UICI – I – 005

PERMITS, RENEWALS, & MODS

2013

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division

DECEMBER 10, 2015

CERTIFIED MAIL
RETURN RECEIPT NO: 3771 5893

Mr. Jeff Davis
Manager/Owner
Agua Moss, LLC
P.O. Box 600
Farmington, New Mexico 87499

RE: **Modification of Underground Injection Control (UIC) Class I (non-hazardous) Disposal Well Discharge Permit (UICI-005) to Require Annual Fall-Off Testing per EPA Regulation §40 CFR146.13(d)(1)**

Dear Mr. Davis:

The New Mexico Oil Conservation Division (OCD) in cooperation with the U.S. Environmental Protection Agency (EPA) Region 6 Office on Tuesday, October 6, 2015, determined that OCD shall increase the frequency of Fall-Off Testing (FOT) for all Underground Injection Control (UIC) Class I (non-hazardous) Injection Well Operators to at least annually per § 40CFR 146.13(d) (1) (see federal regulation below).

§ 146.13 Operating, monitoring and reporting requirements.
(d) *Ambient monitoring.* (1) *Based on a site-specific assessment of the potential for fluid movement from the well or injection zone and on the potential value of monitoring wells to detect such movement, the Director shall require the owner or operator to develop a monitoring program. At a minimum, the Director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shut-down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.*

Therefore, effective immediately, OCD revises Section 3.E. Fall-Off Test of the discharge permit issued to Agua Moss, LLC on October 11, 2012, to require annual FOTs. FOTs shall be completed before September 30th of each year from now on. Well operators shall schedule FOTs with OCD at least 30 days prior to testing to allow OCD to witness key aspects of the FOT, i.e., bottom hole pressure gauge installation, and just prior to injection well pump shut-off and initiation of FOT monitoring.

If you have any questions, please contact Carl Chavez of my staff at (505) 476-3490, mail at the address below, or email at CarlJ.Chavez@state.nm.us. Thank you.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/cjc

cc: OCD Aztec District Office

Lisa Pham, EPA Region 6

State of New Mexico
Energy, Minerals and Natural Resources Department

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Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division

June 2, 2015

Ms. Shacie Murray
Agua Moss, LLC
PO Box 600
Farmington, New Mexico 87499

RE: Facility Closure and Post-Closure Care Plan Review
Agua Moss, LLC - Commercial Surface Waste Management Facility
Permit NM1-009: Agua Moss Surface Waste Management Facility
Location: Section 2, Township 29 North, Range 12 West, NMPM
San Juan County, New Mexico

Dear Ms. Murray:

The Oil Conservation Division (OCD) has reviewed Agua Moss, LLC's (Agua Moss) facility closure and post-closure care plan, dated June 1, 2015, for the closure and post-closure of the OCD permitted commercial surface waste management facility: Agua Moss Surface Waste Management Facility Permit NM-1-009. Based on the information provided, the closure and post-closure care plan **is hereby approved** with the following understandings and conditions:

1. Agua Moss shall comply with all applicable requirements of the Surface Waste Management Facilities Rule (19.15.36 NMAC), the Oil and Gas Act (Chapter 70, Article 2 NMSA 1978), and all conditions specified in this approval;

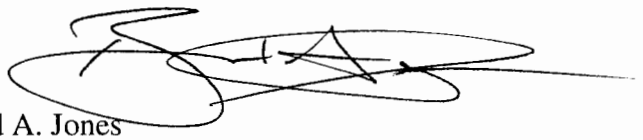
2. Agua Moss shall ensure that the closure and post-closure activities identified in the June 1, 2015 submittal are completed as proposed in the facility closure and post-closure care plan; and

3. Agua Moss shall obtain written approval from OCD prior to implementing any changes to the June 1, 2015 facility closure and post-closure care plan.

Please be advised that approval of this request does not relieve Agua Moss of liability if its operations result in pollution of surface water, ground water, or the environment. Nor does approval relieve Agua Moss of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact me at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,



Brad A. Jones
Environmental Engineer

BAJ/baj

cc: OCD District III Office, Aztec
Carl Chavez, OCD Environmental Bureau, Santa Fe
Merrion Oil & Gas Corp., Ryan Davis, 610 Reilly Ave., Farmington NM 87401

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

OCTOBER 11, 2012

CERTIFIED MAIL
RETURN RECEIPT NO: 0919 5921

Mr. Jeff Davis
Manager/Owner
Agua Moss, LLC
P.O. Box 600
Farmington, New Mexico 87499

RE: OCD RESPONSE TO COMMENTS ON DRAFT DISCHARGE PERMIT AND APPROVAL OF FINAL DISCHARGE PERMIT RENEWAL FOR THE CLASS I NON-HAZARDOUS WASTE INJECTION WELL (SUNCO DISPOSAL WELL NO. 1 - API NO. 30-045-28653), LOCATED 1595 FNL AND 1005 FWL (SW/4 NW/4) IN SECTION 2, TOWNSHIP 29 NORTH, RANGE 12 WEST, NMPM, SAN JUAN COUNTY, NEW MEXICO

Dear Mr. Davis:

On August 17, 2012, the Oil Conservation Division (OCD) provided Agua Moss, LLC (Permittee) with a revised draft renewal discharge permit that added a new permit condition (see Permit Condition 3.E. – Fall-Off Test) and made several minor corrections. Agua Moss was given an additional 30 days to review the additional permit condition and provide OCD with any comments. On September 7, 2012, OCD sent Agua Moss a slightly revised draft permit. The revisions (Permit Condition 3E) addressed Fall-Off Test requirements. On September 14, 2012, Ms. Philana Thompson provided OCD with two comments on the revised draft permit. Ms. Thompson indicated that Agua Moss agreed with the revisions to Permit Condition 3E and also requested that Permit Conditions 2A and 2I be changed by changing the reporting frequency from quarterly to annual.

OCD has slightly revised the language of Permit Condition 3E to refer to the use of OCD's 2007 Fall-Off Test Guidance. OCD has also corrected some internal formatting inconsistencies and typos.

OCD has not changed Permit Conditions 2A and 2I as requested because 20.6.2.5207B and 20.6.2.5207A(2) NMAC require that permittees submit quarterly reports. OCD revised Permit Condition 2I by adding a section for Quarterly Reporting in addition to the section for an Annual Report. OCD also revised Permit Condition 5A (Schedule of Compliance) to specify that the Permittee shall submit both quarterly and annual reports.

The discharge permit renewal (UICI-005) for the Agua Moss Class I Non-Hazardous Waste Injection Well (Sunco Disposal Well No. 1 - API No. 30-045-28653), located 1595 FNL And 1005 FWL (SW/4 NW/4) in Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, **is hereby approved** under the terms and conditions specified in the enclosed Discharge Permit.

OCD approves this discharge permit renewal pursuant to 20.6.2.3109A NMAC. Please note 20.6.2.3109G NMAC, which provides for possible future amendment of the permit. Please be advised that approval of this discharge permit does not relieve Agua Moss of liability if operations result in pollution of surface water, ground water, or the environment.

Please note that 20.6.2.3104 NMAC specifies "*When a permit has been issued, discharges must be consistent with the terms and conditions of the permit.*" Pursuant to 20.6.2.3107C NMAC, Agua Moss is required to notify the Director of any increase in the injection volume or injection pressure, or process modification that would result in any change in the water quality or volume of the discharge.

This discharge permit will expire on **June 1, 2017**, and Agua Moss should submit a discharge permit renewal application in ample time before this date. Note that under 20.6.2.3106F NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved discharge permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

The discharge permit renewal application for the Agua Moss Class I Non-Hazardous Waste Injection Well is subject to 20.6.2.3114 NMAC. Every billable facility submitting a discharge permit renewal application is assessed a non-refundable filing fee of $100.00. OCD has already received the required $100.00 filing fee and the $4,500.00 permit fee for a Class I non-hazardous waste injection well.

If you have any questions, please contact Glenn von Gonten of my staff at (505-476-3488) or email: Glenn.vonGonten@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Jami Bailey
Director

JB/gvg

DISCHARGE PERMIT UICI-005

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department issues Discharge Permit UICI-005 (Discharge Permit) to Agua Moss, LLC (Permittee) to operate its Underground Injection Control (UIC) Class I non-hazardous waste injection well (SUNCO Disposal Well No. 1 - API No. 30-045-28653) located 1595 FNL and 1005 FWL (SW/4 NW/4) in Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico at its Commercial Disposal Facility (Facility). The Facility is located approximately 6 miles southwest of Aztec near the intersection of CR-3500 and CR-3773. The Permittee also operates a Surface Waste Management Facility (NM1-009) separately permitted by OCD pursuant to 19.15.2.36 NMAC at the same location.

The Permittee is permitted to dispose of only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil-field waste fluids into its Class I non-hazardous waste injection well. The Permittee may dispose a maximum of 4,000 bbls/day of oil-field waste fluids. Ground water that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 40 feet below ground surface and has a total dissolved solids concentration of approximately 450 mg/L.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class I non-hazardous waste injection wells (see Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (see 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class I non-hazardous waste injection well is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil-field waste, other than non-hazardous oil-field waste fluids into its Class I non-hazardous waste injection well, including, but not limited to, the on-site disposal of lube oil, glycol, antifreeze, washdown water, and cooling tower blowdown water. The Permittee may not dispose of any industrial waste fluid that is not generated in the oil-field. The Ground Water Quality Bureau of the New Mexico Environment Department permits the management of all field industrial fluids that are not generated in the oil-field.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

1. The injection of fluids into a motor vehicle waste disposal well is prohibited.

2. The injection of fluids into a large capacity cesspool is prohibited.

3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.

