CO_2

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS Flammable Liquid and vapor. Vapor is heavier than air and may settle in low places or travel outward to a source of ignition and flashback. Keep liquid and vapor away from heat, spark, flame and other ignition sources, including, but not limited to, pilot lights, heaters, cigarettes, electric motors and static discharge.

(Continued on next page)

TRADE NAME: W.I.N. 499594

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE *Isopropanol (Note revised OSHA PEL): May cause liver damage based on animal data. May cause kidney damage based on animal data. Can cause central nervous system depression. Signs and symptoms may include headache, dizziness, nausea, vomiting, unconsciousness and even asphyxiation. See Footnote C. ACGIH TLV: 400 PPM (983 MG/M^3) STEL OSHA PEL: 400 PEL: 400 PPM (980 MG/M^3) TWA; 500 PPM (1225 MG/M^3) STEL *Alcohols, C11-15-Secondary, Ethoxylated: May cause allergic skin reaction. See Footnote C. ACGIH TLV: NONE ESTABLISHED. OSHA PEL: NONE ESTABLISHED.

Footnote C: As of the date of issuance of this document, this material has not been listed by NTP, IARC or OSHA as a carcinogen.

EMERGENCY AND FIRST AID PROCEDURES Ingestion: If accidentally swallowed, dilute by drinking large quantities of water. Immediately contact poison control center or hospital emergency room for any other additional treatment directions. Inhalation: Remove to fresh air. Skin Contact: In case of irritation, flush with water. Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held apart during irrigation to insure water contact with entire surface of eyes and lids. Call a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATIBILITY (Materials to avoid) Strong oxidizers and reducing agents

HAZARDOUS DECOMPOSITION PRODUCTS oxides or carbon

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Eliminate all ignition sources. Large quantities: Enclose with diking material to prevent seepage into natural bodies of water, then consult Western Company of North America. Small quantities: Soak up with absorbent material and remove to a chemical disposal area.

WASTE DISPOSAL METHOD Recover free liquid. Absorb residue and dispose of according to local, state/provincial, and federal requirements. Empty container: May contain explosive vapors. DO NOT cut, puncture or weld on or nearby.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Where air contaminants can exceed acceptable criteria, use NIOSH/MSHA approved respiratory protection equipment.

VENTILATION See Section IXA	LOCAL EXHAUST	X	SPECIAL
	MECHANICAL (General)		OTHER

PROTECTIVE GLOVES Yes

EYE PROTECTION Goggles

OTHER PROTECTIVE EQUIPMENT

(Continued on next page)

TRADE NAME: W.I.N. 499594

SECTION IX - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep container closed. Keep drum out of sun and away from heat. Store in a
cool, dry place. Empty container may contain product residues. DO NOT cut, torch or reuse without commercial cleaning. Loosen
closure cautiously before opening. Keep away from heat, sparks, flame and other ignition sources. Use with adequate ventilation.
OTHER PRECAUTIONS

(Continued on next page)

ATTACHMENT TO AND CONTINUATION OF

MATERIAL SAFETY DATA SHEET

Date: April 6, 1992

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. 1-800-732-9876
ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027	
CHEMICAL NAME AND SYNONYMS Isopropyl Alcohol Solution	TRADE NAME AND SYNONYMS Westprop 4 Activator
CHEMICAL FAMILY Isopropyl Alcohol Solution	FORMULA W.I.N. 490594

SECTION IXA - SPECIAL PRECAUTIONS

CONTROL MEASURES

If airborne contaminants are generated when the material is heated or handled, sufficient ventilation in volume and air flow patterns shall be provided to keep air contaminant concentration levels below acceptable criteria.

ENGINEERING CONTROLS: The following exposure control techniques may be used to effectively minimize employee exposure: local exhaust, ventilation enclosed system design, process isolation and remote control in combination with appropriate use of personal protective equipment and prudent work practices. These techniques may not necessarily address all issues pertaining to your operations. We, therefore, recommend that you consult with experts of your choice to determine whether or not your programs are adequate.

(Continued on next page)

ATTACHMENT TO AND CONTINUATION OF

MATERIAL SAFETY DATA SHEET

Date: April 6, 1992

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. 1-800-732-9876
ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027	
CHEMICAL NAME AND SYNONYMS Isopropyl Alcohol Solution	TRADE NAME AND SYNONYMS Westprop 4 Activator
CHEMICAL FAMILY Isopropyl Alcohol Solution	FORMULA W.I.N. 499594

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

FIRST AID:

FOR EYES : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

FOR SKIN : In case of contact, flush with water.

FOR INGESTION: If swallowed, dilute with large quantities of water. Immediately contact poison control center or hospital emergency room for additional instructions.

FOR INHALATION: If breathed in, remove to fresh air.

FOR HANDLING: Employees must wear gloves, goggles.

ATTENTION!! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture, or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

CLM-2B
W.I.N. 499625

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

MATERIALS · INFORMATION · SERVICES

NO. 94

MAGNESIUM OXIDE

Date October 1981

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: MAGNESIUM OXIDE

OTHER DESIGNATIONS: Calcined Brucite, Magnesia, Periclase, MgO, G.E. Material D4C37, CAS #001 309 484

MANUFACTURER: Available from several suppliers, including:
Malkinckrodt, Inc.
P.O. Box M
Paris, Kentucky 40361 Tel: (600) 987-7000

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Magnesium Oxide	>97	8-hr TWA 15 mg/m^3* (fume)
*Current OSHA Standard. ACGIH (1981) TLV for fume is 10mg/m^3 (as Mg)		Human, Inhalation TCLo 400/mg/m^3 Hamster, Intratracheal TDLo 500mg/hg 30 W-I TFX: NEO

SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg C ------- 3600
Solubility in water @ 20C, mg/L --- 6.2

Specific Gravity (H_2O=1) ------ ca 3.7
Melting point, deg C ---------- >2500
Molecular Weight ------------- 40.31

Appearance and Odor: White powder, odorless

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER

Noncombustible material. Use extinguishing media that is appropriate for surrounding fire.

Firefighters should wear self-contained breathing apparatus as this material can become airborne.

SECTION V. REACTIVITY DATA

This is a stable material in closed containers at room temperature under normal storage and handling conditions. It does not polymerize.

This alkaline material can absorb CO_2 and H_2O from air. It is soluble in aqueous acids. It reacts violently with chlorine trifluoride and phosphorus pentachloride.

SECTION VI. HEALTH HAZARD INFORMATION

TLV 15mg/m^3 (fume)

Inhalation of freshly generated magnesium oxide fume can cause an acute toxic reaction called metal fume fever* along with leukocytosis, cough and chest pain. Exposure to MgO dust can produce irritation of the eyes and nasal passages.

FIRST AID:

Eye Contact: Flush thoroughly with running water for 15 min. including under eyelids.
Skin Contact: Remove contaminated clothing. Wash affected area with soap and water.
Inhalation: Remove to fresh air. Restore and/or support breathing as required.
Ingestion: Contact physician. Give water to drink to dilute.
Seek medical assistance for further treatment, observation and support.

*Response to MgO fume is milder than to ZnO fume.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Provide adequate ventilation. Clean up personnel may need respirator protection against dust or fumes. Pick up spills and place in appropriate containers for disposal or recovery (avoid dusting conditions). Flush residue with water.

DISPOSAL: Deposit in an approved landfill. MgO is considered to be of low toxicity in nature with low solubility in water.

Follow Federal, State and Local regulations.

AQUATIC TOXICITY: TLm 96: >1000 ppm

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide local exhaust ventilation to meet TLV requirements in the workplace where dust or fumes may be generated. An air-supplied or self-contained breathing apparatus can be used below 750 mg/m^3, with a full facepiece needed above 150 mg/m^3.

Avoid eye contact by use of chemical safety goggles where dusty conditions may occur. Wear protective clothing appropriate for the work situation.

Eyewash station and washing facilities should be accessible to use area.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in tightly closed containers in a cool, dry, well-ventilated area away from acids. Protect containers from physical damage.

Avoid inhalation or eye contact with dust. Practice good personal hygiene when handling this material. Use good housekeeping practices to prevent accumulation of dust. Wear clean work clothes.

DATA SOURCE(S) CODE: 1,2,4-12,14,20,26,31,37,47,

APPROVALS: MIS J. M. Nielsen
CRD
Industrial Hygiene and Safety 10-12-81

MEDICAL REVIEW: 29 December 1981

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Date: December 1990

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary	TRADE NAME AND SYNONYMS Ultra Perm CRB
CHEMICAL FAMILY Peroxide	FORMULA N/A W.I.N. 499673

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Oxidizing Material n.o.s. (RQ /)
NAME OF HAZARDOUS COMPONENT	Potassium Persulfate
HAZARD CLASS	Oxidizing Material
IDENTIFICATION NUMBER	UN 1479
D.O.T. LABEL(S) REQUIRED	Oxidizer
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Potassium Persulfate CAS # [7727-21-1]	85	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	2-2.5
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	< 1%
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER OVER SEVERAL HOURS	88%		

APPEARANCE AND ODOR Off-white to amber powder with slightly sweet odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	FLAMMABLE LIMITS	Lel	Uel

EXTINGUISHING MEDIA Water, carbon dioxide, foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES Wear self-contaminated breathing apparatus if exposed to fumes. Use water spray to cool fire exposed surfaces and to protect personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS Combustible; decomposes with exothermic reaction; can generate own source of oxygen. Firefighters should wear self-contained breathing apparatus in the positive pressure mode with full facepiece when there is a possibility of exposure to smoke, fumes, or hazardous decomposition products.

(Continued on next page)

TRADE NAME: W.I.N. 499673

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE LD 50 = 1130 mg/kg (rat) (potassium persulfate)

EFFECTS OF OVEREXPOSURE Inhalation: No significant hazard. Fumes may be generated in operations using heat. Exposure to fumes may result in redness, tearing & itching in the eyes together with soreness in the nose and throat with coughing. Ingestion: No data available; potassium persulfate is slightly hazardous. Skin: No data available; potassium persulfate is non-irritating but may be a sensitizer to allergic persons. Eyes: No data available; potassium persulfate is minimally irritating. Mechanical irritation possible; exposure to fumes caused by heating causes eye irritation. Chemical listed as carcinogen: No citation found.

EMERGENCY AND FIRST AID PROCEDURES If exposed to fumes from overheating or combustion, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. In case of contact, wash skin with soap and water. Wash eyes with copious amounts of water.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE	X	CONDITIONS TO AVOID Heat, moisture, reducing agents.
	STABLE		

INCOMPATABILITY (Materials to avoid) Alkylene oxides, acid anhydrides, inorganic acids, halogens, phosphorous trichloride, aldehydes, monomers, polymerizable esters, alkalis, halides, heavy metals, oxidizable materials.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS Acetaldhyde, crotonaldehyde, acetone, acetic acid, carbon monoxide, carbon dioxide, hydrocarbons, fumes of sulfuric acid mist, oxygen which supports combustion and oxides of sulfur and nitrogen.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Sweep up to avoid slipping hazard. Material should be put into an approved DOT container, diluted with large quantities of water, and disposed of according to the outline for waste disposal below.

WASTE DISPOSAL METHOD All recovered material should be packaged, labeled, transported, and disposed or reclaimed in conformance with applicable laws and regulations. Reclaim where possible. Note: Observe all federal, state and local laws.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General) X	OTHER

PROTECTIVE GLOVES Chemically resistant

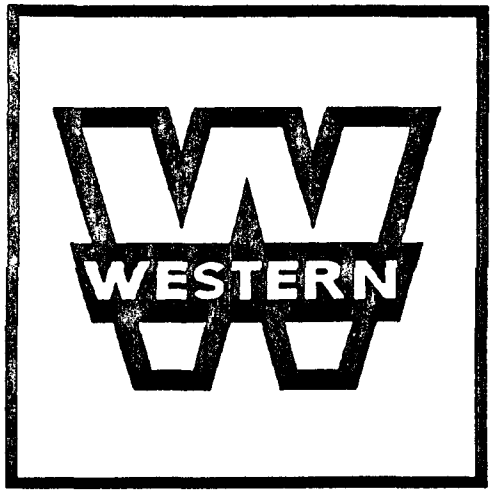
EYE PROTECTION Safety glasses meeting the specification of ANSI Standard Z 87.1

OTHER PROTECTIVE EQUIPMENT Chemically resistant apron

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep in closed containers when not in use. Store in cool, dry place with adequate ventilation. Do not store near heat or open flame.

OTHER PRECAUTIONS Temperature over 90°F causes caking. Avoid breathing dust. Avoid prolonged contact with skin.



WESTERN PETROLEUM SERVICES

W.Z. 499673

ULTRA PERM CRB

Net Content: _____ pounds

DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s): 362.0
SPECIFIC USAGE: Use at the rate of 0.01 to 10 lbm per 1000 gal of water based frac fluids.

FOR INDUSTRIAL USE ONLY

WARNING!

Strong oxidizer. Contact with combustible material, and excessive heat may cause fire. Decomposes rapidly in presence of moisture. Temperature over 90°F causes caking. Store in clean, cool, dry place, separately from flammable materials. Use only dry, clean, scoops, etc. and do not leave utensils in container. Sweep up and remove spillage immediately. Keep container closed when not in use. Avoid breathing dust. Avoid prolonged contact with the skin. Call a physician.

NOTES TO PHYSICIAN: Aside from allergic reactions, exposure problems are related to oxidizing properties and resemble, and are treated like, those caused by strong acids. However, attempts to neutralize with basic or halide-containing materials should be avoided because of possible exothermic reaction. Flooding of exposed areas with water is suggested but gastric lavage or emesis induction for ingestions are probably contraindicated because of possible aggravation of esophageal injury and the expected absence of system effects. Demulcents may be helpful. Treatment otherwise is supportive and symptomatic.

FIRST AID:

FOR EYES:	In case of contact, wash with water for at least 15 minutes.
FOR SKIN:	In case of contact, wash with water. Wash clothes before reuse.
FOR INGESTION:	If swallowed, give water, do not induce vomiting.
FOR INHALATION:	If breathed in,
HANDLING:	Employees must wear chemical goggles, rubber gloves and neoprene covered shoes.

DO NOT USE AFTER _____.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for:

THE WESTERN COMPANY OF NORTH AMERICA

P.O. BOX 186, FORT WORTH, TEXAS 76101

Emergency Telephone: (817) 731-6100 or 731-5433

R-3G1 (01/86) **D.O.T. PROPER SHIPPING NAME: Oxidizer, n.o.s. contains Potassium Persulfate (UN 1492)**

499672

777600

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Date: February 1, 1991

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS Clay Master 5
CHEMICAL FAMILY Oxyalkylated Amine Quat	FORMULA Proprietary W.I.N. 499683

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid (RQ /)
NAME OF HAZARDOUS COMPONENT	Methanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Flammable

SECTION II - HAZARDOUS INGREDIENTS	%	TLV (Units)
Methanol	15-20	200 ppm

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	ND	SPECIFIC GRAVITY (H_2O=1)	1.04
VAPOR PRESSURE (mm Hg)	ND	PERCENT, VOLATILE BY VOLUME (%)	ND
VAPOR DENSITY (AIR=1)	ND	EVAPORATION RATE (_____=1)	ND
SOLUBILITY IN WATER	soluble		

APPEARANCE AND ODOR: Light amber liquid with methanol odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	55°F (PMCC)	FLAMMABLE LIMITS	6.7 Lel	36.0 Uel

EXTINGUISHING MEDIA: Foam, dry chemical, CO_2 and water spray. Do not use alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES: Use caution. Drums may explode in fire conditions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Flashback along vapor trail may occur.

(Continued on next page)

TRADE NAME: W.I.N. 499683

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE NE

EFFECTS OF OVEREXPOSURE Eyes: Irritation, burning, itching and pain. Skin Contact: Irritation, redness. Sensitized skin may show signs of dermatitis. Inhalation: May irritate the nose and throat and cause coughing. Ingestion: Nausea, vomiting, light headedness and other symptoms of methanol poisoning.

EMERGENCY AND FIRST AID PROCEDURES Eyes: Immediately flush copiously with water for 15-20 minutes. Get medical treatment. Skin Contact: Remove contaminated clothing, and wash skin with soap and water. Launder clothing before reuse. Inhalation: Remove to fresh air. Give oxygen if breathing is labored. Call a physician. Ingestion: If victim is conscious, give 2 glasses of water and induce vomiting. Call a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Open flames
	STABLE	X	

INCOMPATABILITY (Materials to avoid) Strong oxidizer

HAZARDOUS DECOMPOSITION PRODUCTS Oxides of nitrogen and carbon

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID None known
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Stop the flow of liquid. Eliminate sources of ignition. Dike or prevent spreading of liquid. Wear NIOSH approved respirator or self-contained breathing apparatus. Vacuum up, absorb or scrape up contaminated soil and place into containers for disposal.

WASTE DISPOSAL METHOD Dispose by incineration under controlled conditions or put in chemical landfill.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) NIOSH approved respirator recommended for use in closed area.

VENTILATION	LOCAL EXHAUST Recommended	SPECIAL Air supply recommended when entering tanks to clean up spills.
	MECHANICAL (General) Recommended	OTHER

PROTECTIVE GLOVES Neoprene

EYE PROTECTION Safety goggles

OTHER PROTECTIVE EQUIPMENT Longsleeve shirt

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Ground containers and liners during transfer to eliminate static electricity.

OTHER PRECAUTIONS Do not drink, eat or smoke in storage area.