4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.

5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified in 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class I non-hazardous waste injection wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified in 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject non-hazardous fluids into ground water having 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (see Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT RENEWAL: This Discharge Permit is a permit renewal that replaces the permit being renewed. Replacement of a prior permit does not relieve the Permittee of its responsibility to comply with the terms of that prior permit while that permit was in effect.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required $100.00 filing fee and the $4,500.00 permit fee for a Class I non-hazardous waste injection well.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective 30 days from the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit will expire on **June 1, 2017.** The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (see Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and the OCD's Environmental Bureau of any Facility expansion, any injection increase above the approved pressure limit or volume limit specified in Permit Condition 3.B.2, or process modification that would result in any significant modification in the discharge of water contaminants (see 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class I non-hazardous waste injection well that was approved pursuant to the requirements of this 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

a. Noncompliance by Permittee with any condition of this Discharge Permit; or,

b. The Permittee's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee's misrepresentation of any relevant facts at any time; or,

c. A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge permit modification or termination (see Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and, 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

a. Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;

b. Violation of any applicable state or federal effluent regulations or limitations; or

c. Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge (see Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS I NON-HAZARDOUS WASTE INJECTION WELL DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class I non-hazardous waste injection well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class I non-hazardous waste injection well discharge permit if:

a. The OCD Director receives written notice 30 days prior to the transfer date; and,

b. The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2.a shall:

a. Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgment that the succeeding Permittee shall be responsible for compliance with the Class I non-hazardous waste injection well discharge permit upon taking possession of the facility;

b. Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

c. Include information relating to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS: Pursuant to 20.6.2.5207B, the Permittee shall provide analysis of the injected fluids at least quarterly to yield data representative of their characteristics.

The Permittee also conducts waste management operations at its facility in accordance with an OCD surface waste management facility permit (NM1-009). That permit authorizes the Permittee to accept only oil-field wastes that are exempt from RCRA Subtitle C regulations and that do not contain Naturally Occurring Radioactive Material regulated pursuant to 20.3.1.1403 (NORM) and non-hazardous, non-exempt oil-field wastes that do not contain NORM. The Permittee is authorized to accept non-hazardous, non-exempt oil-field wastes on a case-by-case basis only after a hazardous waste determination is made by the generator. The Permittee is authorized to accept non-hazardous, non-exempt oil-field wastes only if those wastes are accompanied by an approved form C-138 (Request for Approval to Accept Solid Waste) and a "Generator Certificate of Waste Status," signed by the generator. OCD Permit NM1-009 requires the Permittee to determine by analyzing the non-hazardous, non-exempt fluids that the waste fluids are non-hazardous before accepting the waste fluids for disposal at the facility; therefore, OCD will not require the Permittee to re-analyze the waste fluids to determine whether it is hazardous before injecting the waste fluid in its Class I non-hazardous waste injection well.

The Permittee shall analyze the injected fluids quarterly for the following characteristics:

- pH;
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature; and,
- General ground water quality parameters (general chemistry/cations and anions) including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate,

chloride, sulfate, total dissolved solids, cation/anion balance, pH, and bromide using the methods specified in 40 CFR 136.3.

2.B. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

2.C. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the waste injection well. The Permittee shall plug and abandon its Class I non-hazardous waste injection well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. Pre-Closure Notification: Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of its Class I non-hazardous waste injection well. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. Required Information: The Permittee shall provide OCD's Environmental Bureau with the following information:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);
- Address of Permittee (and owner or operator, if appropriate);
- Contact person;
- Phone number;
- Number and type of well(s);
- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (*e.g.*, sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type of well, ground water and vadose zone investigation, other);
- Proposed date of well closure;
- Name of Preparer; and,
- Date.

2.D. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon its Class I non-hazardous waste injection well, it shall submit to OCD a plugging and abandonment plan that meets the requirements of 20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or

updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.E. RECORD KEEPING: The Permittee shall maintain records of all inspections required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.F. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified in 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,
- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

2.G. OTHER REQUIREMENTS:

1. Inspection and Entry: Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director, to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any effluent before or after discharge; and,
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. **Advance Notice:** The Permittee shall provide OCD's Environmental Bureau and Aztec District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well plugging, abandonment or decommissioning of any equipment associated with its Class I non-hazardous waste injection well.

3. **Environmental Monitoring:** The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, and laboratory QA/QC.

2.H. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated with plugging and abandonment of the Class I non-hazardous waste injection well, surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective actions.

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required herein above.

2.I. REPORTING:

1. **QUARTERLY REPORTS:** The Permittee shall submit quarterly reports pursuant to 20.6.2.5208A NMAC to OCD's Environmental Bureau by September **1st**, December **1st**, and March **1st**, of each year. The quarterly reports shall include the following:

a. The physical, chemical and other relevant characteristics of injection fluids;

b. Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and

c. The results of monitoring prescribed under Section 20.6.2.5207B NMAC.

2. **ANNUAL REPORT:** The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1**st of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Well , Name of Permittee, Discharge Permit Number, API number of well(s), date of report, and person submitting report;
- Summary of Class I non-hazardous waste injection well operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103;
- Monthly injection/disposal volume, including the cumulative total should be carried over to each year;
- Maximum and average injection pressures;
- A copy of the quarterly chemical analyses shall be included with data summary and all QA/QC information;
- Copy of any mechanical integrity test chart, including the type of test, *i.e.,* duration, gauge pressure, *etc.;*
- Copy of fall-of test charts;
- Summary tables listing environmental analytical laboratory data for quarterly waste fluids samples. Any 20.6.2.3103 NMAC constituent(s) found to exceed a water quality standard shall be highlighted and noted in the annual report;
- The Permittee shall include copies of the most recent year's environmental analytical laboratory data sheets with QA/QC summary sheet information in conformance with the National Environmental Laboratory Accreditation Conference (NELAC) and EPA Standards;
- Brief explanation describing deviations from the normal injection operations;
- Results of any leaks and spill reports;
- An Area of Review (AOR) update summary;
- A summary with interpretation of MITs, Fall-Off Tests, *etc.*, with conclusion(s) and recommendation(s);
- Records of the expansion tank monitoring pressure, fluid removals and/or additions indicating the well MIT condition;
- A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and,

- The Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS I NON-HAZARDOUS WASTE INJECTION WELL OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC to ensure that:

1. The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that its Class I non-hazardous waste injection well is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall within 24 hours notify OCD's Environmental Bureau and Aztec District Office of the circumstances and action(s) taken. The Permittee shall cease operations until proper repairs are made and it has received approval from OCD to re-start injection operations.

3. Except during well stimulation, the maximum injection pressure shall not initiate new fractures or propagate existing fractures in the injection zone.

4. The annulus between the tubing and the long string of casing shall be filled with a fluid approved by the OCD Director and a pressure, also approved by the OCD Director shall be maintained on the annulus.

3.B. INJECTION OPERATIONS:

1. Injection Formation, Interval, and Waste Fluids: The Permittee shall inject only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil-field waste fluid into the Point Lookout Formation from 4,350 feet to 4,460 feet in its Class I non-hazardous waste injection well. The surface casing is set at 209 feet, the production casing is set at 4760 feet, the tubing is set at approximately 4,300 feet, and the packer is set at 4,282 feet. The Permittee shall ensure that the injected waste fluid enters only the above specified injection interval and is not permitted to escape to other formations or onto the surface.

2. Well Injection Pressure Limits and Injection Flow Rate: The Permittee shall ensure that the maximum wellhead or surface injection pressure on its Class I non-hazardous waste injection well shall not exceed 2,400 psig and that the injection flow rate shall not exceed 4,000 bbls/day.

3. Pressure Limiting Device: The Permittee shall equip and operate its Class I non-hazardous waste injection well or system with a Murphy switch pressure limiting device, or

equivalent, in workable condition, which shall, at all times, limit surface injection pressure to the maximum allowable pressure for its Class I non-hazardous waste injection well.

The Permittee shall monitor the pressure-limiting device daily and shall report all pressure exceedances within 24 hours of detecting an exceedance to OCD's Environmental Bureau. The Permittee shall take all steps necessary to ensure that the injected waste fluids enters only the proposed injection interval and is not permitted to escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated, or that damage to the well, the injection zone, or formation has occurred.

OCD may authorize an increase in injection pressure if the Permittee demonstrates that higher pressure will not result in migration of the injected fluid from the designated injection zone using a valid Step-Rate test run in coordination with a Fall-Off Test (FOT). If approvable, the Permittee must obtain a modification to this Discharge Permit pursuant to 20.6.2.3109 NMAC.

3.C. CONTINUOUS MONITORING DEVICES: The Permittee shall use continuous monitoring devices to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

3.D. MECHANICAL INTEGRITY FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall demonstrate mechanical integrity for its Class I non-hazardous waste injection well at least once every five years or more frequently as the OCD Director may require for good cause during the life of the well. The Permittee shall demonstrate mechanical integrity for its Class I non-hazardous waste injection well every time it performs a well workover, including when it pulls the tubing or reseats the packer. A Class I non-hazardous waste injection well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which OCD considers to be significant at maximum operating temperature and pressure; and no detectable conduit for fluid movement out of the injection zone through the well bore or vertical channels adjacent to the well bore which the OCD Director considers to be significant. The Permittee shall conduct a casing-tubing annulus Mechanical Integrity Test (MIT) from the surface to the approved injection depth to assess casing and tubing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 300 psig measured at the surface.