(Continued on next page)

499683

ATTACHMENT TO AND CONTINUATION OF

MATERIAL SAFETY DATA SHEET

Date: February 1, 1991

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS Clay Master 5
CHEMICAL FAMILY Oxyalkylated Amine Quat	FORMULA Proprietary W.I.N. 499683

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

FIRST AID:

FOR EYES:	In case of contact, immediately flush copiously with water for 15-20 minutes.
FOR SKIN:	In case of contact, wash with soap and water. Remove contaminated clothing and wash skin with soap and water. Launder clothing before re-use.
FOR INGESTION:	If swallowed, if victim is conscious, give 2 glasses of water and induce vomiting. Call a physician.
FOR INHALATION:	If breathed in, remove to fresh air. Give oxygen if breathing is labored. Call a physician.
FOR HANDLING:	Employees must wear neoprene gloves and safety goggles.

ATTENTION!! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture, or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

100041

MATERIAL SAFETY DATA SHEET

DATE: FEB. 1985

SECTION I

Supplier's Name: The Western Company of North America	EMERGENCY TELEPHONE NO.: (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code): P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS: 50% solution of citric acid	TRADE NAME AND SYNONYMS: Citric Acid, Liquid (XR-2L)
CHEMICAL FAMILY: citric acid	FORMULA: W.I.N. 100091

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Corrosive Liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Citric Acid
HAZARD CLASS	Corrosive Liquid, n.o.s.
IDENTIFICATION NUMBER	UN1760
D.O.T. LABEL(S) REQUIRED	Corrosive Label must be applied
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Citric Acid	50	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.) not established		SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.) not established		PERCENT, VOLATILE BY VOLUME (%) not established	
VAPOR DENSITY (AIR=1) not established		EVAPORATION RATE (_____ =1) not established	
SOLUBILITY IN WATER	1.25		

APPEARANCE AND ODOR: Clear, colorless to faintly yellow-green liquid, essentially no odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A		FLAMMABLE LIMITS	Lel / Uel
EXTINGUISHING MEDIA: N/A			
SPECIAL FIRE FIGHTING PROCEDURES: N/A			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

(Continued on reverse side)

TRADE NAME: W.I.N.100091,ACID,citric,50% solution,XR-2L

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	No TLV established
EFFECTS OF OVEREXPOSURE	May be mild eye and skin irritant
EMERGENCY AND FIRST AID PROCEDURES	Flush skin contact with water and flush eye contact immediately with plenty of water. Seek medical care for eyes.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	N/A
INCOMPATABILITY *(Materials to avoid)*			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	N/A

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Do not attempt to recover.

WASTE DISPOSAL METHOD: Flush with water to drains.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*	None		
VENTILATION	LOCAL EXHAUST: None		SPECIAL
	MECHANICAL *(General)*: None		OTHER
PROTECTIVE GLOVES	Standard work gloves	EYE PROTECTION	Safety glasses
OTHER PROTECTIVE EQUIPMENT			

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

None normally required.

OTHER PRECAUTIONS

None

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT
SCHENECTADY, N. Y. 12305
Phone: (518) 385-4085 DIAL COMM 8*235-4085

MATERIALS INFORMATION SERVICES

NO. 318

XYLENE (mixed isomers)

Revision C

Date November 1980

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: XYLENE (mixed isomers)
OTHER DESIGNATIONS: Xylol, Dimethylbenzene, $C_6H_4(CH_3)_2$; ASTM D843, D845 and D846; GE Material D5B9, CAS #001 330 207.
MANUFACTURER: Available from many suppliers, including EXXON Company USA and Shell Chemical Company.

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Xylene (o, m, p-isomers)	>90	8-hr TWA 100 ppm (skin)**
Other C_7 to C_9 Hydrocarbons*	<10	or 435 mg/m^3
*Material may contain ethylbenzene (8-hr TWA 100 ppm) and traces of toluene and C_9 aromatic and aliphatic hydrocarbons. Some commercial products may contain over 10% non-xylene hydrocarbons, mostly ethylbenzene.		Xylene Typical Human, inhalation TCLo 200 ppm (Irritation Effects)
**Current OSHA standard and ACGIH (1980) TLV. NIOSH has proposed a 10-hr TWA of 100 ppm with a 200 ppm ceiling level (10 min. sample).		Rat, oral LD_{50} 4.3 g/kg
STATUS: NCI bioassay for carcinogenesis study 9/78. TLV set to prevent irritant effects and CNS depression.		Human, oral LDLo 50 mg/kg

SECTION III. PHYSICAL DATA

Boiling range, 1 atm, deg C	135-145*	Specific gravity (H_2O=1)	0.86-0.87
Vapor pressure at 20 C, mm Hg	ca 6	Volatiles, %	ca 100
Vapor density (Air=1)	3.7	Evaporation rate (BuAc=1)	0.6
Solubility in water	Negligible	Molecular weight	106.18

Appearance & Odor: Light colored or colorless, mobile liquid with an aromatic odor. The recognition threshold (100% of test panel) is about 0.3 ppm in air (unfatigued) for xylene.

*Wider and narrower boiling range materials are commercially available.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air Volume %	LOWER	UPPER
>77 F (TCC)	867 F		1	7

Extinguishing Media: Use dry chemical, foam, CO_2, and water fog or steam to provide a smothering effect on fire. A water stream can scatter flames. A spray of water may be used to cool fire-exposed containers.

This flammable liquid is a dangerous fire hazard and a moderate explosion hazard when exposed to heat or flame. Heavier-than-air vapors can flow along surfaces to distant ignition sources and flash back.

Firefighters should use self-contained breathing apparatus.

SECTION V. REACTIVITY DATA

This material is stable in closed containers at room temperature. It does not polymerize.

It is flammable (OSHA Class IC liquid) and can form explosive mixtures with air. Keep away from sources of heat, sources of ignition and strong oxidizing agents. Thermal-oxidative degradation in air can produce toxic vapors and gases, including carbon monoxide and oxides of nitrogen.

GENERAL ELECTRIC

W.I.N. 100105, SOLVENT, Xylene

NO. 318

SECTION VI. HEALTH HAZARD INFORMATION

TLV 100 ppm or 435 mg/m^3

Inhalation of xylene at the TLV may cause mild irritation and dizziness in sensitive persons. Concentrations from 100-200 ppm may cause nausea, headache and depression. Vapor levels >200 ppm can have an anesthesic effect. Skin contact may produce mild irritation and skin defatting. Eye contact may cause burning and irritation. Ingestion of xylene may cause poisoning. One ounce or more may be fatal. Aspiration can be a hazard if this material is swallowed.

FIRST AID:

Eye Contact: Irrigate with water for 15 minutes. Get medical attention!

Skin Contact: Wash with soap and water. Remove contaminated clothing promptly. Replace lost skin oils with approved lotions or creams.

Inhalation: Remove victim to fresh air. Restore breathing if required. Get medical attention if symptoms persist or if nausea or collapse has occurred.

Ingestion: Get medical attention immediately! Give white mineral oil demulcent and saline cathartic, but do not induce vomiting unless directed by a physician.

Maintain observation of patient for possible delayed onset of pulmonary edema.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel. Remove all ignition sources. Provide adequate ventilation. Use vermiculite or sand to absorb spill; scrape up with nonsparking tools and place in a covered metal container. The absorbed material may be burned in an open pit, or placed in cardboard boxes and burned in an incinerator. Spilled liquid can be flushed away from sensitive locations with a water stream; flush to open area not to sewer!

DISPOSAL: Scrap liquid may be atomized into an approved incinerator, or it may be disposed of via a licensed solvent disposal company. When large amounts are involved reclaimation procedures may prove economical. Follow Federal, State, and Local regulations.

Aquatic toxicity rating TLm 96: 100-10 ppm.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general ventilation and efficient exhaust ventilation (explosion-proof equipment to meet TLV requirements and to control heavier-than-air vapors. Use >100 lfm face velocity for exhaust hoods. Use approved organic vapor canister respirators for short periods of nonroutine work or emergency situations at up to 1000-2000 ppm and approved self-contained respirators for higher and unknown vapor levels. Full facepiece required. Buna-N rubber gloves and aprons should be worn to prevent contact of xylene with the skin. Safety glasses or goggles should be used for eye protection and eyewash stations should be readily accessible to use areas.

Comprehensive preplacement and biennial medical examinations to be directed toward, but not limited to, liver, kidney, gastrointestinal disorders, skin irritation, and the central nervous system.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a clean, cool, well-ventilated area, away from sources of heat, sources of ignition and strong oxidizing agents. Protect containers from physical damage. Bond and ground metal containers when transferring liquid. Use metal safety cans for small amounts. Use nonsparking tools for work in solvent areas. No Smoking in areas of use or storage.

Prevent skin contact and remove contaminated clothing promptly. Avoid repeated or prolonged breathing of vapor. Do not ingest!

DATA SOURCE(S) CODE: 1-12,19-21,23,26,31,34,37-39

APPROVALS: MIS CRD J. M. Nelson

Industrial Hygiene and Safety 11-26-80

MEDICAL REVIEW: December 5, 1980

GENERAL ELECTRIC

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
100002-100100	Prop, Sand	Sand (Quartz)
100013-100014	Prop, Sand	Sand (Quartz)
100015-100016	Prop, Sintered Bauxite	Bauxite, Sintered
100017-100018	Prop, CRC	Westprop 4
100019-100024	Cement	Cement
100025-100034	Plug, Cement	None
100041-100044	Plug, Cement	None
100055-100056	Plug, Cement	None
100059-100064	Plug, Cement	None
100067-100079	Ball, Sealer	None
100080	Buffer	Sodium Bicarbonate
100081-100085	Ball, Sealer	None
100086	Prop, Sand	Sand (Quartz)
100087	Prop, Sintered Bauxite	Bauxite, Sintered
100088	Acid, HCl, 22^0 Be	Hydrochloric Acid
100089	Ball, Sealer	None
100090	Acid, Citric	Critric Acid
100091	Acid, Citric	Citric Acid, Liquid
100092	Acid, HCl 20^0 Be	Hydrochloric Acid
100093	Cement	Cement
100094	Acid, Hydroxyacetic	C-2
100095	Acid, Sulfamic	Sulfamic Acid/P-4
100096	Acid, Acetic, glacial	Acetic Acid/ac-1
100097	Acid, Formic	Formic Acid
100100	Biocide	X-Cide® 102W
100101	Biocide	X-Cide® 102
100102	Alcohol	Methanol
100103	Alcohol	IPA
100104	Solvent	WSA-1
100105	Solvent	Xylene
100106	Solvent	Kerosene
100107	Solvent	Cosdenol® 104
100108	Solvent	Varsol® 1
100109	Solvent	A-SOL®/Wellaid® 221
100111	Emulsifier	Wellaid® 266
100112	Salt	Calcium Chloride, Solid

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
100113	Salt	*Ammonium Chloride*
100114	Salt	Potassium Chloride
100115	Brine	Calcium Chloride, 35%
100116	Block	Sodium Chloride (S-6)
100117	Accelerator, Cement	Diacel® A
100118	Fluidloss, Cement	Diacel® LWL
100119	Extender, Cement	Diacel® D
100120	Extender, Cement	Bentonite
100121	Fluidloss Agent	F-11/SF-3
100122	Fluidloss Agent	100 Mesh/SF-4
100123	Fluidloss Agent	Adomite® Mark II
100125	Fluidloss Agent	ASP® -530
100126	Inhibitor, Packer Fluid	ASP® -539D
100127	Scale Control	P-8
100128	Scale control	P-7
100129	Scale Control	P-9
100130	Gel Breaker, Oil	B-16/Sodium Acetate
100131	Block	S-3/Naphthalene
100135	De-Emulsifier	LT-22
100136	Surfactant	LT-17
100137	De-Emulsifier	I-5
100138	Suspending Agent	LT-21
100139	Emulsifier	E-9
100140	Surfactant	MS Concentrate
100141	Foamer	Foamex/LT-30
100142	Intensifier, Acid	Ammonium Bifluoride/AB-54
100143	Suspending Agent	CS-3
100144	Surfactant	LT-25
100146	De-Emulsifier	Aqua Flow
100147	Fluidloss Agent	Aquaseal 2
100149	Buffer	Buffer 2
100150	Gel Complexer, Water	CL-9
100151	Gel Complexer, Water	T.I.C.
100153	Gel Complexer, Water	CL-11
100154	Gel Complexer, Water	CL-12
100155	Anti-Foam, Stimulation	DF-1

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
100156	ANTI-FOAM, cement	AF-11
100158	Acid, Boric, Anhydrous	Boron Oxide
100159	Gelling Agent, Oil	Maxioil HT/J-255
100160	Cement	Cement
100161	Gelling Agent, Oil	Maxioil/J-257
100162	Gelling Complexer, Oil	Maxioil Activator/J-242
100164	Gel Breaker, Oil	B-15/J-278
100167	Surfactant	FS-2
100170	Sequestering Agent	SC-100
100171	Gelling Agent, Water	J-13
100173	Gelling Agent, Water	J-12
100174	Acid, Acetic/Acetic Anhydride	AC-2
100175	Gel Breaker, Water	B-5
100176	Gel Complexer, Water	TDA-1 Activator
100177	Gelling Agent, Oil	G-17
100178	Base	Sodium Hydroxide (G-5)
100179	Base	Sodium Hydroxide (G-6)
100180	Gel Breaker, Oil	Westblock 4/B-20
100181	Foamer	Adofoam® BF-1
100184	Gel Complexer	Complexer 2-C
100185	Gel Breaker, Water	B-11
100186	Gel Breaker, Water	B-9
100189	Inhibitor, Acid	I-8
100191	Inhibitor, Acid	I-16
100192	De-Emulsifier	Wellaid® 215
100193	Surfactant	LT-5
100196	Surfactant	Corexit® 7652
100197	Surfactant	WK-1
100198	Component	None
100200	Anti-Sludge Agent	AS-2
100201	Emulsifier	E-16
100205	Friction Reducer, Water	FR-20
100207	Gelling Agent, Water	J-6
100210	Buffer	Buffer 1
100211	Inhibitor, Acid/Sulfide Cracking	HS-I
100212	Surfactant	F-Flow

+ PRECAUTIONARY LABEL ATTACHED
• MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
100213	Clay Control	Claylok Concentrate/WT-4
100214	Gel stabilizer	Gel Master/ATR-1
100216	Scale Control	C-3
100217	Inhibitor, Scale	S-18/Arcohib® S-235
100218	Block	Westblock 1
100219	Block	Westblock 3X
100220	Block	Westblock 4
100221	Block	Westblock 3X
100222	Paraffin Control	Parasol D
100223	Base	Ammonium Hydroxide, 26 Be
100224	Gas	Carbon Dioxide, Liquified gas
100225	Gas	Nitrogen, Liquid Gas
100228	Intensified, Acid	Methyl Formate
100232-100235	Component	None
100237	Buffer	Buffer 4
100239-100245	Component	None
100247	Component	None
100249-100251	Component	None
100252	Fluidloss Agent, Spacer	SFLA-2
100256	Gelling Agent, Oil	Maxioil W/J-257W
100257-100258	Component	None
100261	Component	None
100262	Sequestering Agent	WZ-100262
100264-100265	Component	None
100266	Fluidloss Agent	100 Mesh/SF-4
100267	Fluidloss Agent, Cement	AGENT, CementCF-2
100269	Fluidloss Agent, Cement	CF-6
100271	Fluidloss Agent, Cement	CF-10
100272	Fluidloss Agent, Cement	CF-11A
100273	Extender, Cement	WE-1L
100274	Extender, Cement	Ataclay
100275	Extender, Cement	Thrifty Lite
100276	Weighing Agent, Cement	Hematite
100277	Weighing Agent, Cement	Ilmenite
100280	Anti-Form, Cement	AF-11L
100281	Anti-Form, Cement	AF-HD

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
100282	Anti-Form, Cement	AF-L
100283	Retarder, Cement	WR-2
100284	Retarder, Cement	WR-6
100285	Retarder, Cement	WR-7
100286	Retarder, Cement	WR-10
100287	Retarder, Cement	WR-15
100288	Retarder, Cement	WR-2L
100289	Retarder, Cement	WR-6L
100290	Dispersant, Cement	TF-4
100291	Dispersant, Cement	TF-4L
100293	Emulsifier, Spacer	EE-200
100294	Lost Circulation Agent	Gilsonite
100295	Lost Circulation Agent	Cello-Seal
100296	Lost Circulation Agent	Tuf Plug
100297	Cement	Cement
100298	Lost Circulation Agent	Kwik-Seal®
100299	Lost Circulation Agent	Perma-Check
100301	Cement	Cement
100302	Prop, Sand	Sand (Quartz)
100304	Cement	Cement
100305	Spacer, Cement	Excello-Gel Concentrate
100306-100307	Lost Circulation Agent	Tuf-Plug
100308-100312	Component	None
100313	Gelling Agent	WZ-100313
100316	Weighing Agent, Cement	Barite
100317	Extender, Cement	Fly Ash/POZ
100318	Special Agent, Cement	Thixad
100319	Prop, Sand	Sand (Quartz)
100321	Extender, Cement	WL-1L
100322	Fluidloss Agent, Spacer	SFL-2
100323	Mud Removal Agent	Sodium Acid Pyrophosphate (SAPP)
100324	Special Agent, Cement	Lime, Hydrated
100325-100330	Special Agent, Cement	Sand (Quartz)
100332-100333	Component	None
100334	Emulsifier, Spacer	EE-100
100335	Special Agent, Spacer	SS-1

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
100336-100339	Ball, Sealer	None
100342	Gravel	Sand (Quartz)
100344	Fluidloss Agent, Stim	Sodium Chloride
100345	Brine	Sodium Chloride Brine
100346	Prop	Westprop 2
100347	Base	Sodium Hydroxide, Solid
100349	Gelling Agent, Water	J-15
100353	Foamer, Oil	Petro Foam 1
100354-100355	Component	None
100356	Weighing agent, Cement	Barite
100359	Gel Breaker, Water	B-12
100362	Foamer	Frac Foam 1
100364	Paraffin Control	Paratrol 150S
100365	Solvent	Diesel #2
100366	Solvent	Diesel #1
100367-100369	Component	None
100370	Fluidloss Agent, Stim	Frac Seal
100371	Component	None
100375	Anti-Foam, Cement	AF-S
100376	Component	None
100377	Gel Complexer, Water	CL-14
100378-100379	Component	None
100380	Extender, Cement	Cenospheres
100381	Fluidloss Agent, Spacer	SFLA 1
100383	Component	None
100384	Ball, Sealer	None
100386	Friction Reducer, Oil	FR-5AW
100387	Defoamer	AF-8L
100389	Polymeric Esters, Mixture (Alcohol Foamer)	WZ-100389
100391	Block	S-8/Paraformaldahyde
100393	Gas Control Agent, Cement	Flo-Lok 1 Aadditive
100394	Special Agent, Cement	ACS-1
100395	Retarder, Cement	WR-5A
100396	Special Agent, Cement	ATR-2
100398-100400	Component	None
100401	Gas Control Agent, Cement	Flo-Lok 2 Aadditive

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
100403	Inhibitor, Packer Fluid	B-17
100404	Salt	Sodium Chloride
100409	Component	None
100411	Biocide	Frac Cide 11
100412	Lost Circulation Agent	Hi-Seal
100413-100414	Component	None
100415	Mud Removal Agent	Invercon 2
100418	Prop	Bauxite, Sintered
100419-100421	Prop	Sand (Quartz)
100422	Biocide	Frac Cide 2
100424	Component	None
100427	Intensifier, Acid	Ammonium Fluoride, 33%
100428-100431	Prop, IDP	Westprop 1
100432-100435	Prop, IDP	Westprop Lite
100436	Extender, Cement	Perlite
100437	Solvent	Toluene
100438	Brine	Zinc Bromide
100443	Lost Circulation Agent	Diacel® M
100444	Lost Circulation Agent	MICA
100445	Anti-Oxidant	Hydrazine
100446	Solvent	Lacquer Thinner
100447	Gel Complexer, Modifier	XDA-Saturn
100448	Surfactant	MAS
100449	Emulsifier, Cement	APS-3A
100450-100454	Drum	None
100455-100459	Bag	None
100460	Solvent	I-SOL 4
100461	Mud Removal Agent	Invercon 4
100462	Surfactant	Flo Back 10
100463	Paraffin Control	Paratrol L
100464-100466	Component	None
100467	Fluidloss Agent, Stim	Frac Seal M
100468	Prop, PRC	Westprop 3
100469	Paraffin Control	Paratrol 100S
100472	De-Emulsifier	Nine 40

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
100473	Synthetic Plastic	TF-Plus 500
100480	Prop, PRC	Westprop 3
100481	Blending Charges	None
100482	Labels	None
100483	Component	None
100484	Inhibitor, Acid	I-17
100485	Gelling Agent, Oil	Maxioil XHT
100486	Biocide	Frac Cide 20
100487	Ball, Sealer	None
100488	Block	Westblock 5
100489	Prop, PRC	Westprop 3
100490	Prop, CRC	Westprop 4
100491	Gelling Agent, Acid	DSGA™
100492	Prop, CRC	Super Sand®
100493	Strip, Iron Test	None
100494	Fluidloss Agent, Cement	CF-16
100495	Salt	Sodium Chloride
100497-100498	Component	None
100499	Gel Complexer, Modifier	XLA-Saturn
100500	Dist	None
160133	Sand, Blast #4	Silica Dioxide
160111	Westweld	
283469	Surfactant	Hydro-Surf
499501	Gel Complexer, Water	CL-14W
499502	Gel Breaker, Water	Hydrogen Peroxide, 35%
499503-499505	Prop, CRC/IDP	Westprop 2
499506-499507	Lost Circulation Agent	Mud Save
499508	Fluidloss Agent, Cement	CF-14
499509	Fluidloss Agent, Stim	Aquaseal L
499510	Salt, Tracer	Ammonium Nitrate
499511-499512	Component	None
499513	Mud Removal Agent	Sodium Tripolyphosphate
499514	Friction Reducer, Water	FR-28
499515	Inhibitor, Acid	I-18
499517	Gelling Agent, Water	J-20
499518	Gelling Agent, Acid	Acigel LT

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
499519	Gel Breaker, Oil	WZ-499519
499520	Gelling Agent, Acid	Acigel
499521	Gel Complexer, Modifier	CLM
499522-499524	Gravel, CRC	Westpak 4
499526	Gel Breaker, Water	B-11L
499527	Inhibitor, Acid	I-10C
499528	Emulsifier, Spacer	WZ-499528
499529	Emulsifier, Spacer	WZ-499529
499532	Surfactant	BM-2W
499533	Retarder, Cement	WR-6LW
499534	Fluidloss Agent, Cement	CF-15L
499535-499536	Component	None
499537	Biostat	Calcium Hypochlorite
499540	Gel Complexer, Modifier	XLD-Saturn
499541	Gelling Agent, Water	J-4
499545	Clay Control	Clay Master 4
499547	Lost Circulation Agent	Cottonseed Hull
499548	Paraffin Control	Paratrol 220S
499549	Paraffin Control	Paratrol 151S
499551	Filter, Element	None
499552	Biostat	Sodium Hypochlorite, 12%
499553-499559	Filter Element	None
499562	Cement	Cement
499563	Scale Control	Ultrasol Concentrate
499564	De-Emulsifier	Maxi-Flow
499567	Base	Amrnonia, Anhydrous
499568	Gelling Agent, Acid	J-25
499569	Gel Complexer, Acid	CL-25
499570	Gel Breaker, Acid	B-30
499571	Fluidloss Agent, Stirn	Aquaseal WS
499572	Gelling Agent, Oil Slurriable	WZ-499572
499573	Gelling Agent, Water	J-20L
499574	Component	None
499575	Sequestering Agent	Sodium Erythorbate
499576	Special Agent, Cement	WL-1P
499577	Cement	Cement

+ PRECAUTIONARY LABEL ATTACHED
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MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
499579	Gelling Agent, Water	WZ-499579
499580	Surfactant	EZ-Sol
499581-499584	Prop, IDP	Interprop™ 1
499585	Clay Control	WZ-499585
499587	Sequestering Agent	Nitrilotriacetic Acid (NTA)
499588	Special Agent, Cement	Silica, Fumed
499589	Anti-Sludge Agent	WZ-499589
499591	Drum	None
499593	Dryacide	
499594	Activator	Activator®
499595	Gelling Agent	WZ-499595 (Resin Activator)
499598	Gelling Agent, Water	WZ-499598
499599	Gelling Agent	WZ-499599 (J-4L)
499604	Fluidloss Agent, Cement	Polymer/CF-18
499613	Organic Polymer	WZ-499613
499617		I-8A
499621	Corrosion Inhibitor	I-18A
499623	Neutralizer, Acid	Methanol
499607	Gel Breaker	Sodium Perforate
499614-616	Dye, Blue, Red, Green	DYE
499617	Hydrochloric Acid	I-8A
499619	Complex Mixture	1-16A
499621	Corrosion Inhibitor	I-18A
499623	Proprietary Blend	WZ-499623
499626	Aluminum Solution	CL-17
499641	Blend - Aldehyde	HS-2
499644	Proprietary Blend	CL-30 HT
499650	Gel Breaker	B-31
499651	Fluid Loss Additive, Cement	CF-18L
499653	Organic	Clay Treat
499654	Liquid Buffer	Buffer 5L
499655	Surfactant	I-22
499656	Surfactant	Super Solv-O
499658	Organic Mixture	CF-19
499659	Mutual Solvent	WSA-2
499665	Solvent	WS-499665

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

MATERIAL SAFETY DATA SHEETS & PRECAUTIONARY LABELS

TABLE OF CONTENTS BY W.I.N.

W.I.N.	MMIS DESCRIPTION	MSDS/PRODUCT NAME
499669	Foamer	Frac Foam 2
499673	Ultra Prem CRB	WZ-499673
499680	Anti-Static Agent	Static Free
499683	Oxyalkyated Amine Quat	Claymaster 5
499684	Nonionic Surfactant, Blend	LT-32
499685	Anti-Setting Agent	ASA-300
499686	Hydrocarbon Wax	Wax Beads, Melting Point 150°F
499687	Flammable Liquid	E-17
499691	Oxyalkyated Amine Quat	Claymaster FS
499692	2-Butanone Oxime	Gel Master 2L
499695	Proprietary Blend	J-22L
499696	Flammable Liquid	Coal Surf
499698	Alkaline Corrosive Liquid	Buffer-6L
499699	Enzyme Mixed	B-33
499700	Oxidizer	ZXL-3
499701	Proprietary Formulation	Gel Master 3
499702	Quaternary Ammonium Chloride	Clay Treat 2C
499705	Anti-Settling Agent	ASA-301
499708	Proprietary	WZ-499708

+ PRECAUTIONARY LABEL ATTACHED
* MSDS NOT AVAILABLE AT THIS TIME

SECTION VII & VIII

CURRENT WASTE STREAM AND TREATMENT PROCEDURE

VII - WASTE STREAMS
VIII - PROCEDURES

1. Truck Wash

The truck wash wastewater generated at the truck wash bay as a result of washing the truck exterior is made of three components; water, inert solids and oil. The water is separated from the oil and the water, approximately 15,000 gallons per month, is discharged to the City POTW.

The sand and dirt commingled in a sludge collected at the sump of the truck wash bay as a result of washing the exterior. Approximately three cubic yards per month is spread at the back of the yard.

The oil collected at the oil/water separator is stored in a 1,000 gallon steel underground waste oil storage tank until it is picked up by the vendor for recycling. This tank was tested on March 13, 1992 and passed the tightness test. Industrial Service Corporation, 2112 E 48th St., Lubbock TX picks up this oil for recycling.

2. Cement

Excess off-spec cement from well servicing activity is collected and stored in a waste bin until it is picked up for disposal by various people for personal use.

3. Used Oil (Truck Maintenance Area)

Approximately 300 gallons per month of used lubricating oil from truck oil changes generated at the maintenance shop is stored in the 1,000 steel underground waste oil storage tank and picked up for recycling. This tank was tested on March 13, 1992 and passed the tightness test. This oil is also picked up by Industrial Service Corporation, 2112 E 48th St., Lubbock TX, for recycling.

4. Spent Shop Solvents

Spent shop solvent, approximately 200 gallons per month, used for truck maintenance and parts cleaning is kept in drums in the General Maintenance Shop until picked up for recycling by the manufacturer. Safety-Kleen Corporation, 4200 A Hawkins Rd., Farmington, recycles this spent solvent.

5. Tires

About 75 per year of worn tires replaced from the trucks are kept in the General Maintenance Shop until picked up by Waste Management of Four Corners and places them in a landfill at their address, 101 Spruce, Farmington, NM.

6. Batteries

Used batteries are kept in the General Maintenance Shop until traded in for new batteries and are transferred from the hauler, Interstate Battery, 615 Mountain NW, Albuquerque NM, to the recycler, Johnson Control, 1550 E Kimberly Ave., Fullerton, CA. Approximately 60 per year are traded in.

7. Empty Drums

Approximately 300 empty drums each year are kept in the drum storage area on the north end of the property until returned to the warehouse if from Western chemicals and oil drums are returned to the vendor, Chemical Blending Service, 5000 W Industrial, Midland TX, for recycling.

8. Domestic Trash

Domestic trash generated by normal operations from the office and site buildings is placed in large receptacles that are picked by the trash trucks; the contents are dumped into the trucks and taken for disposal by Waste Management of Four Corners in their landfill at 101 Spruce, Farmington, NM. About 40 yards per month is picked up for disposal.

9. Domestic Sanitary Wastewater

This wastewater generated from sinks, showers and restrooms is piped into the POTW.

10. Used Filters

Used oil and fuel filters generated from oil changes and truck maintenance are drained with the oil going into the used oil underground storage tank and the filters put into the trash receptacle until picked up by the trash trucks for disposal in the landfill. Approximately 720 per year are picked up by Waste Management of Four Corners for disposal at their disposal site, 101 Spruce, Farmington NM.

11. Antifreeze

Used antifreeze generated during truck maintenance is stored in collection drums in the General Maintenance Shop, recycled and reused.

12. Scrap Metal

Scrap metal generated from miscellaneous truck repair and well maintenance/servicing is collected on site in drums and sold to Farmington Iron & Metal, 4805 Herrera Rd., Farmington, NM for recycling.

13. Field Waste Dump Station

The wastewater generated as a result of draining the manifolds of pump trucks, blenders and transport trucks is collected in an underground storage tank.

14. Acidic Wastewater

Acidic wastewater is collected in the 6,000 gallon underground storage tank where it is neutralized and re-used.

SECTION IX

PROPOSED MODIFICATION

On February 20, 1992, a meeting was held regarding The Western Company of North America's Farmington (Western-Farmington) Facility's application for a Discharge plan. At the meeting was Lynn Loman, Les Baugh, Bill James, Phillip Box with Western, Denny Foust and Roger Anderson with the State of New Mexico. A time frame of 120 days was given for Western-Farmington to present a Discharge Plan.

Table IX.1
PROPOSED MODIFICATIONS

1. Safety Kleen Shop Parts Cleaner is utilized at Western's shop in three locations.

   . Modification/Action:

   Evaporation pans will be placed along side the parts cleaner where parts can drain. Residual liquid can be drained back into the cleaner equipment.

   . Time Frame: Sept. - Dec. 1992

2. Wash bay - Inspection of drain lines and sand trap for proper operation.

   . Modification/Action:

   Have the trap and lines inspected by a contractor for condition and operation. This will determine if solids have plugged the line.

   . Time Frame: Sept. - Dec. 1992

3. Sumps - All sumps are required to have visual leak detection done. These include Items:

   B. Truck wash bay sump D. Truck wash separator
   G. Field wash tank H. SPC tank

   . Modification/Action:

   Each sump will be cleaned annually and inspected for cracks or damage to walls. Records will be maintained on date of inspection and method and records kept in the facility environmental files. If internal inspection indicates leaks or damage, repair will be made and an inspection outside of the tank or sump will follow.

   . Time Frame:

   B. and D. Sept. - Dec. 1992
   G. and H. Jan. - Feb. 1993

4. Drums Storage - All drums with product must be stored on an impermeable pad with a containment berm or wall to contain storm water.

   . Modification/Action:

   The drum storage area for product will be modified to have a concrete base with asphalt or concrete berm for storm water containment. See Item I, Figure 3-2.

   . Time Frame: 1993

5. Need an annual water analysis of water discharged to the POTW from the oil/water separator.

   . Modification/Action:

   Have TCLP run annually on water using EPA Method 601/602.

   . Time Frame: December, 1992

6. Separator-Oil - Audit disposal firm's license.

   . Modification/Action:

   Request a copy of the license authorizing the disposal firm to operate in New Mexico. This license must be on file at our Facility and referenced on each load for disposal.

   . Time Frame: Sept. 1992

7. Separator Oil Tank - Needs containment.

   . Modification/Action:

   A berm or wall will be constructed around the separator oil tank to prevent storm water discharge. See Item D, Figure 3-2.

   . Time Frame: 1993

8. Test Tank - Needs containment.

   . Modification/Action:

   A concrete containment wall will be constructed around the test tank. See Item E, Figure 3-2.

   . Time Frame: 1993

9. Wash Bay and Shop Sludges and Solids Disposal - Need a method of containment to dry and dispose of these waste materials.

   . Modification/Action:

   A concrete pad approximately 30'x30' with a 24" containment wall will be constructed in the northwest corner of the property. See Item F, Figure 3-2. This will allow for proper containment and drying of these waste sludges. A TCLP test will be run annually to get a characterization of the material.

   . Time Frame: July - Sept. 1992

10. Oil Soaked Soil - Located on the north end of the property.

    . Modification/Action:

      Soil will be removed and placed in the wash bay solids evaporation tank per Item 9.

    . Time Frame: 1992

11. Field Waste Dump Station - Needs oil stained soil cleaned up at end of the ramp. See Item G, Figure 3-2.

    . Modification/Action:

      1. Improve cleaning frequency of ramp area.
      2. Remove oil soaked soils and place in the containment area for disposal.

    . Time Frame: 1992/1993

12. Acid Tank Containment - Need to complete the containment wall at the acid dock. See Item J, Figure 3-2.

    . Modification/Action:

      Construct a wall to complete existing walls around the acid dock containment area. The containment should hold 1-1/3 the tank volume.

    . Time Frame: 1992/1993

13. Waste Management at Warehouse

    . Modification/Action:

      Chemicals should be collected in drums and disposed of at a proper disposal site or use a waste management company to dispose of these materials.

    . Time Frame: 1992

14. Fuel and Oil Spill Containment - Needs better control of fuel and oil spills at the fuel island. See Item C, Figure 3-2.

    . Modification/Action:

      Construct a new containment wall at the fuel island tank area.