The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

2. The following criteria will determine if the Class I non-hazardous waste injection well has passed the MIT:

a. Passes MIT if zero bleed-off during the test;

b. Passes MIT if final test pressure is within ± 10% of starting pressure, if approved by OCD;

c. Fails MIT if any final test pressure is greater than ± 10% of starting pressure. Permittee shall investigate for leaks and demonstrate the mechanical integrity of the well by ensuring there are no leaks in the tubing, casing, or packer, and that injected are confined within the piping and/or injection zones. The Permittee shall not resume injection operations until approved by OCD.

d. When the MIT is not witnessed by OCD and fails, the Permittee shall notify OCD within 24 hours of the failure of the MIT.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use by the Permittee of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry. When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

5. The Permittee shall conduct a Bradenhead test at least annually and each time that it conducts a MIT.

3.E. FALL-OFF TEST: The Permittee shall conduct a Fall-Off Test (FOT) to monitor the pressure buildup in the injection zone at least every other year, including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve. The Permittee shall follow OCD's 2007 *New Mexico Oil Conservation Division UIC Class I Well Fall-Off Test Guidance* when conducting a FOT. The Permittee shall submit the results of its Fall-Off Test to OCD's Environmental Bureau and Aztec District Office within 30 days.

3.F. WELL WORKOVER OPERATIONS: Pursuant to 20.6.2.5205A(5) NMAC, the Permittee shall provide notice to and shall obtain approval from OCD's Environmental Bureau prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Aztec District Office. After completing remedial work, pressure tests, or any other workover operations, the Permittee shall run a Fall-Off Test to determine what changes have occurred in the injection zone.

3.G. EXTERNAL EXPANSION TANK: The Permittee shall equip its Class I non-hazardous waste injection well with an external expansion tank (tank) system under constant 100 psig pressure connected to the casing-annulus. The Permittee shall fill the external expansion

tank half-full (250 gallon expansion tank) with an OCD-approved liquid to establish an equilibrium volume and liquid level. The Permittee shall monitor the liquid levels in the external expansion tank at least weekly and shall record all additions or removals of liquids into or out of the external expansion tank. The Permittee shall record any loss or gain of fluids in the external expansion tank, and if significant, report the loss or gain to OCD's Environmental Bureau. The Permittee shall provide the weekly expansion tank volume fluid volumes readings and the fluid volume additions or removals from the expansion tank on a quarterly basis.

3.H. INJECTION RECORD VOLUMES AND PRESSURES: The Permittee shall submit quarterly reports of its injection operations and well workovers. The Permittee shall record the minimum, maximum, average flow waste injection volumes (including total volumes) and annular pressures of the injected waste fluids on a monthly basis, and shall submit the data to OCD's Environmental Bureau on a quarterly basis.

The Permittee shall fill the casing-tubing annulus with an OCD-approved liquid and install a Murphy pressure switch, as described in the Permittee's permit renewal application, in order to detect leakage in the casing, tubing, or packer.

3.I. AREA OF REVIEW (AOR): The Permittee shall report within 72 hours of discovery any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class I non-hazardous waste injection well.

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.,* septic systems, leach fields, dry wells, *etc.*) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. QUARTERLY AND ANNUAL REPORTS: The Permittee shall submit its quarterly and annual reports to OCD as specified in Permit Condition 2I.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class I non-hazardous waste injection well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (see 20.6.2.5210B(17) NMAC). The Permittee's cost estimate shall be based on third person

estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Friday, July 12, 2013 2:18 PM
To:	'Philana Thompson'
Cc:	Dawson, Scott, EMNRD; Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Perrin, Charlie, EMNRD
Subject:	Agua Moss LLC UICI-005 Discharge Permit Modification Request
Attachments:	MOG.pdf; Americoat385.pdf

Philana:

The New Mexico Oil Conservation Division (OCD) Environmental Bureau has completed its review of the above subject "Modification Request".

The OCD hereby **approves** the modification request with the Conditions of Approval (COAs) cited below.

COAs:

1) Provide verification to the OCD within 30-days of work completion that the contingency plan was implemented during the removal of the 8 tanks removed by the former operator. If no records exist verifying that no spills or leaks were identified during the tank removals, the operator shall conduct an inspection in accordance with its Contingency Plan and provide verification, i.e., color photos of the tank removal locations, Best Professional Judgment, environmental sampling, etc. that contamination is not present at those locations.
2) A surface facility survey map(s) to scale with "North" arrow shall be submitted to reflect all existing surface facility units shall be submitted within 30-days of work completion to update the OCD Administrative Record.
3) The operator shall handle any affected units regulated under NM1-9 under applicable regulations.
4) The operator shall consider the use of any plastic piping in connection with the disposal well. The HDPE pipe underground infrastructure, which appears to be connected to the injection well shall be threaded due to the high operating pressures that may cause leakage to a thermally heat fused or glued pipeline connections. A pressure monitoring system shall be incorporated into the "as built" design of the subsurface pipelines to detect leakage. In addition, OCD recommends Schedule 40 pipe be used in the construction because there appears to be the potential for plastic pipe Schedules greater than 40 or 80 to be installed at the facility, which may not adequately protect the environment.
5) An engineering "As Built" drawing to scale of subsurface piping shall be provided to the OCD with the information above.

Please provide any clarification(s) based on the COAs listed above as needed in response to any OCD identified concerns.

Please contact me if you have questions. Thank you.

Please be advised that OCD approval o this modification request does not relieve Agua Moss LLC of responsibility should their operations fail to adequately investigate and remediate contamination that poses a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve Agua Moss LLC of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

From: Philana Thompson [mailto:pthompson@merrion.bz]
Sent: Thursday, July 11, 2013 4:45 PM
To: Chavez, Carl J, EMNRD
Subject: Fwd: Scanned File

request to add & move tanks

see attached

---------- Forwarded message ----------
From: **Philana Thompson** <pthompson@merrion.bz>
Date: Thu, Jul 11, 2013 at 5:31 PM
Subject: Scanned File
To: PThompson@merrion.bz

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Philana Thompson
Regulatory Compliance
Merrion Oil & Gas Corp
cell 505-486-1171
office 505-324-5336

Chavez, Carl J, EMNRD

From: Philana Thompson <pthompson@merrion.bz>
Sent: Thursday, July 11, 2013 4:45 PM
To: Chavez, Carl J, EMNRD
Subject: Fwd: Scanned File
Attachments: MOG.pdf

request to add & move tanks

see attached

---------- Forwarded message ----------
From: **Philana Thompson** <pthompson@merrion.bz>
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Subject: Scanned File
To: PThompson@merrion.bz

--
Philana Thompson
Regulatory Compliance
Merrion Oil & Gas Corp
cell 505-486-1171
office 505-324-5336

Sunco Disposal #1 30-045-28653 UIC1-5
Prepared by: Philana Thompson pthompson@merrion.bz 505-486-1171

MODIFICATIONS: Agua Moss, LLC would like to request a minor modification to the UICI-5 permit for the Class 1 Sunco Disposal Well.. Agua Moss, LLC plans to re-locate the 4 settling tanks and trailer office as outlined in the attached diagram; we will then add 5 new settling tanks and a vacuum tank. The steel suction tank pit along with associated lines will be cleaned out and removed. Please refer to Attachment A for details.

CONTINGENCY PLANS: Agua Moss, LLC shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

RELEASE REPORTING: Agua Moss, LLC shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. **Agua Moss**, LLC shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If it is determined that any constituent exceeds the standards specified at 20.6.2.3103 NMAC, then we shall report a release to OCD's Environmental Bureau.

Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, Agua Moss, LLC shall notify OCD's Environmental Bureau. We shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,
- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

Written Notification: Within one week after Agua Moss, LLC has discovered a discharge, we shall send written notification (form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification. Agua Moss, LLC shall provide subsequent written reports as required by OCD's Environmental Bureau.

Advance Notice: Prior to commencing the work Agua Moss, LLC will contact the OCD's Environmental Bureau and Aztec District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, along with the decommissioning of any equipment associated with its Class I non-hazardous waste injection well.

Environmental Monitoring: Agua Moss, LLC shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. Agua Moss, LLC will ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. Agua Moss, LLC shall submit data summary tables, all raw analytical data, and laboratory QA/QC.

Attachment A

The Facility diagram layout depicts that there are 12 tanks, this was a screen shot utilized from Google Earth. Prior to Agua Moss, LLC taking ownership of the Sunco Disposal #1 Key had already removed all but 4 tanks. Please see the current picture that depicts the current tanks that are being utilized. (Photo 1). The area for the tanks, Solids Pit, Vacuum Tank and Office is where the un-lined pond was located and has been closed.

Actions to be performed:

1. **Prep area for tank placement:**
    a. The entire tank area will be bermed and lined to hold at least 1 + 1/3 volume of all tanks.(see liner specs) with the interconnected tanks to be set within bermed area on top of liner. The area for the Vacuum tank & Solids put will be bermed & lined to hold at least 1 + 1/3 volume of the tanks.