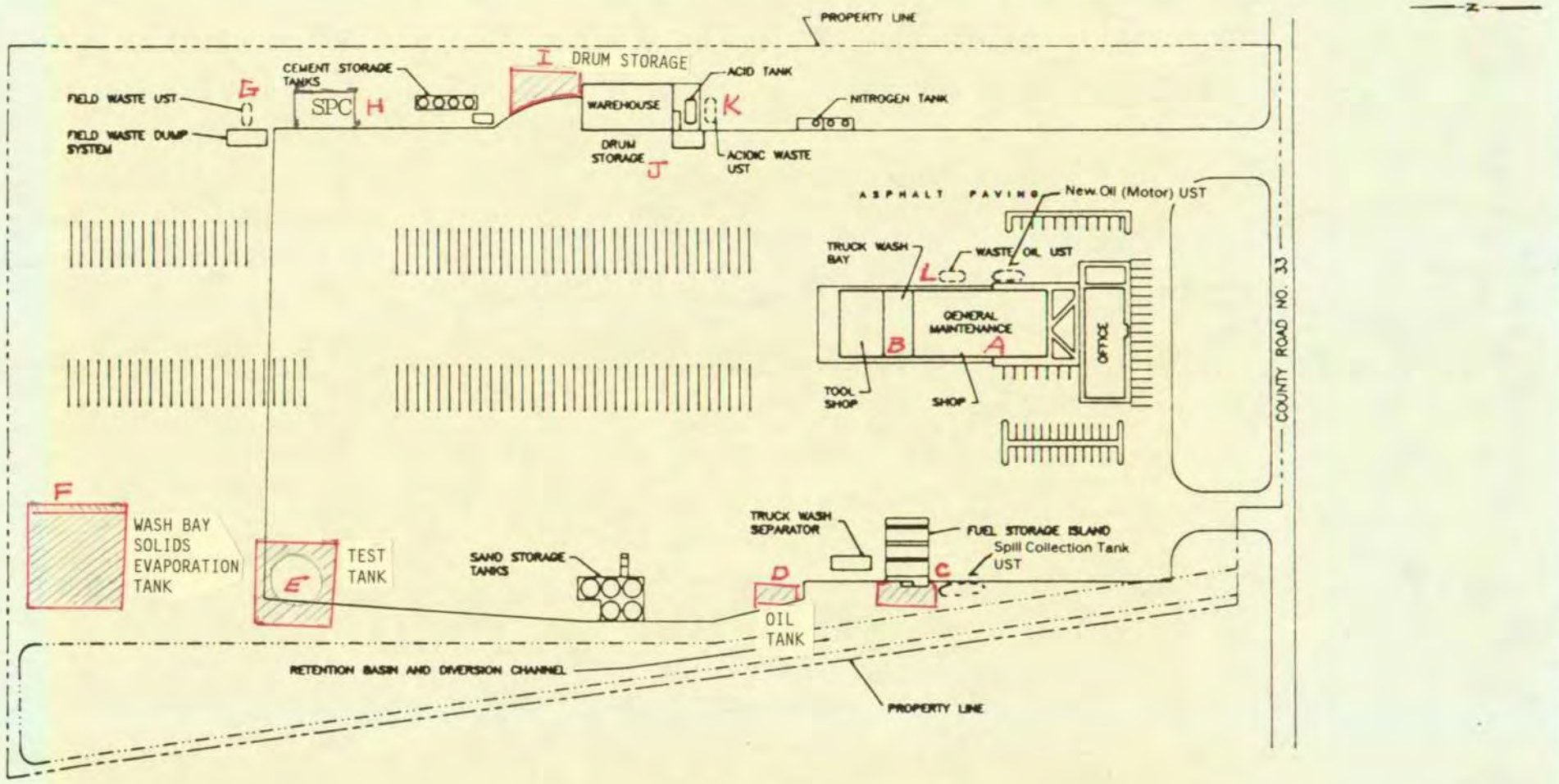
    . Time Frame: 1993

15. Lab Practices - Prevent toxics from entering sewer system.

    . Modification/Action:

    Remove all chromate, lead acetate and di-chomates from the lab and have them shipped to the Woodlands Research Center.

    . Time Frame: 1992



DRAWING NOT TO SCALE

FIGURE 3-2

SITE PLAN
FARMINGTON, NEW MEXICO

FOR

THE WESTERN COMPANY
OF NORTH AMERICA

SECTION X

INSPECTION PLAN

INSPECTION PLAN

The Western Company of North America's (Western-Farmington) facility is inspected monthly (to be performed during the calendar month) by the designated Environmental Coordinator on site using an inspection check list. The facility is also inspected yearly by the Environmental Supervisor sent from The Western-Houston Corporate Office (form included). Corrective action will be taken whenever deficiency is found. The actions taken are documented, dated and signed by the Environmental Coordinator on site.

Pressurized line leak detectors were installed on pressurized motor fuel lines by H & S Enterprises (3100 Bloomfield Highway, Farmington, NM 87401) on August 29, 1990 and tightness tests were conducted on the pressurized fuel lines. Envirotech, Inc. (5796 US Hwy 64-3014, Farmington NM 87401) performed tightness tests of these tanks on January 11, 1992. These tanks are scheduled to be tested each year.

The 1,000 gallon used oil tank was tested on March 13, 1992 and tested tight.

If a problem is indicated during any tank testing that would indicate a leak the OCD will immediately be notified by the Western-Houston Corporate office. If any visual inspection is made and a possible problem is indicated, further investigations will be made.

THE WESTERN COMPANY OF NORTH AMERICA
SITE FACILITY ENVIRONMENTAL INSPECTION REPORT

LOCATION: DATE: BY:

ITEM	OK	A
RECORDS:		
Is the environmental filing system in good order?		
Have the disposal records been filed?		
Have the daily tank gauging records been filed?		
Have the environmental inspection records been filed?		
Have permits and registrations been filed?		
Have the environmental reports to the Government been submitted on time?		
Has the test data been filed?		
YARD:		
Is the yard clean, free of trash & oil stains, overall?		
Are all of the spills cleaned?		
Is all the vegetation healthy?		
Are the drainage ditches clean with no oil sheen on the standing water?		
Is the pH of the surface water in the yard or in the drainage ditch between 6 & 8?		
Is there an effort to assure that no oily or acidic fluid is flowing off the site?		
Is there an effort to assure that no pollutant is flowing to our site?		
FUEL ISLAND:		
Are all spills promptly cleaned and oil stain free?		
Is the slab clean and oil stain free?		
Are tank valves in good working order?		
MAINTENANCE SHOP:		
Is the place clean?		
Is the waste oil collecting area clean with minimum oil stain?		
Is the waste antifreeze being properly handled?		
Are the waste oil & waste antifreeze collection drums being properly labeled and dated?		
Is the Safety Kleen apparatus working properly?		

THE WESTERN COMPANY OF NORTH AMERICA
SITE FACILITY ENVIRONMENTAL INSPECTION REPORT

LOCATION: DATE: BY:

ITEM	OK	A
DRUM STORAGE:		
Is there an effort to eliminate empty drums?		
Are all containers in good condition?		
Are all containers properly labeled with readable labels?		
Are all containers closed?		
Are all spills cleaned and leaks properly fixed with no chemicals left on the ground?		
WET CHEMICAL STORAGE AND DISPENSING AREA:		
Are all spills cleaned up, floors cleaned and leaks properly fixed?		
Are all containers properly labeled with readable labels?		
Are proper chemical dispensing procedures practiced?		
Is the place clean and dry?		
ACID TANK:		
Are all spills cleaned up and leaks properly fixed?		
Is the overfill storage tank routinely checked for pH?		
Is the tank properly labeled with a readable label?		
TRUCK WASH AREA:		
Is the waste storage tank routinely checked for proper pH?		
Is the waste storage tank full?		
DRY CHEMICAL STORAGE AREA:		
Is the place clean and dry?		
SPC AREA:		
Is the place clean and free of oil stains?		
Are all spills cleaned?		
TRUCK INTERIOR CLEANING STATION:		
Is the place clean and the ground free of oil stain?		
Is the waste storage tank routinely checked for proper pH?		
Is the waste storage tank full?		

THE WESTERN COMPANY OF NORTH AMERICA
SITE FACILITY ENVIRONMENTAL INSPECTION REPORT

LOCATION: FARMING TON DATE: 7/10/91 BY: BENNETT

ITEMS:	OK	A
RECORDS		
IS THE ENVIRONMENTAL FILING SYSTEM IN GOOD ORDER?	✓	
HAVE THE DISPOSAL RECORDS BEEN FILED?	✓	
HAVE THE DAILY TANK GAUGING RECORDS BEEN FILED?		NOT 2
HAVE THE ENVIRONMENTAL INSPECTION RECORDS BEEN FILED?	✓	
HAVE PERMITS & REGISTRATIONS BEEN FILED?	✓	
HAVE THE ENVIRONMENTAL REPORTS TO THE GOVERNMENT BEEN SUBMITTED ON TIME?	✓	
HAS THE TEST DATA BEEN FILED?	✓	
YARD:		
IS THE YARD CLEAN, FREE OF TRASH & OIL·STAINS, OVERALL?	✓	
ARE ALL OF THE SPILLS CLEANED?	✓	
IS ALL VEGETATION HEALTHY?	✓	
ARE THE DRAINAGE DITCHES CLEAN WITH NO OIL SHEEN ON THE STANDING WATER?	✓	
IS THE pH OF THE SURFACE WATER IN THE YARD OR IN THE DRAINAGE DITCH BETWEEN 6 & 8?	✓	
IS THERE AN EFFORT TO ASSURE THAT NO OILY OR ACIDIC FLUID IS FLOWING OFF THE SITE?	✓	
IS THERE AN EFFORT TO ASSURE THAT NO POLLUTANT IS FLOWING TO OUR SITE?	✓	
FUEL ISLAND:		
ARE ALL SPILLS PROMPTLY CLEANED AND OIL STAIN FREE?	✓	
IS THE SLB CLEAN AND OIL STAIN FREE?	✓	
ARE TANK VALVES IN GOOD WORKING ORDER?	✓	
MAINTENANCE SHOP:		
IS THE PLACE CLEAN?	✓	
IS THE WASTE OIL COLLECTING AREA CLEAN WITH MINIMUM OIL STAIN?	✓	
IS THE WASTE ANTIFREEZE BEING PROPERLY HANDLED?	✓	
ARE THE WASTE OIL & WASTE ANTIFREEZE COLLECTION DRUMS BEING PROPERLY LABELED & DATED?	✓	
IS THE SAFETY KLEEN APPARATUS WORKING PROPERLY?	✓	

THE WESTERN COMPANY OF NORTH AMERICA
SITE FACILITY ENVIRONMENTAL INSPECTION REPORT

LOCATION: FARMINGTON DATE: 7/10/91 BY: BRIAN HO

ITEMS:	OK	A
DRUM STORAGE:		
IS THERE AN EFFORT TO ELIMINATE EMPTY DRUMS?	✓	
ARE ALL CONTAINERS IN GOOD CONDITION?	✓	
ARE ALL CONTAINERS PROPERLY LABELED WITH READABLE LABELS?	✓	
ARE ALL CONTAINERS CLOSED?		MVE 1
ARE ALL SPILLS CLEANED & LEAKS PROMPTLY FIXED WITH NO CHEMICAL LEFT ON THE GROUND?	✓	
WET CHEMICAL STORAGE & DISPENSING AREA:		
ARE ALL SPILLS CLEANED UP, FLOORS CLEANED & LEAKS PROMPTLY FIXED?	✓	
ARE ALL CONTAINERS PROPERLY LABELED WITH READABLE LABELS?	✓	
ARE PROPER CHEMICAL DISPENSING PROCEDURES PRACTICED?	✓	
IS THE PLACE CLEAN AND DRY?	✓	
ACID TANK:		
ARE ALL SPILLS CLEANED UP & LEAKS PROPERLY FIXED?	✓	
IS THE OVERFILL STORAGE TANK ROUTINELY CHECKED FOR pH?	✓	
IS THE TANK PROPERLY LABELED WITH A READABLE LABEL?	✓	
TRUCK WASH AREA:		
IS THE WASTE STORAGE TANK ROUTINELY CHECKED FOR PROPER pH?	✓	
IS THE WASTE STORAGE TANK FULL?	✓	
DRY CHEMICAL STORAGE AREA:		
IS THE PLACE CLEAN & DRY?	✓	
SPC AREA:		
IS THE PLACE CLEAN AND FREE OF OIL STAINS?	✓	
ARE ALL SPILLS CLEANED?	✓	
TRUCK INTERIOR CLEANING STATION:		
IS THE PLACE CLEAN AND THE GROUND FREE OF OIL STAIN?	✓	
IS THE WASTE STORAGE TANK ROUTINELY CHECKED FOR PROPER pH?	✓	
IS THE WASTE STORAGE TANK FULL?	✓	

ENVIRONMENTAL INSPECTION Date: 7/10/91

DISTRICT: FARMINGTON BY: BENNY HO

NOTE 1: NEED TO CAP ALL DRUMS,

NOTE 2: NEED TO TRANSFER GAUGING RECORD TO ENVIRONMENTAL FILE AT END OF EACH MONTH

THE WESTERN COMPANY OF NORTH AMERICA
SITE FACILITY ENVIRONMENTAL INSPECTION REPORT

LOCATION: FARMINGTON DATE: 2/21/91 BY: BENNY HO

ITEMS:	OK	A
RECORDS		
IS THE ENVIRONMENTAL FILING SYSTEM IN GOOD ORDER?	✓	
HAVE THE DISPOSAL RECORDS BEEN FILED?		NOTE 1
HAVE THE DAILY TANK GAUGING RECORDS BEEN FILED?		NOTE 1
HAVE THE ENVIRONMENTAL INSPECTION RECORDS BEEN FILED?		NOTE 2
HAVE PERMITS & REGISTRATIONS BEEN FILED?	✓	
HAVE THE ENVIRONMENTAL REPORTS TO THE GOVERNMENT BEEN SUBMITTED ON TIME?	✓	
HAS THE TEST DATA BEEN FILED?	✓	
YARD:		
IS THE YARD CLEAN, FREE OF TRASH & OIL-STAINS, OVERALL?	✓	
ARE ALL OF THE SPILLS CLEANED?	✓	
IS ALL VEGETATION HEALTHY?	✓	
ARE THE DRAINAGE DITCHES CLEAN WITH NO OIL SHEEN ON THE STANDING WATER?	✓	
IS THE pH OF THE SURFACE WATER IN THE YARD OR IN THE DRAINAGE DITCH BETWEEN 6 & 8?	✓	
IS THERE AN EFFORT TO ASSURE THAT NO OILY OR ACIDIC FLUID IS FLOWING OFF THE SITE?	✓	
IS THERE AN EFFORT TO ASSURE THAT NO POLLUTANT IS FLOWING TO OUR SITE?	✓	
FUEL ISLAND:		
ARE ALL SPILLS PROMPTLY CLEANED AND OIL STAIN FREE?		NOTE 3
IS THE SLB CLEAN AND OIL STAIN FREE?	✓	
ARE TANK VALVES IN GOOD WORKING ORDER?		
MAINTENANCE SHOP:		
IS THE PLACE CLEAN?	✓	
IS THE WASTE OIL COLLECTING AREA CLEAN WITH MINIMUM OIL STAIN?	✓	
IS THE WASTE ANTIFREEZE BEING PROPERLY HANDLED?	✓	
ARE THE WASTE OIL & WASTE ANTIFREEZE COLLECTION DRUMS BEING PROPERLY LABELED & DATED?	✓	
IS THE SAFETY KLEEN APPARATUS WORKING PROPERLY?	✓	

THE WESTERN COMPANY OF NORTH AMERICA
SITE FACILITY ENVIRONMENTAL INSPECTION REPORT

LOCATION: FARMINGTON DATE: 2/21/91 BY: BENNY HO

ITEMS:	OK	A
DRUM STORAGE:		
IS THERE AN EFFORT TO ELIMINATE EMPTY DRUMS?	✓	
ARE ALL CONTAINERS IN GOOD CONDITION?	✓	
ARE ALL CONTAINERS PROPERLY LABELED WITH READABLE LABELS?	✓	
ARE ALL CONTAINERS CLOSED?		NOTE 4
ARE ALL SPILLS CLEANED & LEAKS PROMPTLY FIXED WITH NO CHEMICAL LEFT ON THE GROUND?	✓	
WET CHEMICAL STORAGE & DISPENSING AREA:		
ARE ALL SPILLS CLEANED UP, FLOORS CLEANED & LEAKS PROMPTLY FIXED?	✓	
ARE ALL CONTAINERS PROPERLY LABELED WITH READABLE LABELS?	✓	
ARE PROPER CHEMICAL DISPENSING PROCEDURES PRACTICED?	✓	
IS THE PLACE CLEAN AND DRY?	✓	
ACID TANK:		
ARE ALL SPILLS CLEANED UP & LEAKS PROPERLY FIXED?	✓	
IS THE OVERFILL STORAGE TANK ROUTINELY CHECKED FOR pH?	✓	
IS THE TANK PROPERLY LABELED WITH A READABLE LABEL?	✓	
TRUCK WASH AREA:		
IS THE WASTE STORAGE TANK ROUTINELY CHECKED FOR PROPER pH?	✓	
IS THE WASTE STORAGE TANK FULL?	✓	[illegible]
DRY CHEMICAL STORAGE AREA:		
IS THE PLACE CLEAN & DRY?	✓	
SPC AREA:		
IS THE PLACE CLEAN AND FREE OF OIL STAINS?		NOTE 6
ARE ALL SPILLS CLEANED?	✓	
TRUCK INTERIOR CLEANING STATION:		
IS THE PLACE CLEAN AND THE GROUND FREE OF OIL STAIN?	✓	
IS THE WASTE STORAGE TANK ROUTINELY CHECKED FOR PROPER pH?	✓	
IS THE WASTE STORAGE TANK FULL?		NOTE 5

ENVIRONMENTAL COMPLIANCE INSPECTION

DISTRICT: FARMINGTON DATE: 2/21/91

BY: BENNY Ho

NOTE 1: DISPOSAL RECORDS (TIRES, BATTERIES, SAFETY KLEEN, & WASTE OIL) NEEDS TO BE FILED IN THE ENVIRONMENTAL FILES

NOTE 2: MONTHLY ENVIRONMENTAL INSPECTION IS REQUIRED

NOTE 3: NEEDS TO KEEP FUEL SPILL TO MINIMUM.

NOTE 4: NEEDS TO PLACE EMPTY DRUMS RIGHT SIDE UP, CAPPED AND TOP CLEANED

NOTE 5: NEEDS TO LOOK INTO POSSIBLE TANK LEAK.

NOTE 6: NEEDS TO CLEAN DIESEL SPILL.

MATERIAL USED

	DESCRIPTION	PRICE			
3	Leak Detectors	170	00	510	00
3	Check Valves	15	00	45	00
3	Line Test	135	00	405	00
	TOTAL PARTS			960	00
	OUTSIDE REPAIRS				
	TOTAL OUTSIDE REPAIR				

Petroleum Marketing & Industrial Equipment — Sales & Service

2407 Boyd Building
Gallup, New Mexico 87301

FARMINGTON: (505) 326-1118
GALLUP: 863-4424

MEMBER PEI Petroleum Equipment Institute

H & S Enterprises, Inc.

F 26594

4109 Bloomfield Hwy — P. O. Box 1050
Farmington, New Mexico 87499

SENT AUG 24 1990

NAME [redacted] Western Company

ADDRESS P.O. Box 360

CITY Farmington, NM 87499 PHONE

STATION NO.

LOCATION

P.O. #

TYPE OR MODEL

SER. NO.

DATE 08-21-90

	INSTRUCTIONS		
	Installed and certified leak detectors as per bid.		
	11-311-754-048-00		
	Labor	120	00

DELINQUENT ACCOUNTS ARE SUBJECT TO A FINANCE CHARGE AT AN ANNUAL PERCENTAGE RATE OF EIGHTEEN (18) PER CENT. THIS IS EQUIVALENT TO ONE AND ONE-HALF (1½) PER CENT PER MONTH.

Thank You

COMPUTER READINGS

NEW MONEY	
NEW GALLONS	
OLD MONEY	
OLD GALLONS	

I HEREBY AUTHORIZE THE ABOVE REPAIR WORK TO BE DONE ALONG WITH THE NECESSARY MATERIAL, AT ABOVE LOCATION. AN EXPRESS MECHANIC'S LIEN IS HEREBY ACKNOWLEDGED ON ABOVE EQUIPMENT TO SECURE THE AMOUNT OF REPAIRS THERETO

x _____

F.S.

MILEAGE

TOTAL MILEAGE

PHONE WHEN READY YES ☐ NO ☐

TOTAL LABOR	120	00
TOTAL PARTS	960	00
MILEAGE		
OUTSIDE REPAIRS		
TAX	62	10
TOTAL AMOUNT	1142	10

INVOICE

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

April 1, 1992

Attn: Mr. Les Baugh

Western Company of North America
3250 Southside River Road
Farmington, New Mexico 87401

RE: Used Oil Tank Integrity Testing Project No: 92101

Dear Mr. Baugh:

Enclosed please find the results of testing for the integrity of the used oil tank at the Western Company of North America, Farmington Facility located at 3250 Southside River Road, Farmington, New Mexico.

The testing was conducted by Mr. Rex Farnsworth of Envirotech, Inc. on March 13, 1992. The subject used oil tank was reportedly 500 gallons and tested tight.

Please contact us should you have any questions regarding the testing or results. Thank you for allowing Envirotech, Inc. the opportunity to be of service on this project.

Respectfully submitted,
ENVIROTECH, Inc.

Rex N. Farnsworth
General Superintendent

Enclosure: Tank Tighness Test

RNF:MKL/mkl 2101UO.TST

SOILTEST®

AINLAY TANK 'TEGRITY TESTER™ FIELD TEST DATA

1 TANK OPERATOR

NAME / ADDRESS / PHONE

Western Co. 327-6222

3250 Southside Rd. RD.

Farmington, N.Mex.

2 TANKS TO BE TESTED

IDENTIFICATION	CAPACITY—GALS.	MANUFACTURER	STEEL/FIBRGLS.	AGE—YRS.
Used Oil	1000		STEEL	Apx 10yrs

3 WATER TABLE

DISTANCE FROM GRADE TO WATER 35' ~~FEET~~.

4 TANK FILL-UP

TANK WILL BE FILLED _____ (TIME) ON 3/12/92

EXTRA 5 GALS PRODUCT AVAILABLE FROM Shop.

FILL UP TO BE ARRANGED BY MR. Les Baugh PHONE 505 327-6222

CONTACT AT STORAGE TERMINAL IS MR. _____ PHONE ( )

5 OUTSIDE CONTRACTORS

NAME / ADDRESS / PHONE

Envirotech Inc. 505-632-0615

6 OFFICIALS TO BE CONTACTED

NAME / AUTHORITY / PHONE

Les Baugh. 327-6222

7 SPECIAL NOTES OR PRECAUTIONS

8 TEST RESULTS

ALL TESTS WERE PERFORMED IN ACCORDANCE WITH PROCEDURES DESCRIBED IN SOILTEST'S INSTRUCTION BOOK. CRITERIA FOR TIGHTNESS IS ESTABLISHED BY NATIONAL FIRE PROTECTION ASSOCIATION BULLETIN. N.F.P.A. 329.

TANK IDENT	TANK IS TIGHT	TANK IS NOT TIGHT	LEAK RATE G. P. H.	TEST DATE
Used Oil	✓		.005	3-13-92

9 CERTIFICATION

THIS CERTIFIES THAT THE TANKS DESCRIBED WERE TESTED BY THE UNDERSIGNED AND THAT THE STATED RESULTS REPRESENT THE TRUE STATE OF THE TANKS ON THIS DATE TO THE BEST OF MY KNOWLEDGE.

SIGNED _____ CERTIFICATE NO. # 1520

ISSUE DATE 11-89

FOR (TEST COMPANY) Envirotech Inc.

ADDRESS 5796 Hy 64 - 2014

Farmington N.Mex. 87401

STATE ZIP

ST-6 (459-916) REV. 1/90

AINLAY TANK TIGHTNESS TEST No.

10 TANK I.D.

INCLUDE ENOUGH INFO. TO ACCURATELY IDENTIFY TANK. (NUMBER/CONTENTS/POSITION, ETC.)

TANK DIAMETER 47" INS FILL PIPE LENGTH 26" INS

11 WATER IN TANK

(a) START WATER IN TANK — INS (c) END WATER IN TANK — INS

(b) START WATER IN TANK — GALS (d) END WATER IN TANK — GALS

12 PRODUCT VOLUME

(a) NOMINAL CAPACITY 1000 GALS (c) DEDUCT WATER IN TANK — GALS

(b) ACTUAL CAPACITY 1002 GALS (d) TOTAL PRODUCT VOL. 1002 GALS

(FROM TANK CHART) (e) PIPING 3 GALS

(f) TOTAL 1005 GALS

13 FILL PIPE EXTENSION

(a) HEIGHT OF WATER TABLE ABOVE TANK BOTTOM = — (h) INS

(b) DENSITY OF TANK PRODUCT = — (w) LB/CU. IN. (FROM TABLES)

DENSITY OF EXTERNAL WATER = 0.036 LB/CU. IN.

(c) ADDITIONAL HEAD REQUIRED = $\frac{(h) \times 0.036}{(w)}$ = $\frac{\times\ 0.036}{}$ = — INS

NOTE:
TO AVOID POSSIBLE TANK DAMAGE THE ADDED PRESSURE FROM A FILL PIPE EXTENSION MUST NEVER EXCEED 5 P.S.I.

14 PRELIM TEST DATA

(a) A.P.I. GRAVITY 31.4 AT 63 °F

(b) A.P.I. GRAVITY 31.3 AT 60° F

(c) COEFF. OF EXPANSION .00044882

15 TEST DATA

(a) START TEST 9:25 AM/PM: END TEST 11:15 AM/PM: TEST TIME 110 MINS.

(b) TEMPERATURE CHANGE DURING TEST = (SLOPE OF "BEST FIT" LINE) × (TEST TIME)

= .0006 × 110 = ⊖/- .066 °F.

(c) VOL. CHANGE DUE TO TEMP = PRODUCT VOL × TEMP. CHANGE × COEFF. EXP.

= 1005 (12f) × .066 (15b) × .00044882 (14c) = ⊖/- .029 GALS.

(d) TOTAL LIQUID VOL. ADDED/SUBTRACTED AT END OF TEST..... = +⊕.019 GALS.

(e) VOL. CHANGE NOT DUE TO TEMP [(c) + (d)]..... = .029 + .019 = ⊖/- .010 GALS.

(f) LEAK RATE = $\frac{(e) \times 60}{\text{TIME OF TEST (MINS)}}$ = $\frac{.010 \times 60}{110}$ = .005 G.P.H.

(15a)

THIS LEAK RATE DOES/DOES NOT EXCEED THE STANDARD OF 0.050 G.P.H. DESCRIBED IN NATIONAL FIRE PROTECTION ASSOC., BULLETIN N.F.P.A. 329.

THE TANK IS TIGHT ☒ / THE TANK IS NOT TIGHT ☐

16 NOTES

ENVIROTECH INC.

UNDERGROUND TANK TESTING • SITE ASSESSMENT • SITE REMEDIATION

5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

February 17, 1992

Western Co.
Mr. Les Baugh
3250 Southside River Rd.
Farmington, NM 87401

RE: Ainlay Tank 'Tegrity Tester Field Test Data

Dear Mr. Baugh:

Enclosed, please find a copy of the 'Tegrity Tester test data that was competed at the Western's Farmington facility.

We appreciate working with you on this matter, if we can be of further help, don't hesitate to call.

Sincerely,

Rex N. Farnsworth
General Superintendent

RNF/tjg

140.doc

SOILTEST®

AINLAY TANK 'TEGRITY TESTER™ FIELD TEST DATA

1 TANK OPERATOR

NAME / ADDRESS / PHONE

Western Co. 327-6222
3250 Southside River Rd.
Farmington New Mexico

2 TANKS TO BE TESTED

IDENTIFICATION	CAPACITY—GALS.	MANUFACTURER	STEEL/FIBRGLS.	AGE—YRS.
New oil	1000	-	Steel	10 yrs +
Unleaded	8000		Steel	10 yrs +
Diesel	10000		Steel	10 yrs +
Diesel	10000		Steel	10 yrs +

3 WATER TABLE

DISTANCE FROM GRADE TO WATER 35'

4 TANK FILL-UP

TANK WILL BE FILLED pm. (TIME) ON 1 / 10 / 92.
EXTRA 5 GALS PRODUCT AVAILABLE FROM 55 Drums.
FILL UP TO BE ARRANGED BY MR. Les. PHONE 505) 327-6222
CONTACT AT STORAGE TERMINAL IS MR. _____ PHONE ( )

5 OUTSIDE CONTRACTORS

NAME / ADDRESS / PHONE

Envirotech Inc. 632-0615

6 OFFICIALS TO BE CONTACTED

NAME / AUTHORITY / PHONE

Les. Filling supervisor 327-6222

7 SPECIAL NOTES OR PRECAUTIONS

8 TEST RESULTS

ALL TESTS WERE PERFORMED IN ACCORDANCE WITH PROCEDURES DESCRIBED IN SOILTEST'S INSTRUCTION BOOK. CRITERIA FOR TIGHTNESS IS ESTABLISHED BY NATIONAL FIRE PROTECTION ASSOCIATION BULLETIN. N.F.P.A. 329.

TANK IDENT	TANK IS TIGHT	TANK IS NOT TIGHT	LEAK RATE G. P. H.	TEST DATE
New oil 1000	✓		.014	1-11-92
Unleaded 8000	✓		.001	1-11-92
Diesel 10000.	✓		.026	1-11-92
Diesel 10000	✓		-.010	1-11-92

9 CERTIFICATION

THIS CERTIFIES THAT THE TANKS DESCRIBED WERE TESTED BY THE UNDERSIGNED AND THAT THE STATED RESULTS REPRESENT THE TRUE STATE OF THE TANKS ON THIS DATE TO THE BEST OF MY KNOWLEDGE.

SIGNED _____ CERTIFICATE NO. # 1520
ISSUE DATE 11-89

FOR (TEST COMPANY) Envirotech Inc.
ADDRESS 5796 Hy. 64 - 3014
Farmington, NM 87401
STATE ZIP

ST-0 (459-916) REV 1-90

AINLAY TANK TIGHTNESS TEST No. ______

OB Western Co DATE 1-10-92 ER REXTank Western
ADDRESS 3250 Southside Rd Farmington TEST COMPANY Envirotech Inc

10 TANK I.D.	INCLUDE ENOUGH INFO. TO ACCURATELY IDENTIFY TANK. (NUMBER/CONTENTS/POSITION, ETC.) TANK DIAMETER 48" INS FILL PIPE LENGTH 48" INS
11 WATER IN TANK	(a) START WATER IN TANK — INS (c) END WATER IN TANK — INS (b) START WATER IN TANK — GALS (d) END WATER IN TANK ______ GALS
12 PRODUCT VOLUME	(a) NOMINAL CAPACITY 1000 GALS (c) DEDUCT WATER IN TANK — GALS (b) ACTUAL CAPACITY 1000 GALS (d) TOTAL PRODUCT VOL. 1000 GALS (FROM TANK CHART) (e) PIPING 5 GALS (f) TOTAL 1005 GALS
13 FILL PIPE EXTENSION	(a) HEIGHT OF WATER TABLE ABOVE TANK BOTTOM = — (h) INS (b) DENSITY OF TANK PRODUCT = — (w) LB/CU. IN. (FROM TABLES) DENSITY OF EXTERNAL WATER = 0.036 LB/CU. IN. (c) ADDITIONAL HEAD REQUIRED = (h) x 0.036 / (w) = ______ x 0.036 / ______ = — INS NOTE: TO AVOID POSSIBLE TANK DAMAGE THE ADDED PRESSURE FROM A FILL PIPE EXTENSION MUST NEVER EXCEED 5 P.S.I.
14 PRELIM TEST DATA	(a) A.P.I. GRAVITY 28 AT 40 °F (b) A.P.I. GRAVITY 29.4 AT 60°F (c) COEFF. OF EXPANSION .00044200
15 TEST DATA	(a) START TEST 1505 AM/PM: END TEST 1635 AM/PM: TEST TIME 90 MINS. (b) TEMPERATURE CHANGE DURING TEST = (SLOPE OF "BEST FIT" LINE) × (TEST TIME) = .008 × 90 = +/- .72 °F. (c) VOL. CHANGE DUE TO TEMP = PRODUCT VOL × TEMP. CHANGE × COEFF. EXP. = 1005 (12f) × .72 (15b) × .00044200 (14c) = (+)/- .319 GALS. (d) TOTAL LIQUID VOL. ADDED/SUBTRACTED AT END OF TEST.................... = +/(-) .298 GALS. (e) VOL. CHANGE NOT DUE TO TEMP [(c) + (d)]......... = .319 + -.298 = +/- .21 GALS. (f) LEAK RATE = (e) × 60 / TIME OF TEST (MINS) = .21 × 60 / 90 (15a) = .014 G.P.H. THIS LEAK RATE DOES/DOES NOT EXCEED THE STANDARD OF 0.050 G.P.H. DESCRIBED IN NATIONAL FIRE PROTECTION ASSOC., BULLETIN N.F.P.A. 329. THE TANK IS TIGHT ☑ / THE TANK IS NOT TIGHT ☐
16 NOTES	

AINLAY TANK TIGHTNESS TEST No. ______

JOB Westken Co. ADDRESS 3250 Southside Rd. Farmington Rd. DATE 11-1-92 TESTER Rex Nessmons TEST COMPANY Envirotech Inc

10 TANK I.D.	INCLUDE ENOUGH INFO. TO ACCURATELY IDENTIFY TANK. (NUMBER/CONTENTS/POSITION, ETC.) TANK DIAMETER 96 INS FILL PIPE LENGTH 48. INS
11 WATER IN TANK	(a) START WATER IN TANK 0 INS (c) END WATER IN TANK 0 INS (b) START WATER IN TANK 0 GALS (d) END WATER IN TANK 0 GALS
12 PRODUCT VOLUME	(a) NOMINAL CAPACITY 8000 GALS (b) ACTUAL CAPACITY 8021 GALS (FROM TANK CHART) (c) DEDUCT WATER IN TANK 0 GALS (d) TOTAL PRODUCT VOL. 8021 GALS (e) PIPING 5 GALS (f) TOTAL 8026 GALS
13 FILL PIPE EXTENSION	(a) HEIGHT OF WATER TABLE ABOVE TANK BOTTOM = – (h) INS (b) DENSITY OF TANK PRODUCT = – (w) LB/CU. IN. (FROM TABLES) DENSITY OF EXTERNAL WATER = 0.036 LB/CU. IN. (c) ADDITIONAL HEAD REQUIRED = (h) x 0.036 / (w) = x 0.036 / = – INS NOTE: TO AVOID POSSIBLE TANK DAMAGE THE ADDED PRESSURE FROM A FILL PIPE EXTENSION MUST NEVER EXCEED 5 P.S.I.
14 PRELIM TEST DATA	(a) A.P.I. GRAVITY 63.7 AT 42 °F (b) A.P.I. GRAVITY 66- AT 60°F (c) COEFF. OF EXPANSION .00071628
15 TEST DATA	(a) START TEST 1255 AM/PM: END TEST 1435 AM/PM: TEST TIME 100 MINS. (b) TEMPERATURE CHANGE DURING TEST = (SLOPE OF "BEST FIT" LINE) × (TEST TIME) = .0006 × 100 = +/- .06 °F. (c) VOL. CHANGE DUE TO TEMP = PRODUCT VOL × TEMP. CHANGE × COEFF. EXP. = 8026. (12f) × .06 (15b) × .00071628 (14c) = +/- .344 GALS. (d) TOTAL LIQUID VOL. ADDED/SUBTRACTED AT END OF TEST .... = +/- .342 GALS. (e) VOL. CHANGE NOT DUE TO TEMP [(c) + (d)] .... = .344 + -.342 = +/- .002 GALS. (f) LEAK RATE = (e) × 60 / TIME OF TEST (MINS) = .002 × 60 / 100 (15a) = .001 G.P.H. THIS LEAK RATE DOES/DOES NOT EXCEED THE STANDARD OF 0.050 G.P.H. DESCRIBED IN NATIONAL FIRE PROTECTION ASSOC., BULLETIN N.F.P.A. 329. THE TANK IS TIGHT ☑ / THE TANK IS NOT TIGHT ☐
16 NOTES	