2. **Tanks:** The settling tanks hold produced water & oil, Vacuum Tank & Solids Pit will hold solids until they are removed and disposed of.
    a. The four tanks currently on location will be moved up as shown in the Facility diagram layout, in the bermed area.
        i. #0720054 400 bbls
        ii. #0720047 400 bbls
        iii. #0720011 400 bbls
        iv. #0720051 400 bbls
    b. 5 -400 bbl tanks will then be placed in the bermed area next to the four tanks as shown in the facility diagram. (See attached Tank Specs)
    c. Vacuum Tank, 130 bbl lay down tank 5'x36' ¼" steel (insulated) used to remove solids from settling tanks into Solids Pit.
    d. Solids Pit, 480 bbl 9'x40' 8' tall ¼" steel w/ expanded metal cover and walkways.
3. **Pipes:** The facility will have both above ground pipes & below (See specs attached)
    a. The unloading lines and lines connecting the tanks will be above ground steel pipe.
    b. The remaining lines that will connect to the injection facility will be below ground plastic pipe.
4. **Office:** The office that is currently located at the South End of the facility will be moved and placed North of the unloading line.
5. **Cleanup & removal: Testing will be conducted by Envirotech, INC**
    a. The area where the tank battery was previously located will be sampled. A 5 point composite sample will be collected 6" to 12" from the surface, in accordance with the procedures specified in chapter nine of the EPA publication SW-846, test methods for evaluating solid waste, physical/chemical methods for TPH, BTEX, metals and other in-organics listed in Subsection A and B of 20.6.2.3103 NMAC. Sample results will be provided to the Santa Fe Environmental Bureau prior to any remediation activities. In the event that the samples show that they are above acceptable standards then Agua Moss, LLC shall comply with the applicable requirements of 19.15.29 NMAC and/or 19.15.30 NMAC. The area will then be remediated and gravel placed for esthetic purposes.

b. Upon approval of the closure plan for the NM1-9 surface waste permit, Agua Moss will remove the steel suction tank pit #1020122 400 bbls, clean it out at the decontamination area outlined in plan for the surface waste closure area, and transport the tank to the M&R storage yard. The area will then be sampled, a 5 point composite sample will be collected 6" to 12" from the surface, in accordance with the procedures specified in chapter nine of the EPA publication SW-846, test methods for evaluating solid waste, physical/chemical methods for TPH, BTEX, metals and other in-organics listed in Subsection A and B of 20.6.2.3103 NMAC. Sample results will be provided to the Santa Fe Environmental Bureau prior to any remediation activities. In the event that the samples show that they are above acceptable standards then Agua Moss, LLC shall comply with the applicable requirements of 19.15.29 NMAC and/or 19.15.30 NMAC. The area will then be remediated and gravel placed for esthetic purposes.

6. The remaining equipment will remain as outlined in UICI-5 permit (see UICI-5 diagram)

Facility Diagram Layout

Photo #1

UIC I 5 Diagram from Original Permit

North End of Location: Detailed diagram & Process description

Process:

Truck arrives on location, unloads into settle tanks. Approximately every two days the tank contents are transferred to pump house #1 through two filter pots (Pump House #2 is back up) and then injected down well head located in the injection well house.

STRENGTH • COMMITMENT • GUARANTEED CONTAINMENT

BTL™-40

DOUBLE SCRIM- LOW TEMPERATURE - HYDROCARBON STABLE

DESCRIPTION	BLACK 16 X 16 COUNT PER INCH	
FABRICATION & WAREHOUSE	PRINEVILLE, OREGON	
WEIGHT	19.1 OZ/SQ.YD. (+/-5%)	ASTM D 751
THICKNESS	40 MILS (+/-10%)	ASTM D 5199
COATING THICKNESS	3.0 MILS EACH (+/-10%)	
TENSILE STRENGTH (GRAB METHOD)	WARP 740 LBS. WEFT 650 LBS.	ASTM D 5034
ELONGATION TO BREAK	WARP 26 %	
TEAR STRENGTH (TONGUE METHOD)	WARP 153 LBS/INCH WEFT 174 LBS/INCH	ASTM D 2261
BURSTING STRENGTH (MULLEN)	1220 PSI	ASTM D 3786
HYDROSTATIC RESISTANCE	728 PSI	ASTM D 751
PUNCTURE RESISTANCE	131 LBS. FED. STD 101C, METHOD 2065 238 LBS. ASTM D 4833	
MOISTURE VAPOR TRANSMISSION	0.475 GRAMS/M2/24HRS.	ASTM E 96 B
LOW TEMPERATURE COLD CRACK	-85F	ASTM D 2136
PERMEABILITY	N/A	ASTM D 4491
CARBON BLACK CONTENT **CARBON BLACK DISPERSION**	2% A-1	
UV RESISTANCE	90% STRENGTH RETAINED AFTER 2000 HRS.	ASTM G-151

ALL DATA IS DRAWN FROM U.S. TESTING AND PRECISION LABORATORIES. AVAILABLE ON REQUEST.

12-14-2011

BTL

STRENGTH • COMMITMENT • GUARANTEED CONTAINMENT

[redacted]

Property	Test Method	Minimum Average Roll Value ENGLISH	Minimum Average Roll Value METRIC
Grab Tensile	ASTM D 4632	203 lb.	0.9 kN
Grab Elongation	ASTM D 4632	50%	50%
Mullen Burst	ASTM D 3786	380 psi	2619 kPa
Puncture	ASTM D 4833	120 lb.	0.533 kN
Trapezoid Tear	ASTM D 4533	80 lb.	0.355 kN
UV Resistance	ASTM D 4355	70%@500 hrs	70%@500 hrs
AOS	ASTM D 4751	80 sieve	0.15 mm
Permittivity	ASTM D 4491	1.5 sec^{-1}	1.5 sec^{-1}
Flow Rate	ASTM D 4491	110 $gal/min/ft^2$	4470 $L/min/m^2$

This goes down FIRST

TANK BATTY (Bench Mark Equipment)

SPECIFICATIONS FOR WELDED STEEL PRODUCTION TANKS

NOMINAL CAPACITY	SIZE	BOTTOM	SHELL AND DECK	NOMINAL WEIGHT
200 BBL	12' OD X 10'	1/4"	3/16"	5,106#
300BBL	12' OD X 15'	1/4"	3/16"	6,587#
400BBL	12' OD X 20'	1/4"	3/16"	8,182#
500BBL	12' OD X 25'	1/4"	3/16"	8,783#
500BBL	13'6" OD X 20'	1/4"	3/16"	9,281#

GENERAL NOTES

1. Benchmark Equipment & Tank Inc. tanks are shop fabricated.
2. Tanks fabricated can be vertical, cylindrical, aboveground, closed top, welded steel, with a conical top and flat bottom, or cone bottom and are intended for internal pressure not to exceed atmospheric.
3. These tanks are used by the oil production industry for storage of crude oil, water and other liquids commonly used by this industry.

GENERAL SPECIFICATIONS

1. Plate steel is ASTM A36 mild carbon steel
2. Bottom and wall joints are double welded butt construction
3. Tops are single welded butt construction
4. All connections are 4" diameter female NPT (Unless other specified by customer)
5. Thief hatch is 8" diameter, 4oz pressure and 4oz vacuum pressure (standard)
6. Cleanout (24" x 36") can either single or double door
7. Walkway lugs (4) are included
8. Exterior surfaces are power tool cleaned and painted. Exterior sandblasting and other coatings are available upon request
9. Interior surfaces are bare steel, Interior sandblasting and other coatings are available upon request
10. Tanks are air tested at 2.5psi

Steel Pipe other

Based on ASTM A53 Grade B or A106 Grade B Seamless
ANSI B31.1, 1977 with allowances for connections and fittings
reduces these working pressures approx. 25%

PIPE		PRESSURE–PSI		WATER HAMMER FACTOR	PIPE		PRESSURE–PSI		WATER HAMMER FACTOR
NOM. SIZE INCHES	SCH. NO.	WORKING	BURST		NOM. SIZE INCHES	SCH. NO	WORKING	BURST	
1/8	40	3500	20,200		2½	160	4200	15,700	5.43
1/8	80	4800	28,000		2½	XXS	6700	22,000	7.82
1/4	40	2100	19,500		3	40	1600	7,400	2.60
1/4	80	4350	26,400		3	80	2600	10,300	2.92
3/8	40	1700	16,200		3	160	4100	15,200	3.56
3/8	80	3600	22,500		3	XXS	6100	20,500	4.64
1/2	40	2300	15,600	63.4	3½	40	1500	6,800	1.94
1/2	80	4100	21,000		3½	80	2400	9,500	2.17
1/2	160	7300	26,700		4	40	1400	6,200	1.51
1/2	XXS	12300	42,100		4	80	2300	9,000	1.67
3/4	40	2000	12,900	36.1	4	160	4000	14,200	2.08
3/4	80	3500	17,600	44.5	4	XXS	5300	18,000	2.47
3/4	169	8500	25,000		5	40	1300	5,500	.960
3/4	XXS	10000	35,000		5	80	2090	8,100	1.06
1	40	2100	12,100	22.3	5	160	3850	13,500	1.32
1	80	3500	15,900	26.8	5	XXS	4780	16,200	1.49
1	160	5700	22,300	36.9	6	40	1210	5,100	.666
1	XXS	9500	32,700	68.3	6	80	2070	7,800	.738
1¼	40	1800	10,100	12.9	6	160	3760	13,000	.912
1¼	80	3000	13,900	15.0	6	XXS	4660	15,000	1.02
1¼	160	4400	18,100	18.2	8	40	1100	4,500	.385
1¼	XXS	7900	27,700	30.5	8	80	1870	6,900	.422
1½	40	1700	9,100	9.46	8	160	3700	12,600	.529
1½	80	2800	12,600	10.9	8	XXS	3560	12,200	.519
1½	160	4500	17,700	13.7	10	40	1030	4,100	.244
1½	XXS	7200	25,300	20.3	10	*80	1800	6,600	
2	40	1500	7,800	5.74	10	160	3740	12,500	.340
2	80	2500	11,000	6.52	10	XXS	3300	11,200	
2	160	4600	17,500	8.60	12	@40	1000	3,800	
2	XXS	6300	22,100	10.9	12	**80	1800	6,500	
2½	40	1900	8,500	4.02	12	160	3700	12,300	.239
2½	80	2800	11,500	4.54	12	XXS	2700	9,400	

The allowable pressures were calculated by the formula in the Code for Pressure Piping, ASA B31.1-1955, Section 3, par. 324(a),

$$P = \frac{25(t-C)}{D-2y(t-C)}$$

where P = allowable pressure in lb per sq in. (gauge)
S = allowable working stress in lb per sq in.
D = outside diameter in inches
t = design thickness in inches, or 12 1/2% less than the nominal thickness shown in the table
C = allowance in inches for corrosion and/or mechanical strength (C=0.05" has been used above for all pipe sizes)
y = a coefficient having values for ferritic steels, as follows:

0.4 up to and including 900°F
0.5 for 950°F
0.7 for 1000°F and above

The allowable working stresses were obtained from the Code for Pressure Piping, ASA B31.1.1-1955, Table 12.