AINLAY TANK TIGHTNESS TEST No. ______

10 TANK I.D.	INCLUDE ENOUGH INFO. TO ACCURATELY IDENTIFY TANK. (NUMBER/CONTENTS/POSITION, ETC.) TANK DIAMETER 96. INS FILL PIPE LENGTH 51 INS
11 WATER IN TANK	(a) START WATER IN TANK 0 INS (c) END WATER IN TANK 0 INS (b) START WATER IN TANK 0 GALS (d) END WATER IN TANK 0 GALS
12 PRODUCT VOLUME	(a) NOMINAL CAPACITY 10000 GALS (c) DEDUCT WATER IN TANK 0 GALS (b) ACTUAL CAPACITY 10026 GALS (d) TOTAL PRODUCT VOL. 10026 GALS (FROM TANK CHART) (e) PIPING 5 GALS (f) TOTAL 10031 GALS
13 FILL PIPE EXTENSION	(a) HEIGHT OF WATER TABLE ABOVE TANK BOTTOM = — (h) INS (b) DENSITY OF TANK PRODUCT = — (w) LB/CU. IN. (FROM TABLES) DENSITY OF EXTERNAL WATER = 0.036 LB/CU. IN. (c) ADDITIONAL HEAD REQUIRED = (h) x 0.036 / (w) = x 0.036 = — INS NOTE: TO AVOID POSSIBLE TANK DAMAGE THE ADDED PRESSURE FROM A FILL PIPE EXTENSION MUST NEVER EXCEED 5 P.S.I.
14 PRELIM TEST DATA	(a) A.P.I. GRAVITY 39.2 AT 44 °F (b) A.P.I. GRAVITY 41.3 AT 60°F (c) COEFF. OF EXPANSION .00049355
15 TEST DATA	(a) START TEST 9:30. AM/PM: END TEST 11:00. AM/PM: TEST TIME 90 MINS. (b) TEMPERATURE CHANGE DURING TEST = (SLOPE OF "BEST FIT" LINE) × (TEST TIME) = .0003 × 90. = +/- .027 °F. (c) VOL. CHANGE DUE TO TEMP = PRODUCT VOL × TEMP. CHANGE × COEFF. EXP. = 10031 (12f) × .027 (15b) × .00049355 (14c) = +/- .133 GALS. (d) TOTAL LIQUID VOL. ADDED/SUBTRACTED AT END OF TEST .... = +/- .091 GALS. (e) VOL. CHANGE NOT DUE TO TEMP [(c) + (d)] .... = .133 - .091 = +/- .042 GALS. (f) LEAK RATE = (e) × 60 / TIME OF TEST (MINS) = .042 × 60 / 95 (15a) = .026 G.P.H. THIS LEAK RATE DOES/DOES NOT EXCEED THE STANDARD OF 0.050 G.P.H. DESCRIBED IN NATIONAL FIRE PROTECTION ASSOC., BULLETIN N.F.P.A. 329. THE TANK IS TIGHT ☑ / THE TANK IS NOT TIGHT ☐
16 NOTES	

TESTER Rex Fairsworth TEST COMPANY EnviroTech Inc
DATE 1-11-92
JOB Weyburn Co.
ADDRESS 3250 South Side Rd

AINLAY TANK TIGHTNESS TEST No. ____

10 TANK I.D.	INCLUDE ENOUGH INFO. TO ACCURATELY IDENTIFY TANK. (NUMBER/CONTENTS/POSITION, ETC.) TANK DIAMETER 96" INS FILL PIPE LENGTH 46" INS
11 WATER IN TANK	(a) START WATER IN TANK – INS (c) END WATER IN TANK – INS (b) START WATER IN TANK – GALS (d) END WATER IN TANK – GALS
12 PRODUCT VOLUME	(a) NOMINAL CAPACITY 10000 GALS (c) DEDUCT WATER IN TANK – GALS (b) ACTUAL CAPACITY 10026 GALS (d) TOTAL PRODUCT VOL. 10026 GALS (FROM TANK CHART) (e) PIPING 5 GALS (f) TOTAL 10031 GALS
13 FILL PIPE EXTENSION	(a) HEIGHT OF WATER TABLE ABOVE TANK BOTTOM = – (h) INS (b) DENSITY OF TANK PRODUCT = – (w) LB/CU. IN. (FROM TABLES) DENSITY OF EXTERNAL WATER = 0.036 LB/CU. IN. (c) ADDITIONAL HEAD REQUIRED = (h) x 0.036 / (w) = x 0.036 = – INS NOTE: TO AVOID POSSIBLE TANK DAMAGE THE ADDED PRESSURE FROM A FILL PIPE EXTENSION MUST NEVER EXCEED 5 P.S.I.
14 PRELIM TEST DATA	(a) A.P.I. GRAVITY 39.2 AT 43 °F (b) A.P.I. GRAVITY 40.9 AT 60°F (c) COEFF. OF EXPANSION .00049126
15 TEST DATA	(a) START TEST 11:15 AM/PM: END TEST 12:45 AM/PM: TEST TIME 90 MINS. (b) TEMPERATURE CHANGE DURING TEST = (SLOPE OF "BEST FIT" LINE) × (TEST TIME) = -.0001 × 90 = +/- .009 °F. (c) VOL. CHANGE DUE TO TEMP = PRODUCT VOL × TEMP. CHANGE × COEFF. EXP. = 10031 (12f) × .009 (15b) × .00049126 (14c) = +/- .044 GALS. (d) TOTAL LIQUID VOL. ADDED/SUBTRACTED AT END OF TEST.................... = +/- .028 GALS. (e) VOL. CHANGE NOT DUE TO TEMP [(c) + (d)].......... = -.044 + .028 = +/- .016 GALS. (f) LEAK RATE = (e) × 60 / TIME OF TEST (MINS) = -.016 × 60 / 90 (15a) = -.010 G.P.H. THIS LEAK RATE DOES/DOES NOT EXCEED THE STANDARD OF 0.050 G.P.H. DESCRIBED IN NATIONAL FIRE PROTECTION ASSOC., BULLETIN N.F.P.A. 329. THE TANK IS TIGHT ☒ / THE TANK IS NOT TIGHT ☐
16 NOTES	

JOB Western [illegible] ADDRESS 3250 Southside Rd, Farmington DATE [illegible]

OWNER TEX [illegible] TEST COMPANY Enviro-Tech Inc

SECTION XI

CONTINGENCY PLAN/EMERGENCY RESPONSE PLAN

CONTINGENCY/EMERGENCY RESPONSE PLAN

This Emergency Response Plan is necessary for the district and its personnel to minimize personal injury, property damage and business interruptions caused by any catastrophe; such as, fire, flood, storm, tornado, etc.

In the event of an emergency, all employees will proceed to The Western Company's sign on the front lawn in a safe and orderly fashion. At this time a head count will be taken by the Team Coordinators to determine if any employee is missing. The Dispatcher will notify all Team Leaders of employees that may be on jobs or days off. Two Team Coordinators and two Team Leaders will make a sweep of the facility by means of the Buddy System to locate any missing persons or vendors that may be on the yard.

1. Chemical Spill/Release Reporting and Containment

EmTech Environmental Services, Inc. - **1-800/336-0909**

This is a **24 hour emergency response service for spills/releases** that is contracted to assist Western with any emergencies. Every District has been provided with this information to assist them in handling emergencies. This company has been provided a site plan, MSDSs for chemicals handled at each District and the contact people at each District.

Emergency Telephone Numbers

A. Emergency Number - 911
B. Electrical Utility - 505/327-7701
C. Gas Utility - 505/325-2889
D. Water Utility - 505/327-7701
E. Telephone - 1-555-1653
F. Poison Control Center - 1-800/432-6866
G. District Manager - 505/334-1855

Equipment for Containment

A. Foutz & Bursom Co. - 325-3712
   After hours:
   Greg Swapp - 632-9569
   Larry Sanders - 334-2348
   Steve Foutz - 334-2656

II. Action Team Members

A. Action Team make-up and duties - All operations concerning evacuation, rescue, spill containment, fire fighting procedures, securing utilities, medical (First Aid), public relations, clean-up and all clear to re-enter areas, will be handled by the district action team. This team will be made up of the district manager, operations supervisors, assistant operations supervisors and maintenance supervisor.

Names of team members:

Lynn Loman, District Manager
908 Highway 550
Flora Vista, NM
505/334-1855

Terry Gorman, Operations Supervisor

Flora Vista, NM
505/334-3570

Duane McCoy, Maintenance Supervisor
1221 Camina Flora
Farmington, NM 87401
505/327-6532

Les Baugh, Facilities Supervisor
4509 Celtic
Farmington, NM 87401
505/327-5844

Ted Randolph, Field Engineer
3512 Kayenta
Farmington, NM 87401
505/327-2059

Les Baugh, Environmental Coordinator
4509 Celtic
Farmington, NM 87401
505/327-5844

TEAM COORDINATORS	TEAM LEADERS	
Lynn Loman	Jay Savage	Mark Knight
Duane McCoy	Terry Lattin	Mike Rose
Les Baugh	Barry Holman	

TEAMS
ALL DISTRICT EMPLOYEES

Teams will be set up to handle any type situation that may require removal of equipment or a spill on the facility. At **NO** time will a team or teams be ordered into an area that is unsafe.

The "All Clear" signal to re-enter areas will come from Western management. The Team members will assign their standbys in the event of absence.

B. In the event the Emergency Preparedness Plan is implemented, the Dispatch Office will serve as a command center. If this is unsafe, the secondary command post will be The Western Company sign on the front lawn.

III. Fire Fighting Procedures

A. Hazardous Materials Handling - If a fire cannot be put out immediately with hand held portable fire extinguishers, the area will be evacuated and the Fire Department will be summoned by dialing 911. Material Safety Data Sheet books should be consulted and made available to the Fire Department in order to ascertain what, if any, hazards might be encountered in the fire. These books are kept in the following places:

1. Dispatch Office
2. District Lab
3. Training Office
4. Maintenance Supervisor's Office
5. Chemical Warehouse

B. Fire Extinguisher Locations - Fire extinguishers in the main office are located at the entrance of the Dispatch Office; at the entrance of the lounge; outside the Conference Room; at the door near the storage room next to the sales office and just outside the District Manager's office.

C. Securing Utilities - The master shutoff points are at the **SOUTHEAST CORNER** of the **MAINTENANCE BUILDING.** The **RED VALVE** is the **gas,** the **YELLOW ARROW** on the electric box points to the **main breaker** for all **ELECTRICAL POWER.** This will shutdown all gas and electricity on the facility.

In case of an uncontrolled **acid spill** or fire where the acid tank is involved, turning the **fluorescent orange** valve on the acid tank will stop all flow.

In case of an uncontrolled **nitrogen discharge** from the storage tanks, turning the **fluorescent orange** valves on the tanks should stop all flow.

D. Fire Fighting Water Available - The main water shut-off valve, a **red-handled valve,** is located at the **southeast corner** of the facility in a concrete lined pit with a metal cover.

IV. Evacuation of Personnel and Equipment

A. Personnel - All personnel on the district facility will meet at The Western Company sign on the front lawn. From that point, all personnel will go to the nearest safe point near the District to receive information on rescue, recovery and control measures to be taken.

B. Equipment - Only equipment that is to be used in control and containment will be removed from the facility. Also any equipment that could be in immediate danger that can be removed without risking any personal harm or injury to personnel in the area should be removed. Equipment used to contain hazardous material spills will be moved to a safe place on the facility until ready for use.

In the event any emergency makes it necessary to evacuate a specific work area or the entire premises, the following guidelines should be followed, in addition to those already set forth. As an area is evacuated and it is safe to do so:

Shop Area, Iron Shop and Wash Bay:

Turn off all operating equipment such as diesel, gasoline or electric motors and engines, welders-gas and electric, grinders, saws, parts washers, sprayers, compressors and anything that might be or become a hazard if left unattended.

Fuel Island:

Turn off all operating equipment such as diesel, gasoline or electric motors and engines, fuel and oil dispensers and anything that might be or become a hazard if left unattended.

Sand Plant and Test Tank Area:

Turn off all operating equipment such as diesel, gasoline or electric motors and engines, tank discharge valves and anything that might be or become a hazard if left unattended.

SPC, Chemical Warehouse, Acid, Nitrogen and Propane Docks:

Turn off all operating equipment such as diesel, gasoline, electric or propane motors and engines, tank discharge valves and anything else that might be or could become a hazard if left unattended.

Front Office, Lab, Training and Locker Room Areas:

Turn off anything that might be or could become a hazard if left unattended.

ALL AREAS

Evacuate using the safest and most direct route possible!

V. Security

All outside persons, except fire fighting personnel, will be kept off the facility until the "All Clear" has been given. The district manager will assign all those in charge of this duty. All outsiders must be kept out of the dangerous areas. The possibility of explosion, fumes, radioactive materials, etc., may be present and complete measures must be taken to control its confinement.

VI. Radioactive Material Handling

In the event there is an emergency that involves a densitometer containing radioactive materials; the Radiation Safety Officer (Brian Ault) and the Radiation Safety Supervisor (Mike Rose) will be immediately notified.

No one will be permitted into the area until the RSO and the RSS have determined that it is safe to do so.

VII. Public Relations

The district policy is to cooperate fully with members of the press and representatives of the public. District policy is to provide all possible factual information as quickly as possible within the normal limits of safety and security. The District Manager will designate the person or persons responsible for this activity.

VIII. Serious Injuries and Fatalities

A personal visit by the District Manager and any other personnel assigned is recommended when informing the family of the circumstances. This should be done as soon as possible and in a manner in line with Western philosophy and procedure.

IX. Medical

A. In the event of a serious accident or injury, a person qualified in American Red Cross Standard First Aid is on duty during all hours of operation. Using the procedures set by the American Red Cross, first aid will be initiated and followed until the Emergency Medical Services arrive.

B. In case of chemical poisoning, a call should be placed to the nearest poison control center available. Consult the Material Safety Data Sheets manual to find information on first aid measures to be taken until qualified help can be reached.

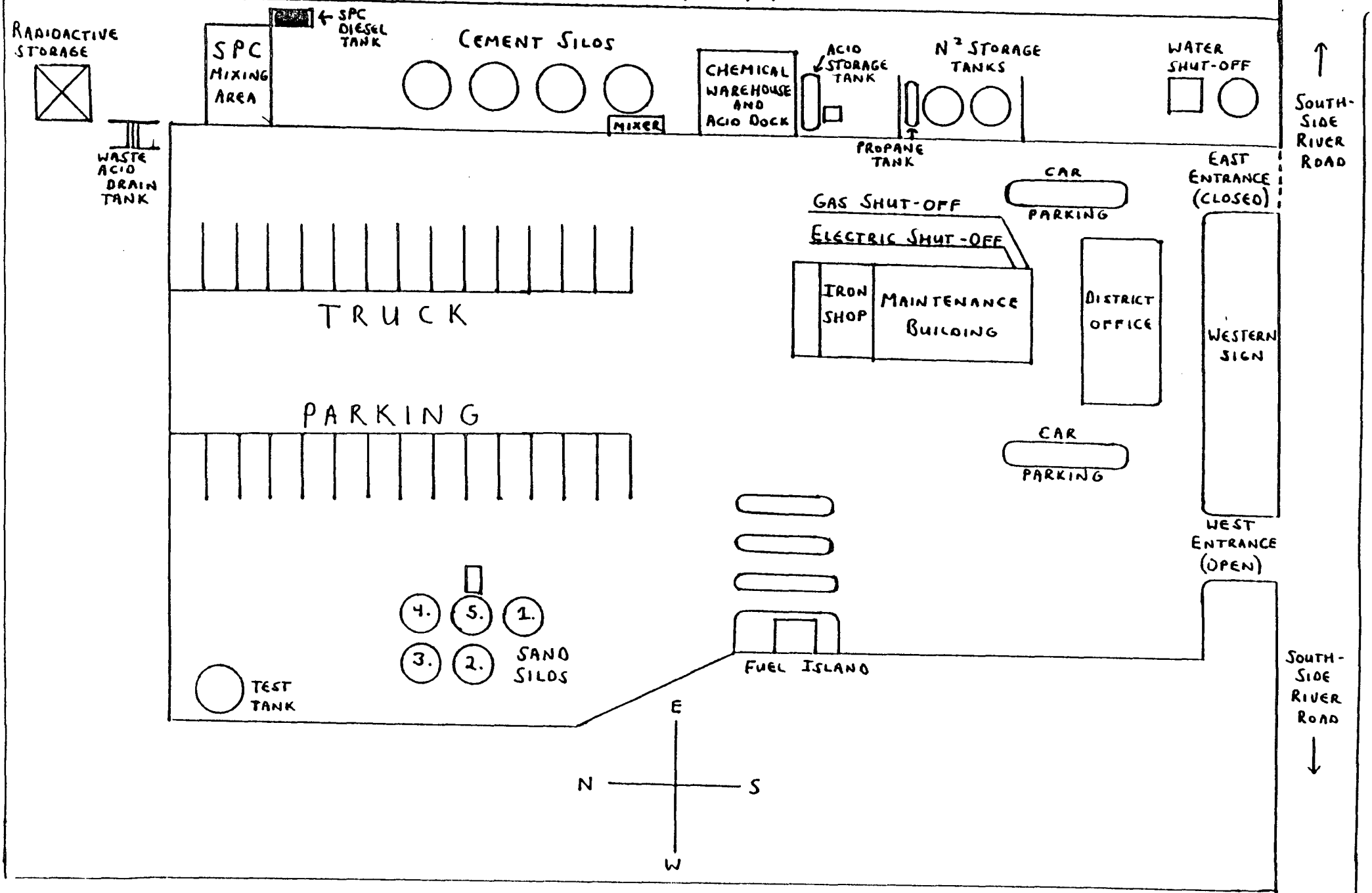
X. Spill Control and Containment

A. Acid Tank Failure - First, clear the area of all personnel and give first aid to the injured. Establish security measures and keep all personnel clear of the area. An action team comprised of the district manager, facilities manager and safety & training supervisor will select personnel to start clean-up and containment procedures. A forklift will be activated and utilized to move soda ash and lime to the lowest point in the facilities to dam up fluid flow and neutralize strong acid on the surface. Construction companies in the area will be contacted to bring in materials to strengthen the dam so as to contain all fluid within the facilities. Next will be the ordering of clean-up equipment, ie; front loader, dump trucks, fill material, vacuum trucks, etc. Western (district) transports will be positioned on the east side of the maintenance shop and office area. There the vacuum trucks will meet with the transports to begin pulling fluid off the ground and washing down with fresh water to force the strong fluid to the low point in the yard where all fluid on the ground will be pulled into the vacuum trucks and moved to a disposal well or area.