Hydraulic machinery piping is not covered by the Code for Pressure Piping, but it is current practice to use stresses comparable with those given for Refinery and

pressures at 100°F tabulated above accordingly may be used, provided that water hammer or shock conditions are considered by reducing these values by the product of the flow rate in gallons per minute and the Water Hammer Factor tabulated above.

Thus if the flow rate is 100 gpm in a 2" extra strong line, the shock pressure created by water hammer is 100 x 6.52 = 652 lbs. per sq. in.; by deducting this from the value of 2500 lb per sq in. shown in the table the allowable static working pressure is found to be 1848 lb per sq in.

Burst pressures for pipe were calculated using formula

$$P = \frac{25t}{OD}$$

Where P = internal burst pressure, psig
S = allowable stress (60,000 psi
OD = outside diameter of tube in inches
t = nominal wall thickness

NOTES: *Not extra strong. Schedule 60 is extra strong in this size.

** Not extra strong. Extra strong does not have a schedule number in this size (ID of 12" XS is 11.75 inches)

@ Not standard weight. Standard weight does not have a schedule number in this size (ID of 12" Standard is 12.00 inches)

Steel Pipe- Size, Schedule and Flow Rates

Standard Pipe - Schedule 40

Pipe Size	OD	WALL	ID	INT AREA	WT/ FT	GPM @ 2 FPS	GPM @ 5 FPS	GPM @ 10 FPS	GPM @ 15 FPS	GPM @ 20 FPS	GPM @ 25 FPS
1/8	.405	.068	.269	.057	.245	.35	.89	1.8	2.7	3.5	4.4
1/4	.540	.088	.364	.104	.425	.65	1.6	3.2	4.8	6.5	8.1
3/8	.675	.091	.493	.191	.567	1.2	3.0	6.0	9.0	12.0	15.0
1/2	.840	.109	.622	.304	.852	1.9	4.8	9.5	12.0	19.0	23.8
3/4	1.050	.113	.824	.533	1.132	3.3	8.4	16.7	25.1	33.4	41.8
1	1.315	.133	1.049	.864	1.679	5.4	13.5	27.0	40.6	54.1	67.7
1 1/4	1.660	.140	1.380	1.495	2.273	9.4	23.4	46.8	70.3	93.7	117
1 1/2	1.900	.145	1.610	2.036	2.718	12.7	31.9	63.7	95.6	127	159
2	2.375	.154	2.067	3.356	3.653	21.0	52.5	105	157	210	263
2 1/2	2.875	.203	2.469	4.788	5.793	30.0	75.0	150	225	300	375
3	3.500	.216	3.068	7.393	7.575	46.3	116	232	347	463	579
3 1/2	4.000	.226	3.548	9.886	9.109	61.9	155	310	465	619	774
4	4.500	.237	4.026	12.73	10.79	79.7	199	399	598	797	997
4 1/2	5.000	.247	4.506	15.95	12.54	99.9	250	499	749	998	1249
5	5.563	.258	5.047	20.01	14.62	125	313	627	940	1253	1567
6	6.625	.280	6.065	28.89	18.97	181	452	904	1357	1810	2262
7	7.625	.301	7.023	38.74	23.54	243	607	1213	1820	2427	3033
8	8.625	.322	7.981	50.03	28.55	313	783	1567	2350	3134	3917
10	10.75	.365	10.02	78.85	40.48	494	1235	2470	3705	4940	6175
12	12.75	.406	11.94	111.9	53.56	701	1753	3506	5259	7012	8765

Extra Strong Pipe - XS - Schedule 80

WALL	ID	INT AREA	WT/ FT	GPM @ 2 FPS	GPM @ 5 FPS	GPM @ 10 FPS	GPM @ 15 FPS	GPM @ 20 FPS	GPM @ 25 FPS	Pipe Size
.095	.215	.036	.314	.23	.57	1.1	1.7	2.3	2.8	
.119	.302	.072	.535	.45	1.1	2.2	3.4	4.5	5.6	
.126	.423	.141	.738	.88	2.2	4.4	6.6	8.8	11.0	
.147	.546	.234	1.087	1.5	3.7	7.3	11.2	14.7	18.3	1
.154	.742	.433	1.473	2.7	6.8	13.6	20.5	27.1	33.9	
.179	.957	.719	2.171	4.5	11.3	22.5	33.8	45.0	56.3	
.191	1.278	1.283	2.996	8.0	20.0	40.1	60.2	80.3	100	1 1/4
.200	1.500	1.767	3.631	11.1	27.7	55.3	83.0	110	138	1
.218	1.939	2.953	5.022	18.5	46.2	92.5	139	185	231	
.276	2.323	4.238	7.661	26.5	66.4	133	199	265	332	2
.300	2.900	6.605	10.25	41.4	103	207	310	414	517	
.318	3.364	8.888	12.50	55.7	139	278	418	557	696	3
.337	3.826	11.50	14.98	72.0	180	360	540	720	900	
.355	4.290	14.45	17.61	90.5	226	453	679	905	1132	4
.375	4.813	18.19	20.78	114	285	570	855	1140	1425	
.432	5.761	26.07	28.57	163	408	816	1225	1633	2041	
.500	6.625	34.47	38.05	216	540	1080	1620	2160	2699	
.500	7.625	45.66	43.39	286	715	1430	2146	2861	3576	
.594	9.562	71.81	64.40	450	1125	2249	3374	4498	5623	
.688	11.37	101.61	88.57	636	1591	3182	4774	6365	7956	

Schedule 160 Pipe

Pipe Size	OD	WALL	ID	INT AREA	WT/ FT	GPM @ 2 FPS	GPM @ 5 FPS	GPM @ 10 FPS	GPM @ PS	GPM @ 20 FPS	GPM @ 25 FPS
1/2	.840	.187	.466	1.71	1.310	1.07	2.67	5.34	8.01	10.7	13.4
3/4	1.050	.218	.587	.271	1.940	1.70	4.24	8.49	12.7	17.0	21.2
1	1.315	.250	.815	.522	2.850	3.27	8.17	16.3	24.5	32.7	40.8
1 1/4	1.660	.250	1.160	1.060	3.764	6.62	16.6	33.1	49.7	66.2	82.8
1 1/2	1.900	.281	1.338	1.410	4.862	8.81	22.0	44.0	66.1	88.1	110
2	2.375	.343	1.689	2.241	7.450	14.0	35.1	70.2	105	140	175
2 1/2	2.875	.375	2.125	3.542	10.01	22.2	55.5	111	167	222	278
3	3.500	.437	2.626	5.416	14.30	33.9	84.8	170	254	339	424
4	4.500	.531	3.438	9.283	22.52	58.2	145	291	436	582	727
5	5.563	.625	4.313	14.61	33.0	91.5	229	458	686	915	1144
6	6.625	.718	5.189	21.15	45.30	132	331	662	994	1325	1656
8	8.625	.906	6.813	36.44	74.70	230	571	1142	1713	2284	2855
10	10.75	1.125	8.500	56.75	115.64	355	889	1777	2666	3555	4443
12	12.75	1.312	10.126	80.53	160.33	504	1261	2523	3784	5045	6306

Double Extra Strong Pipe

WALL	ID	INT AREA	WT/ FT	GPM @ 2 FPS	GPM @ 5 FPS	GPM @ 10 FPS	GPM @ 15 FPS	GPM @ 20 FPS	GPM @ 25 FPS	Pipe Size
.294	.252	.050	1.714	.32	.79	1.6	2.4	3.1	3.9	
.308	.434	.148	2.440	.93	2.3	4.6	6.9	9.2	11.5	
.358	.599	.282	3.659	1.8	4.4	8.8	13.3	17.7	22.1	
.382	.896	.630	5.214	4.0	9.9	19.8	29.6	39.5	49.4	1
.400	1.100	.950	6.408	6.0	14.9	29.8	44.6	59.5	74.1	1
.436	1.503	1.774	9.029	11.1	27.9	55.6	83.4	111	139	
.552	1.771	2.463	13.70	15.4	38.6	77.1	116	154	193	2
.600	2.300	4.154	18.58	26.0	65.1	130	195	260	325	
.674	3.152	7.803	27.54	48.9	122	244	367	488	611	
.750	4.063	12.97	38.55	81.2	203	406	609	812	1016	
.864	4.897	18.83	53.16	118	295	590	885	1180	1476	
.875	6.875	37.12	72.42	233	581	1163	1744	2325	2907	
1.000	8.750	60.13	104.1	377	942	1883	2825	3767	4709	
1.000	10.75	90.76	125.5	569	1421	2843	4264	5686	7107	

Plastic Pipe Below

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A Division of Chevron Phillips Chemical Company LP

When Performance Matters
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PERFORMANCE PIPE
DRISCOPLEX® 6400 SERIES
Oil, Gas Gathering & Energy Piping Systems

- Oil and Gas Gathering
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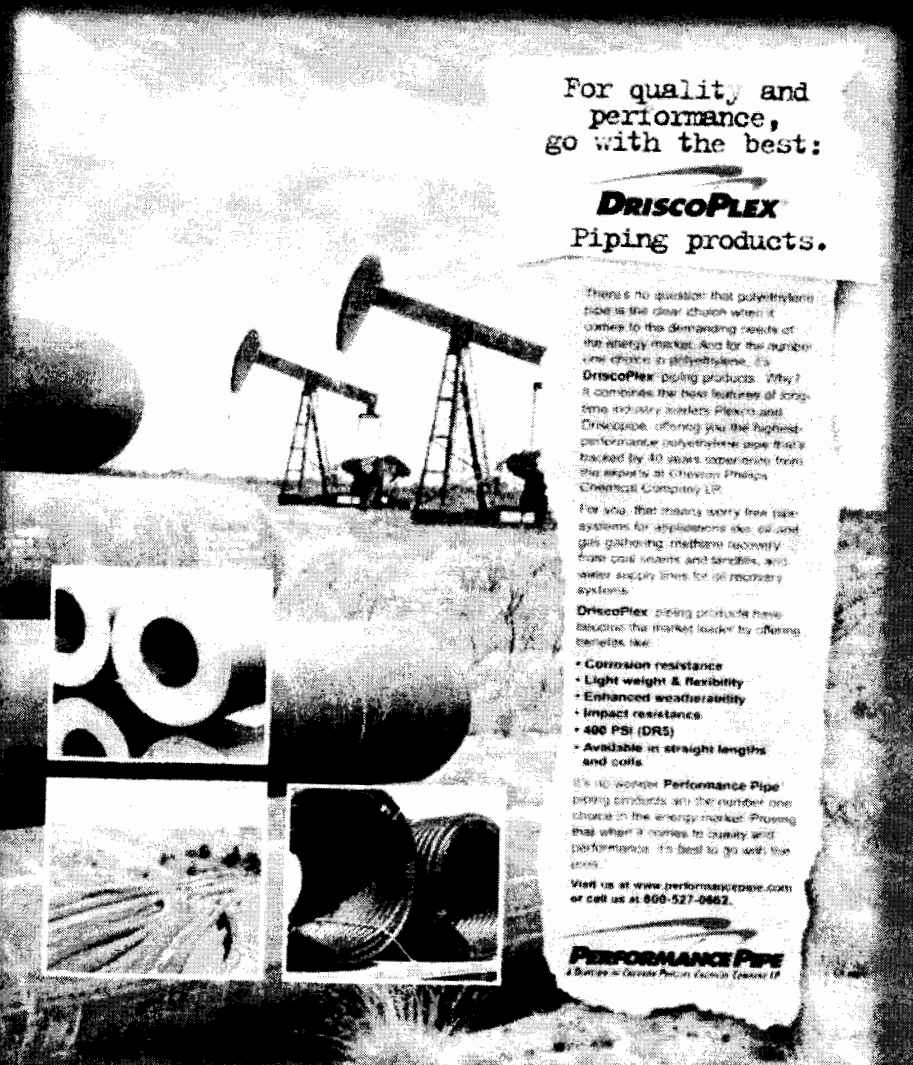
- Crude Oil Collection and Transportation
- Coal Bed Methane
- Shale Methane Recovery
- Shale Hydraulic Fracturing
- Sour Service Co2 and H2S
- Liners
- Landfill Methane Recovery
- Leachate Collection
- Raw Water Lines



PERFORMANCE PIPE
A DIVISION OF CHEVRON PHILLIPS CHEMICAL COMPANY LP

PE 4710 (PE3408)
Energy - DriscoPlex® 6400 Series
PE4710 IPS Pipe Data

Pipe weights are calculated in accordance with PPI TR-7. Average inside diameter calculated using nominal OD and minimum wall plus 6% for use in estimating fluid flows. Actual ID will vary. When designing components to fit the pipe ID, refer to pipe dimensions and tolerances in applicable pipe specifications. Pressure Ratings are for water at 73.4° F. For other fluid and service temperature, ratings may differ. Refer to Engineering Manual for Chemical and Environmental Considerations.

Pressure		400 psi			335 psi			250 psi			200 psi			160 psi			125 psi			
Rating		DR 6.0			DR 7.0			DR 9.0			DR 11.0			DR 13.5			DR 17			
IPS Pipe Size	Nom OD (in)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	IPS Pipe Size
1"	1.315	0.219	0.851	0.33	0.180	0.933	0.29													
1 1/4"	1.660	0.277	1.073	0.52	0.227	1.179	0.46	0.184	1.270	0.37	0.151	1.340	0.31	0.123	1.399	0.26				1 1/4"
1 1/2"	1.900	0.317	1.228	0.69	0.260	1.349	0.61	0.211	1.453	0.49	0.173	1.533	0.41	0.141	1.601	0.34				1 1/2"
2"	2.375	0.396	1.535	1.07	0.325	1.686	0.95	0.264	1.815	0.77	0.216	1.917	0.64	0.176	2.002	0.53	0.140	2.078	0.43	2"
3"	3.500	0.583	2.264	2.33	0.479	2.485	2.06	0.389	2.675	1.66	0.318	2.826	1.39	0.259	2.951	1.16	0.206	3.063	0.94	3"
4"	4.500	0.750	2.910	3.85	0.616	3.194	3.40	0.500	3.440	2.75	0.409	3.633	2.31	0.333	3.794	1.92	0.265	3.938	1.55	4"
6"	6.625	1.104	4.285	8.35	0.908	4.700	7.37	0.736	5.065	5.96	0.602	5.349	5.00	0.491	5.584	4.15	0.390	5.798	3.36	6"
8"	8.625	1.438	5.576	14.15	1.182	6.119	12.50	0.958	6.594	10.11	0.784	6.963	8.47	0.639	7.270	7.04	0.507	7.550	5.69	8"
10"	10.750	1.792	6.951	21.98	1.473	7.627	19.42	1.194	8.219	15.70	0.977	8.679	13.16	0.796	9.062	10.93	0.632	9.410	8.83	10"
12"	12.750	2.125	8.245	30.92	1.747	9.046	27.31	1.417	9.746	22.08	1.159	10.293	18.51	0.944	10.749	15.38	0.750	11.160	12.43	12"
14"	14.000				1.918	9.934	32.93	1.556	10.701	26.63	1.273	11.301	22.32	1.037	11.802	18.54	0.824	12.253	14.98	14"
16"	16.000				2.192	11.353	43.01	1.778	12.231	34.78	1.455	12.915	29.15	1.185	13.488	24.22	0.941	14.005	19.57	16"
18"	18.000				2.466	12.772	54.43	2.000	13.760	44.02	1.636	14.532	36.89	1.333	15.174	30.65	1.059	15.755	24.77	18"
20"	20.000				2.740	14.191	67.20	2.222	15.289	54.34	1.818	16.146	45.54	1.481	16.860	37.84	1.176	17.507	30.58	20"
22"	22.000				3.014	15.610	81.32	2.444	16.819	65.75	2.000	17.760	55.10	1.630	18.544	45.79	1.294	19.257	37.00	22"
24"	24.000				3.288	17.029	96.77	2.667	18.346	78.25	2.182	19.374	65.58	1.778	20.231	54.49	1.412	21.007	44.03	24"
26"	26.000							2.889	19.875	91.84	2.364	20.988	76.96	1.926	21.917	63.95	1.529	22.759	51.67	26"
28"	28.000							3.111	21.405	106.51	2.545	22.605	89.26	2.074	23.603	74.17	1.647	24.508	59.93	28"
30"	30.000							3.333	22.934	122.27	2.727	24.219	102.47	2.222	25.289	85.14	1.765	26.258	68.80	30"
32"	32.000										2.909	25.833	116.58	2.370	26.976	96.87	1.882	28.010	78.28	32"
34"	34.000										3.091	27.447	131.61	2.519	28.660	109.36	2.000	29.760	88.37	34"
36"	36.000										3.273	29.061	147.55	2.667	30.346	122.60	2.118	31.510	99.07	36"

Pressure ratings are calculated using 0.63 design factor for HDS at 73°F as listed in PPI TR-4 for PE4710 materials. Temperature, chemical and environmental use considerations may require use of additional design factors.

Other Sizes and Dimensions Available

Performance Pipe, a division of
Chevron Phillips Chemical Company LP
PO Box 269006
Plano, TX 75026-9006
Phone: 800-527-0662
Fax: 972-599-7348

Performance Characteristics

Polyethylene Resins Continue to Improve

DriscoPlex® 6400 series pipe and fittings for oilfield and energy applications are made from polyethylene materials that are engineered for high density, extra high molecular weight, and broad molecular weight distribution. These characteristics give Driscoplex® 6400 series products strength, flexibility, toughness and durability. Since the introduction of polyethylene piping materials in the 1950's, polyethylene resin manufacturers have continually improved the resins produced. In 2005 "High Performance" polyethylene pipe materials were adopted in U.S. ASTM standards. One of the new material designation codes refer to PE4710. Compared to PE3408 (now PE3608) materials, the PE4710 resins have an increased density, higher tensile strength and higher resistance to slow crack growth. These increased properties allow the pipe to meet higher performance requirements.

Performance Pipe now manufactures all pipe and fittings of high performance PE4710 resins. Performance Pipe's PE4710 materials are listed in PPI TR-4 with a Hydrostatic Design Stress of 1000 psi at 73°F.

PE4710 materials are an improvement in resin properties and do not reflect on the long term performance of PE2708, PE3408, PE3608, PE3710 or PE4708 previously manufactured pipe or fittings. However, PE4710 resins meet and exceed the physical and performance properties of all the previous material designation codes between PE3408 and PE4710.