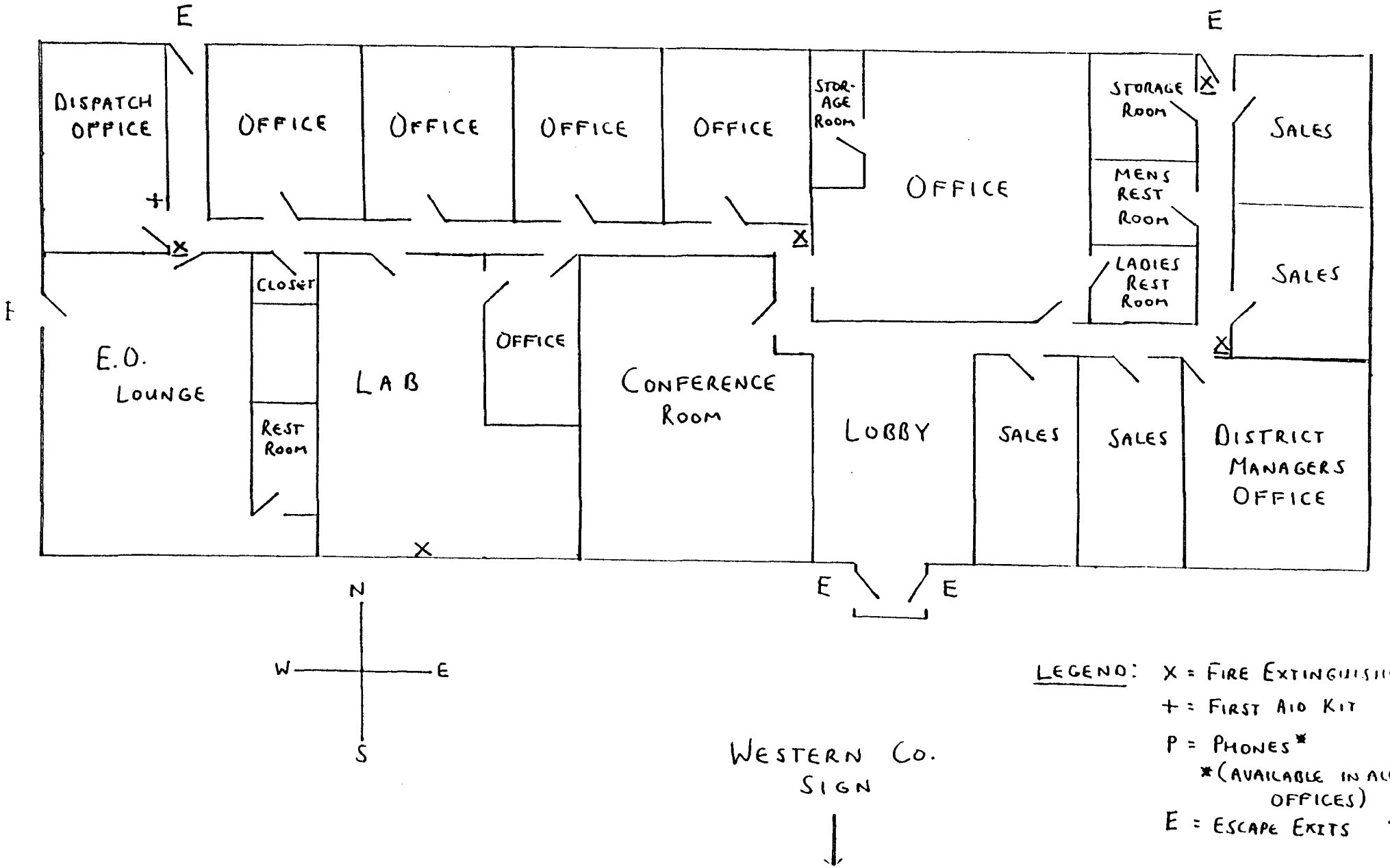
After all fluid has been removed from the ground, clean-up and repair operations will commence using all district personnel available. The action team will coordinate all operations.

B. Hazardous Material Leakage - When there is a leak or suspected leakage at a hazardous materials storage facility, efforts must be made to stop the leakage as soon as possible without endangering personnel safety. Containment dikes will be built to contain the spillage; the spill picked up by absorbent material and placed inside containers or containment area before disposal by a qualified disposal company. The incident will be reported to the National Response Center, the local authority and Western's corporate environmental office.

FARMINGTON FACILITY MAP

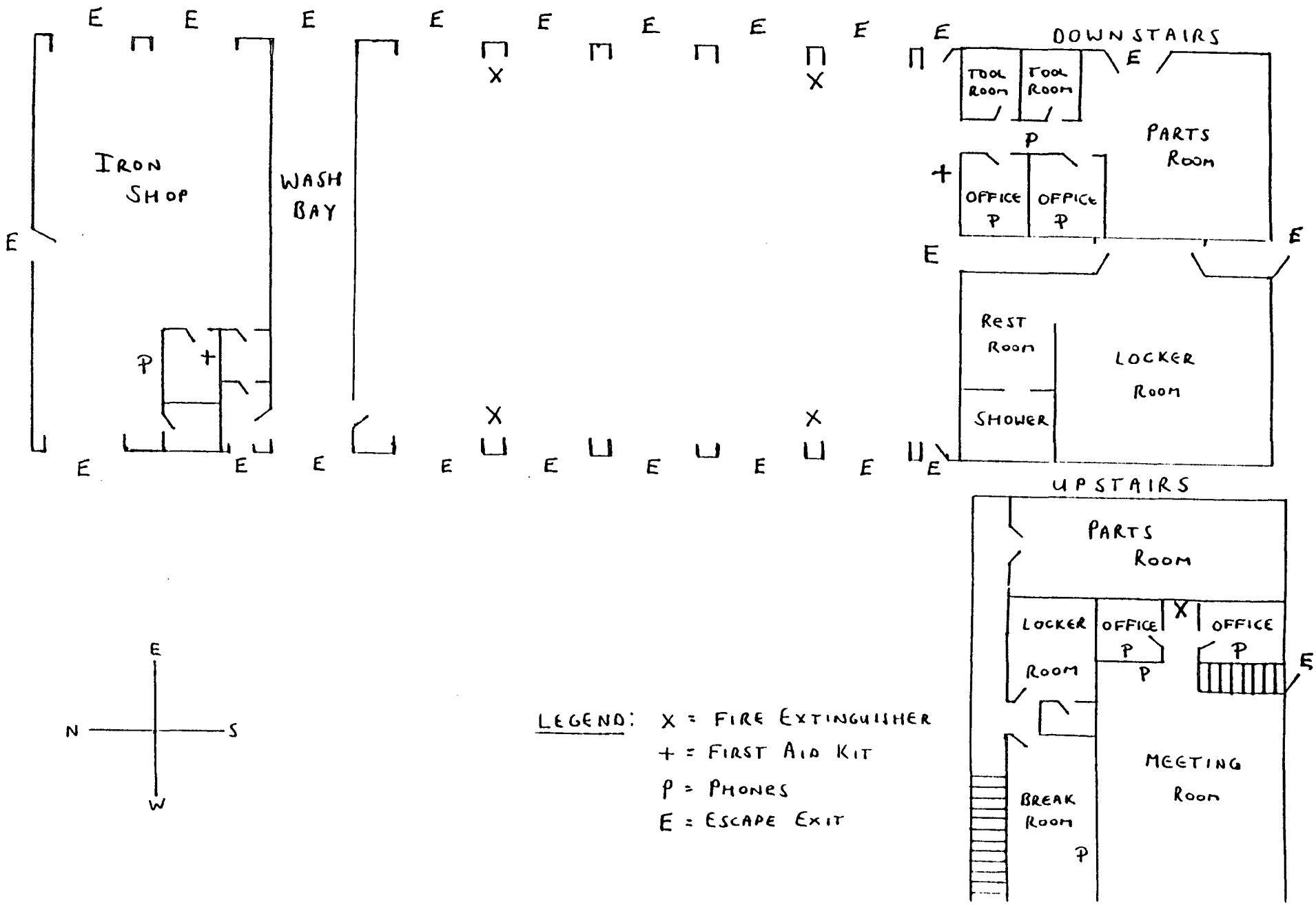


MAIN OFFICE

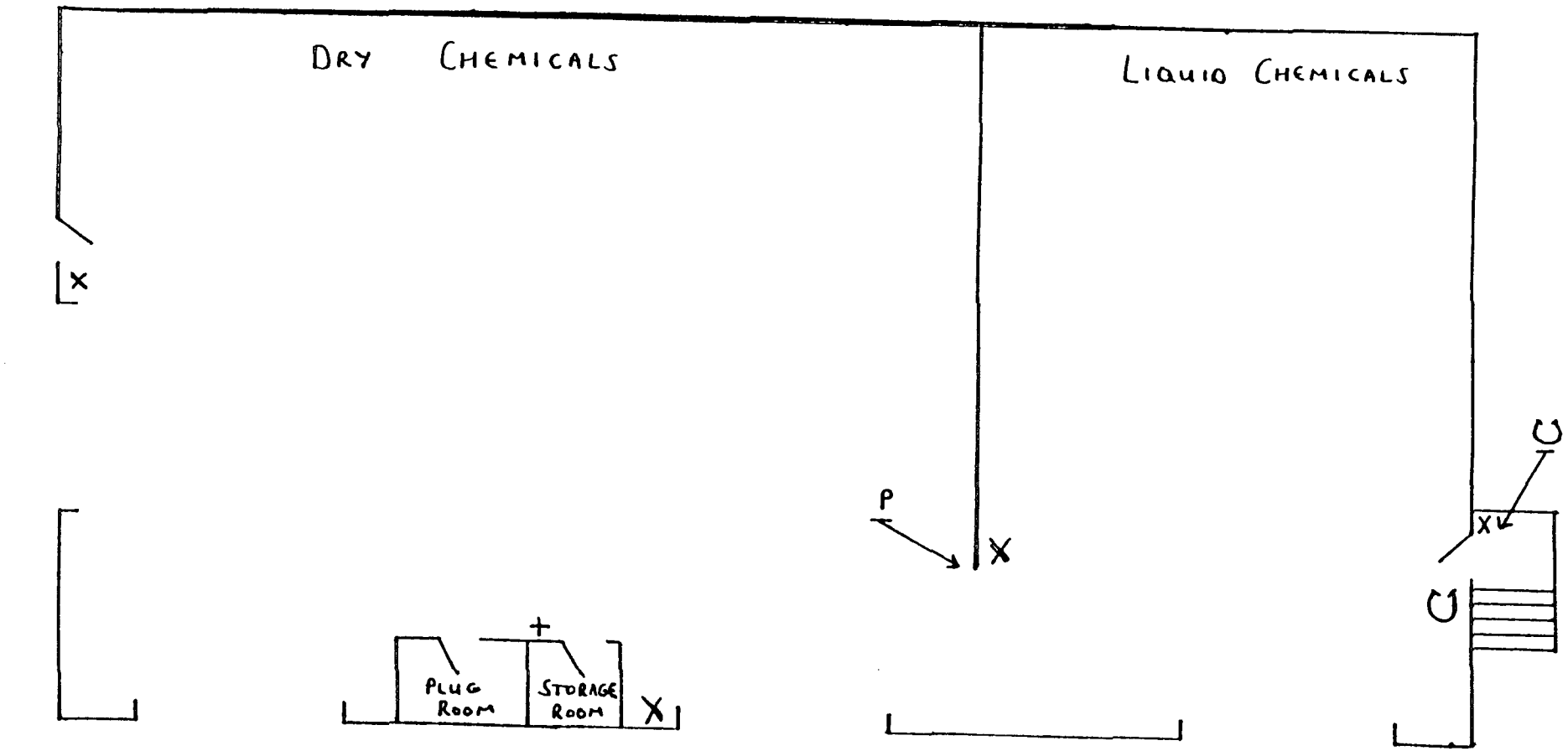


LEGEND: X = FIRE EXTINGUISHER
+ = FIRST AID KIT
P = PHONES*
*(AVAILABLE IN ALL OFFICES)
E = ESCAPE EXITS

MAINTENANCE SHOP



CHEMICAL WAREHOUSE



LEGEND :

X = FIRE EXTINGUISHER

\+ = FIRST AID KIT

U = EYE WASH + SHOWER

P = PHONE + EMERGENCY NUMRERS

: ESCAPE EXITS

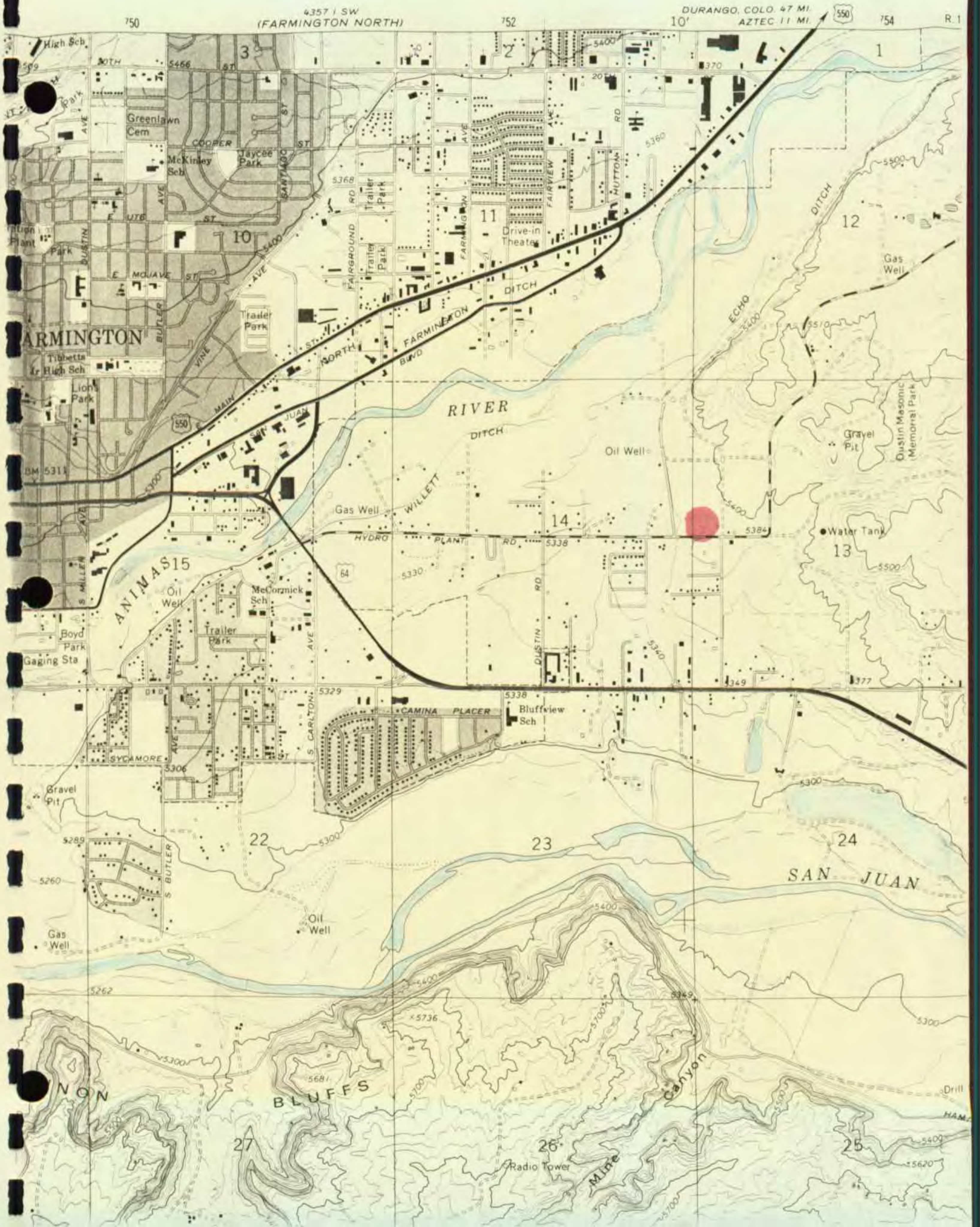
SECTION XII

GEOLOGICAL/HYDROLOGICAL EVIDENCE

The Animas River is approximately 1 mile northwest of the property line. The San Juan River is approximately 1.5 miles south of the facility.