API 15LE "Specification for Polyethylene Line Pipe (PE)" recognizes the higher performing PE4710 materials and allows higher operating pressures as compared to PE3408 materials. Refer, API 15LE 4th Edition 2008.

Cell Classification

ASTM D3350 *Standard Specification for Polyethylene Plastics Pipe and Fittings Materials* standard cell classification covers the identification of polyethylene materials for pipe and fittings according to a cell classification system. Performance Pipe's Driscoplex® 6400 series cell classification is listed.

Table 1: Cell Classification

Performance Pipe Product Series	Material Designation Code (MDC)		ASTM D3350 Cell Classification
	Present	Past	
DRISCOPIPE® 6400 HDPE	PE4710	(PE3408)	445574C

Slow Crack Growth (SCG) Resistance

Resistance to slow crack growth is a critical performance requirement because long-term stress can cause cracks to grow slowly through polyethylene pipe resin material. Resistance to slow crack growth is measured using ASTM F1473 *Standard Test Method for Notch Tensile Test to Measure the Resistance to Slow Crack Growth of Polyethylene Pipes and Resins.* Driscoplex® 6400 series products exceed the requirements of ASTM D2513 that requires that all PE materials meet a minimum of at least 100 hours for two tests before failure when tested per ASTM F1473.

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[1]CPChem Marlex TIB-3 Weatherability

Embedment material must be placed in the haunch areas below the pipe springline and above the pipe so that the pipe is fully encapsulated without voids. Compacted embedment is preferred.

To ensure protection against shear and bending loads, measures such as properly placed & compacted backfill, protective sleeves, and structural support are sometimes necessary.

Locating

Most polyethylene materials are not detectable with standard magnetic locating equipment. When installing PE piping, a method or methods for future pipeline detection should be considered. Underground locating agencies should always be contacted before the start of any underground installation work such as excavation, trenching, directional boring, etc.

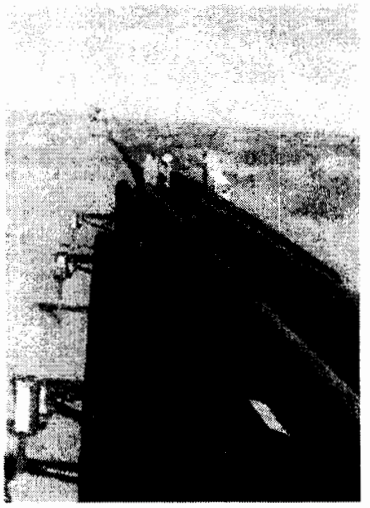
Leak Testing

Polyethylene pipe may be hydrostatically tested or pneumatically tested to determine system integrity for leaks. When testing is required, observe all safety measures, especially if using pressurized gas as the test medium. Consideration is given to restraining the pipe against movement in the event of catastrophic failure, observing limitations of temperature, test pressure, test duration, and procedures for making repairs.

Performance Pipe's hydrostatic leak testing procedure "Technical Note 802" is available on the website at: http://www.performancepipe.com/ptperformancepipe/en-us/Documents/PP802-TN%20Leak%20Test.PDF

Also See: ASTM F2786 for "Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Gaseous Media Under Pressure (Pneumatic Leak Testing).

Joining



Driscoplex® 6400 series pipe and fittings may be joined using Performance Pipe's Bulletin *PP-750 "Heat Fusion Joining Procedures and Qualification Guide"*. A copy of PP-750 may be obtained from our website at: www.performancepipe.com.

Other joining procedures used for butt and saddle fusion of polyethylene piping products are the Plastic Pipe Institute's, "*PPI TR-33 Generic Butt Fusion Joining Procedure for Field Joining of Polyethylene Pipe*, PPI TR-41 *Generic Saddle Fusion Joining Procedure for Polyethylene Gas Piping* and *ASTM F2620 Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings*".

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Table 2: Typical PENT Value

Performance Pipe Product Series	PENT, hours (ASTM F1473)
DRISCOPIPE® 6400 HDPE (PE4710/3408)	>500

Permeability and Permeation

Plastics are permeable to gases to varying degrees. Although some constituents of natural gas can permeate through polyethylene, the volume of gas lost through permeation is generally so low as to have an insignificant effect on the handling of natural gas in a piping system.

Other constituents of natural gas are typically heavier than methane, thus less permeable through polyethylene. Hydrogen is the exception; however, the concentration of hydrogen in most natural gas is so low that the actual amount of hydrogen permeation is insignificant. At low temperatures and higher pressures, heavier hydrocarbon gases such as propane or butane may condense and liquefy in the pipe. Such condensates are known to permeate polyethylene pipe. Liquid hydrocarbon permeation can affect butt fusion joining. Driscoplex® 6400 piping that has been in service conveying liquid hydrocarbons, wet natural gas that includes heavier hydrocarbons can sometimes exhibit a bubbly appearance when re-melted for heat fusion. This bubbling is the result of the rapid expansion (by heat) and passage of heavier, adsorbed hydrocarbon gases through the heated and molten polyethylene material. Since there currently are no field tests to readily determine the amount of adsorbed hydrocarbons in PE pipe and their potential effect on the fusion joint, the heat fusion process should be abandoned and mechanical connections should be used if bubbles are encountered during a heat fusion process.

Vacuum or Suction Pipelines

Typical cases of vacuum or suction pipelines are gravity flow, downhill siphon lines, pipelines which are cleaned by vacuum and gas gathering lines operating under vacuum. When Driscoplex® 6400 series is used in vacuum applications; a sufficiently heavy wall pipe must be selected to resist the collapsing forces. The amount of vacuum a pipeline can support is a function of its dimension ratio (DR) and other operating conditions. A thicker wall pipe will provide a greater resistance. Refer to API 15LE "Specification for Polyethylene Line Pipe (PE)" Appendix B or the Plastic Pipe Institute "Handbook of Polyethylene Pipe", Chapter 11, for more detailed information on vacuum or suction lines.

Chemical Resistance

Driscoplex® 6400 has outstanding chemical and corrosion resistance and will tolerate most downhole corrosion inhibitors, hot soils and sour gas. It has proven use in crude oil service, low-pressure gas operations, acidic or alkaline water service, and brine service. Dry, gaseous hydrocarbons have no adverse effect on expected service life. Liquid hydrocarbons will permeate the wall and reduce hydrostatic strength, but normally will not degrade the material. A technical report of chemical resistance for thermoplastic pipes can be found at the Plastic Pipe Institute's website: TR-19/2007 Chemical Resistance of Thermoplastics Piping Materials. http://plasticpipe.org/pdf/tr-19_thermoplastic_pipe_for_transport_of_chemical.pdf

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Temperature

Operating service temperature for Driscoplex® 6400 may be –30°F and up to 140°F. The system operating temperature will affect the allowable design parameters of DRISCOPLEX 6400 systems. Detailed temperature rating information is provided in the "Design Pressure" section. Driscoplex® 6400 can handle conditions of freezing water much better than traditional metal piping. In the event that water does freeze inside Driscoplex® 6400, the line should be carefully and fully thawed before placing it back in service. To prevent freezing, the line may be insulated and may be heat traced if necessary. Heat tracing equipment should not exceed 120°F (49°C). Exposure to the sun increases operating temperatures, especially during summer months. This may reduce the Design (Working) Pressure capability of the system.

Design Pressure

The following formula is used to compute the design pressures in Driscoplex® 6400 piping systems for operating temperatures up to but not over 140°F (60°C). For operating temperatures below 73°F (23°C), use 73°F (23°C) Design Pressures.

$$PR = \frac{2\,HDS\,F_T\,A_E}{(DR-1)}$$ ***(Equation 1)***

Where:
PR=Pressure Rating, psi
HDS=Hydrostatic Design Stress, Table 3
F_T=Service Temperature Design Factor
A_E=Environmental Application Factor

DR= Dimension Ratio - OD Controlled Pipe $DR = \frac{OD}{t}$

OD=Outside Diameter
t=Pipe Minimum Wall Thickness, in

Table 3: Hydrostatic Design Stress

Hydrostatic Design Stress, HDS	
Performance Pipe Product Series	73 °F (23°C) Data
Driscoplex® 6400 Series (PE4710)	1000

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Table 4: Environmental Application Factor

Environmental Application Factor, A_E	
Application	**Environmental Application Factor, A_E**
Water, Brine, Dry gas gathering (no associated hydrocarbon liquids)	1.0
Multiphase fluids, wet natural gas and liquid hydrocarbons. Water containing significant quantities of liquid hydrocarbons (> 2%) shall be treated as hydrocarbon liquids in this instance.	0.50
Gas distribution or transmission piping that is permeated by solvating chemicals such as liquid hydrocarbons or liquefied gas condensate.	0.5

Table 5: Service Temperature Design Factor

Service Temperature Design Factor, F_T							
Service Temperature, °F (°C)	<80 (27) [1]	<90 (32)	<100 (38)	<110 (43)	<120 (49)	<130 (54)	<140 (60)
	1.0	0.90	0.78	0.75	0.63	0.60	0.5

[1] Use 80°F (27°C) service factor for service temperatures below 80°F (27°C).

Operating Pressures (psig)

The following tables provide ***maximum allowable operating pressures (MAOP)*** for PE3608 and PE4710 pipes. PE pipes of the same DR and Material Designation Code but different outside diameters have the same Design (Working) Pressure Ratings.

Pressure ratings are calculated using Equation 1 above. A check should be made to determine if these pressures apply under the state and/or local codes governing the specific application. Use 80°F pressure ratings for operating temperatures below 80°F (27°C).