Only a very heavy rain storm could cause any significant flooding due to run-off. In the event of heavy run-off none of the underground storage tanks would be threatened.

There is a berm and ditch on the east side of the property to control run-off from neighboring property. On the west property line there is a drainage channel to control run-off from Western's property.


4357 I SW
(FARMINGTON NORTH)
DURANGO, COLO. 47 MI.
AZTEC 11 MI.
550
750
752
10'
754
R. 1
High Sch
20TH
ST
Greenlawn
Cem
COOPER
ST
McKinley
Sch
Jaycee
Park
SANTIAGO
UTE
ST
Park
DUSTIN
AVE
BUTLER
MOJAVE
ST
FARMINGTON
Tibbetts
Jr High Sch
Lions
Park
VINE
MAIN
NORTH
SAN JUAN
BLVD
FARMINGTON
DITCH
Trailer
Park
FAIRGROUND
RD
FAIRVIEW
HUTTON
Drive-in
Theater
RIVER
DITCH
WILLETT
Gas Well
HYDRO
PLANT
RD
Oil Well
ECHO
DITCH
Gas
Well
Gravel
Pit
Dustin Masonic
Memorial Park
Water Tank
ANIMAS
Oil
Well
McCormick
Sch
Trailer
Park
Boyd
Park
Gaging Sta
S. MILLER
S. CARLTON
CAMINA
PLACER
Bluffview
Sch
SYCAMORE
AVE
Gravel
Pit
S. BUTLER
SAN
JUAN
Oil
Well
Gas
Well
BLUFFS
Mine
Canyon
Radio Tower
Drill
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5466
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5368
5500
5510
5384
5338
5330
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5306
5349
5377
5300
5289
5260
5262
5736
5681
5700
5620
BM 5311
64

SECTION XIII

COMPLIANCE INFORMATION

Ron McKeel
director of real estate
and facilities construction

February 18, 1991

Underground Storage Tank Bureau
1190 Saint Francis Drive
Harold Runnels Bldg. N 2164
Santa Fe, New Mexico 87503

RE: Amended UST Registration Form - The Western Company of North America - Farmington, New Mexico Facility

Gentlemen:

Enclosed is an amended Underground Storage Tank (UST) Registration Form for the Western Company of North America's Farmington, New Mexico Facility. The pressurized fuel piping was upgraded with line leak detectors and the pressurized piping was tightness tested.

If you have any questions or require additional information, please contact me at (713) 629-2861.

Sincerely,

Ron McKeel

RMK:lb
enclosure

ustregst.ltr

P.O. Box 56006 • Houston, TX 77256

Notification for Underground Storage Tanks

UNDERGROUND STORAGE TANK BUREAU
1190 St. Francis Drive
Harold Runnels Bldg. N. 2164
Santa Fe, New Mexico 87503

ID Number

STATE USE ONLY

Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974 that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means –

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes,
2. tanks used for storing heating oil for consumptive use on the premises where stored,
3. septic tanks,
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws,
5. surface impoundments, pits, ponds, or lagoons,
6. storm water or wastewater collection systems,
7. flow-through process tanks,
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations,
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must by completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached: 1

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
Western Company of North America

Street Address
Post Office Box 56006

County
Harris

City: Houston | State: TX | ZIP Code: 77256

Area Code: (713) | Phone Number: 629-2861

Type of Owner (Mark all that apply ☒)

- ☐ Current
- ☐ Former
- ☐ State or Local Govt
- ☐ Federal Govt (GSA facility I.D. no. _____)
- ☒ Private or Corporate
- ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here ☐)

Facility Name or Company Site Identifier, as applicable
Western Company of North America

Street Address or State Road, as applicable
3250 S. Side Rivers Road

County
San Juan

City (nearest): Farmington | State: NM | ZIP Code: 87401

Indicate number of tanks at this location: 9

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here ☐) | Job Title | Area Code | Phone Number

Mr. Harv Michel | Facility Manager | (505) | 327-6222

IV. TYPE OF NOTIFICATION

☒ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative: Mr. Ron McKeel Director Real Estate and Facilities Const.

Signature: Ron McKeel

Date Signed: 2-18-91

CONTINUE ON REVERSE SIDE

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank listed in Item V above)

Identification No. (e.g., ABC-123), or Facility Assigned Sequential Number (e.g., 1,2,3...)		Tank No. 1	Tank No. 2	Tank No. 3	Tank No. 4	Tank No. 5
1. Status of Tank (Mark all that apply ☒)	Currently in Use	X		X	X	X
	Temporarily Out of Use		X			
	Permanently Out of Use					
	Brought into Use after 5/8/86					
2. Estimated Age (Years)						
3. Estimated Total Capacity (Gallons)		10,000	10,000	10,000	10,000	8,000
4. Material of Construction (Mark one ☒)	Steel	X	X	X	X	X
	Concrete					
	Fiberglass Reinforced Plastic					
	Unknown					
	Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)	Cathodic Protection					
	Interior Lining (e.g., epoxy resins)					
	None	X	X	X	X	X
	Unknown					
	Other, Please Specify					
6. External Protection (Mark all that apply ☒)	Cathodic Protection					
	Painted (e.g., asphaltic)	X	X	X	X	X
	Fiberglass Reinforced Plastic Coated					
	None					
	Unknown					
	Other, Please Specify					
7. Piping (Mark all that apply ☒)	Bare Steel					
	Galvanized Steel	X	X	X	X	X
	Fiberglass Reinforced Plastic					
	Cathodically Protected					
	Unknown					
	Other, Please Specify	Line leak detector		Line leak detector	Line leak detector	Line leak detector
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)	a. Empty					
	b. Petroleum					
	Diesel	X	X	X	X	
	Kerosene					X
	Gasoline (including alcohol blends)					
	Used Oil					
	Other, Please Specify					
	c. Hazardous Substance					
Please Indicate Name of Principal CERCLA Substance OR Chemical Abstract Service (CAS) No.						
Mark box ☒ if tank stores a mixture of substances	d. Unknown					
9. Additional Information (for tanks permanently taken out of service)	a. Estimated date last used (mo/yr)	/	1 / 86	/	/	/
	b. Estimated quantity of substance remaining (gal.)		0			
	c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)					

Name (from Section I) Western Co NA — Location (from Section II) Farmington — Page No. 2 of 2 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location)

Identification No. (e.g., ABC-123), or Facility Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 6	Tank No. 7	Tank No. 8	Tank No. 9	Tank No.
Tank Status (Mark all that apply ☒) — Currently in Use	X	X	X	X	
Temporarily Out of Use					
Permanently Out of Use					
Brought into Use after 5/8/86					
Estimated Age (Years)					
Estimated Total Capacity (Gallons)	1,000	1,000	1,000	1,000	
Material of Construction (Mark one ☒) — Steel	X	X	X	X	
Concrete					
Fiberglass Reinforced Plastic					
Unknown					
Other, Please Specify					
Internal Protection (Mark all that apply ☒) — Cathodic Protection					
Interior Lining (e.g., epoxy resins)					
None	X	X	X	X	
Unknown					
Other, Please Specify					
External Protection (Mark all that apply ☒) — Cathodic Protection					
Painted (e.g., asphaltic)	X	X	X	X	
Fiberglass Reinforced Plastic Coated					
None					
Unknown					
Other, Please Specify					
Piping (Mark all that apply ☒) — Bare Steel					
Galvanized Steel	X	X	X	X	
Fiberglass Reinforced Plastic					
Cathodically Protected					
Unknown					
Other, Please Specify					
Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒) — a. Empty					
b. Petroleum					
Diesel					
Kerosene					
Gasoline (including alcohol blends)					
Used Oil				X	
Other, Please Specify	Motor oil	Pack oil	Motor oil		
c. Hazardous Substance					
Please Indicate Name of Principal CERCLA Substance OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances					
d. Unknown					
Additional Information (for tanks permanently taken out of service) — a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)					

ATTACHMENT

Pressurized line leak detectors were installed on pressurized motor fuel lines. Tightness tests were conducted on pressurized fuel lines. Work was completed on August 29, 1990 by

H&S Enterprises
3100 Bloomfield Highway
Post Office Box 1050
Farmington, New Mexico 87401
(505) 326-1118

State of New Mexico

ENVIRONMENT DEPARTMENT

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

UNDERGROUND STORAGE TANK INVOICE
FOR THE 1991 - 1992 YEAR

Invoice Number: UST-0-965-80

DEC 9 1991

Account : WESTERN CO OF NORTH AMERICA
ATTN BENNY HO
515 POST OAK BLVD SUITE 915
HOUSTON TX 770279407

Date : 03-DEC-91

1991 Amount Due-
Past Due:$1,300.00
Adjustments: $.00
Total Amount Due:$1,300.00

Invoices for 1991-1992 were mailed out June 12, 1991. Payment for your tank fees has not bee received by this office. Balances from the 1990-1991 billing will also appear on the 1991-1992 invoice.

If payment is not received within 30 days from the date of this invoice, The Environment Department will collect late fees and penalties in accordance with Part III, Section 302, LATE PAYMENT PENALTIES OF THE UNDERGROUND STORAGE TANK REGULATIONS. If these tank(s) have been sold or removed, please send a letter of explanation, including names and dates so that this office can invoice the proper owner.

Please mail payment to the address listed below ONLY. Utilize a check or money order. DO NOT SEND CASH. Please list your invoice number on your check. If you have questions or problems with this billing, please call the Underground Storage Tank Bureau at 827-0216, 827-0188, or 827-2913.

PLEASE DETACH AND RETURN THIS SECTION WITH YOUR PAYMENT

Make Checks Payable To : UNDERGROUND STORAGE TANK BUREAU

Mail Checks To: NEW MEXICO ENVIRONMENT DEPARTMENT, PSB
ATTN: USER FEE COLLECTIONS, RM S4051
HAROLD RUNNELS BUILDING
1190 ST FRANCIS DRIVE - PO BOX 26110
SANTA FE, NM 87502

Invoice Number: UST-0-965-80

Account : WESTERN CO OF NORTH AMERICA
ATTN BENNY HO
515 POST OAK BLVD SUITE 915
HOUSTON TX 770279407

Date : 03-DEC-91

1991 Amount Due-
Past Due:$1,300.00
Adjustments: $.00
Total Amount Due:$1,300.00

Amount Enclosed: $1300

New Mexico DRUG FREE It's a State of Mind!

Harold Runnels Building • 1190 St. Francis Drive • P.O. Box 26110 • Santa Fe, New Mexico 87502
(505) 827-2850 FAX (505) 827-2836

UNDERGROUND STORAGE TANK INVOICE FOR THE 1991-1992 YEAR

Invoice Number: UST-0-965-80 03-DEC-91 - PAGE: 2

Account : WESTERN CO OF NORTH AMERICA

TANK LOCATION	1990 TANKS	1991 TANKS
WCNA FARMINGTON DISTRICT 3250 SOUTH SIDE RIVER RD FARMINGTON NM 87401	9	9
WESTERN CO OF NORTH AMERICA THE INDUSTRIAL PARK ARTESIA NM 88210	4	4
WESTERN CO OF NORTH AMERICA THE A WEST COUNTY RD 2708 HOBBS NM 88240	1	0

***
1990 TANK TOTAL = 14
1991 TANK TOTAL = 13
***

THE WESTERN COMPANY
OF NORTH AMERICA

P.O. BOX 56006
HOUSTON, TEXAS 77256

INVOICE NUMBER	INVOICE DATE	NET AMOUNT	INVOICE NUMBER	INVOICE DATE	NET AMOUNT	INVOICE NUMBER	INVOICE DATE	NET AMOUN
124		$1300.00	11-1311-714-047-00 11-1011-714-047-00		900.00 400.00	T1		
			INV. UST-0-065-80					

TOTAL NUMBER OF INVOICES

TOTAL NET AMOUNT

THE WESTERN COMPANY
OF NORTH AMERICA

HOUSTON, TEXAS

62-20
311

IN FULL PAYMENT OF ITEMS SET FORTH ON THE ACCOMPANYING REMITTANCE ADVICE

CHECK NO.	DATE	VENDOR NO.	GROSS		AMOUNT OF CHECK
[redacted]	12/09/91		$1300.00		$1300.00

PAY EXACTLY REGISTERED D-26111 $1,300dol's00cts

PAY TO THE ORDER OF
NEW MEXICO ENVIRONMENTAL DEPARTMENT PSB
ATTN USER FEE COLLECTIONS RM S4051
1190 ST FRANCIS DRIVE
SANTA FE NM 87502

CITIBANK DELAWARE, ONE PENN'S WAY NEW CASTLE, DE 19720

[redacted]

HEALTH ENVIRONMENT department

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020
STEVEN ASHER, Director
AIR QUALITY BUREAU

TONEY ANAYA
GOVERNOR

ROBERT McNEILL
SECRETARY

ROBERT L. LOVATO, M.A.P.A.
DEPUTY SECRETARY

JOSEPH F. JOHNSON
DEPUTY SECRETARY

MAR 5 1984
Law & Administration

March 2, 1984

Ms. Kay Lamb
Legal Assistant
The Western Co. of North America
P.O. Box 186
Fort Worth, TX 76101

RE: Modification to the Farmington Cement Blending Plant - Bulk Cement Blending/Storage Facilty

Dear Ms. Lamb:

Your permit application to modify the Farmington Cement Blending Storage facility located at 320 South Side River Road, Farmington, NM 87401 was received by the Division on February 27, 1984.

The results of our review show that the estimated total particulate emissions from the facility to be 6.6 lb/hr and 598.6 lb/yr. These emissions are less than 10 lb/hr or 25 ton/yr and thus in accordance with New Mexico Air Quality Control Regulation No. 702, paragraph A, no permit is required to modify the above mentioned facility.

The estimated emissions do not exceed 2000 pounds per year from this facility and, therefore, in accordance with New Mexico Air Quality Control Regulation No. 703 a Registration Certificate is not required. If you make any changes in the facility in the future please contact our Division.

Your cooperation with the Division is greatly appreciated. If we can be of any further help, please contact us at the above address or phone number.

Sincerely,

Deodat Bhagwandin, P. E.
New Source Review Unit
Stationary Sources Section

DB:lo

HEALTH ENVIRONMENT department

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87503
(505) 827-5271
Thomas E. Baca, M.P.H., Director
ENGINEERING SECTION

Bruce King
GOVERNOR

George S. Goldstein, Ph.D.
SECRETARY

Larry J. Gordon, M.S., M.P.H.
DEPUTY SECRETARY

May 28, 1979

CERTIFIED MAIL NO. 375352
RETURN RECEIPT REQUESTED

The Western Company of North America
P.O. Box 186
Forth Worth, Texas 76101

RE: Sand Storage and Acid Storage capacity increases at relocated Farmington operations - Application No. 243

Attention: Ms. Kay Lamb, Legal Assistant

To Whom it May Concern:

Your permit application and registration received May 28th concerning additional capacity to sand and acid storage tanks at Western's Farmington facility has been reviewed.

The estimated emissions resulting from your plant expansion are less than ten pounds per hour or less than 25 tons per year.

Therefore, in accordance with Regulation 702 (since <10 lbs/hr, <25 tons tons/yr) the plant expansion may proceed. A permit is not required.

This letter supercedes the temporary permit of May 10, 1979 issued by Mr. D. E. Tryk, Chief, Engineering Section.

If you have any questions feel free to contact the undersigned.

Sincerely,

Richard C. Neal

Richard C. Neal, P.E.
Air Pollution Engineering Review

RCN:lo

need to be send to Farmington

HEALTH ENVIRONMENT department

ENVIRONMENTAL IMPROVEMENT DIVISION
STATE OF NEW MEXICO
P.O. BOX 968
SANTA FE, NEW MEXICO 87503
ENGINEERING SECTION
(505) 827-5271 ext. 310

Jerry Apodaca
GOVERNOR

GEORGE S. GOLDSTEIN, Ph.D.
SECRETARY FOR HEALTH & ENVIRONMENT

December 7, 1978

Ms. Kay Lamb, Legal Assistant
The Western Company of North America
Box 186
Fort Worth, TX.76101

Dear Ms. Lamb:

The information you supplied regarding the Western Company sand and acid facilities at Farmington, Hobbs, and Artesia has been reviewed by this Section. Based on this information it is our opinion that these facilities are in compliance with New Mexico Air Quality Control Regulations.

Thank you for your cooperation in this matter.

Sincerely,

James G. Lareau, P.E.
Air Pollution Engineering Review Unit

JGL:lo

CITY OF FARMINGTON, NEW MEXICO
800 MUNICIPAL DR.
FARMINGTON, NEW MEXICO 87401
505/327-7701

To : Western Company of North America
Farmington, New Mexico

October 10, 1989

Preliminary Discharge Limits

CONSITUENT	CONCENTRATION, mg/l
Benzene	0.01
Toluene	0.75
Ethylbenzene	0.75
Xylenes	0.62
[illegible]chloroethane	0.01
Ethylene dibromide	0.0001
Total naphthalenes plus monomethylnaphthalenes	0.03
Lead	0.05
Iron	1.0
Manganese	0.02

Thank You !
Gary K. Lee
Environmental Coordinator
City Of Farmington N.M.
800 Municpal Drive
Farmington N.M. 87401
Phone 327-7701 ext.1409