Table 6: Pressure Rating versus Temperature (PE4710) Water, Brine & Dry Natural Gas

Design (Working) Pressures for Water, Brine and Dry Natural Gas Gathering service (Class 1, Class 2 and non-Federally Regulated Areas)				
DriscoPlex 6400 Series (PE4710)	Operating Temperature			
	73.4°F	100°F	120°F	140°F
DR				
6.0	403 psig	314 psig	254 psig	202 psig
7.0	336 psig	262 psig	212 psig	168 psig
9.0	250 psig	197 psig	159 psig	126 psig
11.0	202 psig	158 psig	127 psig	101 psig
17.0	126 psig	98 psig	79 psig	63 psig
21.0	101 psig	79 psig	64 psig	51 psig

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Table 7: Pressure Rating versus Temperature (PE4710) Liquid Hydrocarbon

Design (Working) Pressures for Crude Oil, Produced Water with > 2% liquid hydrocarbons, Wet Natural Gas & Condensates (Class 1, Class 2 and non-Federally Regulated Areas)				
Driscoplex® 6400 Series (PE4710)	Operating Temperature			
	73.4°F	100°F	120°F	140°F
DR				
6.0	160 psig	125 psig	101 psig	80 psig
7.0	133 psig	104 psig	84 psig	67 psig
9.0	100 psig	78 psig	63 psig	50 psig
11.0	80 psig	62 psig	50 psig	40 psig
17.0	50 psig	39 psig	31 psig	25 psig
21.0	40 psig	31 psig	25 psig	20 psig

Pressure Surge Capacity

System pressures due to frequently occurring surges or water hammer events of up to 1-1/2 times the rated system operating pressure are well within the limits of the DRISCOPLEX piping system. System pressures of twice the rated operating pressure can be tolerated occasionally. For moderate flow velocity systems, i.e. 5 ft/sec or less, it is generally unnecessary to include a surge allowance within the pressure rating of the system. For lines operating at higher velocities, the allowance will be reduced.

Cold Bending Radius

The allowable cold bending radius for DRISCOPLEX® 6400 pipe is dependent upon the pipe OD, DR and the presence of fittings in the bend. See Performance Pipe's Technical Note *PP-819-EN Field Bending of DRISCOPLEX® Pipe*.

Table 8: Allowable Cold Bending Radius

Table 10: Allowable Cold Bending Radius	
Pipe Dimension Ratio	Allowable Cold Bending Radius
9 or less	20 times the pipe OD
>9 to 13.5	25 times the pipe OD
13.5 or greater	27 times the pipe OD
Fusion fittings present in the bend	400 times the pipe OD

Special Considerations for Plowing and Planting

Plowing and planting involve cutting a narrow trench and feeding the pipe into the trench through a shoe or chute fitted just behind the trench cutting equipment. The shoe or chute feeds the pipe into the bottom of the cut. The minimum bend radius of the pipe through the shoe may be tighter than the minimum bend radius of the pipe used for a permanent long-term installation, but it must not be so tight that the pipe kinks. Table 2 presents the minimum short-term bend ratio for applications such as

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plowing and planting. The pipe's path through the shoe or chute should be as friction free as practicable to reduce additional outer-fiber tensile stresses. Generally plowing and planting is limited to 12" and smaller pipes.

Table 9: Minimum Short-term Cold Bending Radius

Table 11: Minimum Short-term Cold Bending Radius	
Pipe Dimension Ratio	Minimum Short-Term bending Radius
9	10
>9 to 13.5	13
>13.5 to 17	17

Cautions

Polyethylene piping has been safely used in thousands of applications. However, there are general precautions that should be observed when using any product. In this respect, polyethylene piping is no different. Performance Pipe's recommends the following reading for a more detailed lsit of cautions and safety features.

1. The Plastic Pipe Institute Handbook of Polyethylene Pipe, Chapter 2, details safety considerations for polyethylene pipe. See: http://plasticpipe.org/pdf/chapter02.pdf Inspection, Tests and Safety Considerations.
2. The Performance Pipe Field Handbook.

- **Fusion**
  During the heat fusion process, equipment and products can reach temperatures in excess of 450°F (231°C). Caution should be taken to prevent burns.

  Do not bend pipes into alignment against open butt fusion machine clamps. The pipe may spring out and cause injury or damage.

  Performance Pipe polyethylene piping products cannot be joined with adhesives or solvent cement. Pipe-thread joining and joining by hot air (gas) welding or extrusion welding techniques are not recommended for pressure service.

- **Static Electricity**
  High static electricity charges can develop on polyethylene piping products, especially during squeeze-off, when repairing a leak, purging, making a connection, etc.

  Where a flammable gas atmosphere and static electric charges may be present, observe all company (pipeline operator, utility, contractor, etc.) safety procedures for controlling and discharging static electricity and all requirements for personal protection. See website for: Performance Pipe Technical Note *Polyethylene Pipe Squeeze Off; PP 801-TN.*

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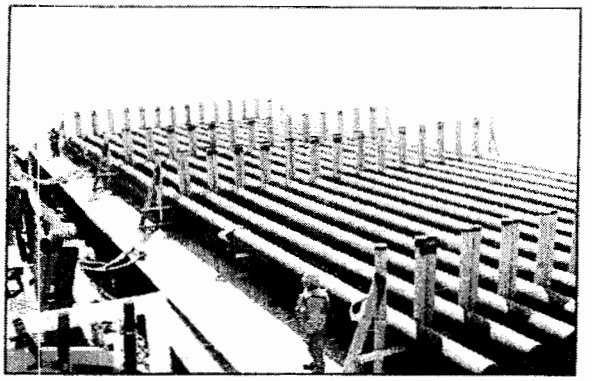
- **Weight, Unloading and Handling**



Although polyethylene pipe is not as heavy as some other piping products, significant weight may be involved. Care should be used when handling and working around polyethylene pipe. Improper handling or abuse may cause damage to piping, compromise system quality or cause personal injury. Observe the safe handling instructions provided by the delivery driver. See website for: *Pipe Loading/Unloading Truck Driver Safety Video*.

- **Coils**

Coiled PE pipe is restrained with strapping to contain the spring-like energy retained within the coil. Cutting or breaking strapping can result in an uncontrolled release. Take all necessary safety precautions and use appropriate equipment. Observe the safe handling instructions provided by the delivery driver.

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Chavez, Carl J, EMNRD

From: Philana Thompson <pthompson@merrion.bz>
Sent: Thursday, July 11, 2013 4:47 PM
To: Chavez, Carl J, EMNRD
Subject: Fwd: Interior Coating Specs for Tanks
Attachments: Americoat385.pdf

coating specs for tanks

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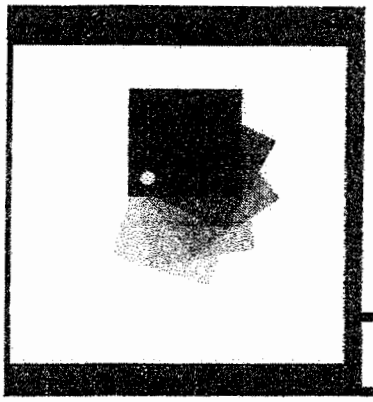
Philana Thompson
Regulatory Compliance
Merrion Oil & Gas Corp
cell 505-486-1171
office 505-324-5336



Amercoat 385

Multi-purpose epoxy *(385 Series)*

Product Data/ Application Instructions

- **Excellent durability in both marine and industrial environments**
- **Compatible over inorganic zincs**
- **Outstanding chemical and weather resistance**
- **Suitable for immersion service**
- **Self-priming, economical, long-term protection**
- **Adheres to a variety of substrates such as steel, aluminium, stainless steel, concrete and previously coated surfaces**
- **Wide film build range**
- **Also available in MIO**
- **Also available as rust inhibitive pigmented version (Amercoat 385PA)**

Amercoat 385 is a high build polyamide epoxy with high solids content designed for industrial and marine use. It adheres strongly to bare steel, primed steel and inorganic zinc silicate coatings on new construction, repairs and field maintenance projects. Amercoat 385 provides an excellent barrier to corrosion; its inhibitive pigment version (385PA) affords corrosion inhibition at damage areas. Amercoat 385 can be applied by a variety of spray methods to produce a smooth fast-drying high build film. Amercoat 385 may be overcoated with itself in non-immersion conditions for an unlimited period. Antifoulings must be applied to Amercoat 385 while the film is still soft to the fingernail.

Typical uses

MARINE- Decks, hulls, superstructures and ballast tanks of ships, barges and workboats.
INDUSTRIAL – Tank exteriors, structural steel pipes in chemical plants, refineries, pulp and paper mills and waste water treatment plants. Offshore platforms, jetties and other structures exposed to severe weathering, water, salt spray, immersion or aggressive chemical environments.
Amercoat 385 is an alternative for traditional coaltar epoxies and is suitable for immersion in both salt and fresh water. It is specifically suitable as marine ballast water tanklining.
Amercoat 385 can be topcoated with amongst others PSX 700, Amercoat 440 and Amercoat 450S.
NOTE: For immersion service use only the standard colours oxide red, RAL 7036 or RAL 1013, other colours available on request in special occasions.

Physical data

Finish	flat			
Colour				
Amercoat 385	White, Oxide Red, RAL 1013, RAL 7035, RAL 7035MIO, RAL 7036, Black			
Amercoat 385PA	Oxide red, Buff			
Components 385 or 385PA	2			
Mixing ratio (by volume)				
Resin	1 part			
Cure	1 part			
Curing mechanism	solvent release and chemical reaction between components			
Volume solids 385 or 385PA	68% (ISO 3233)*			
VOC	16% by weight 225 g/l 2.3 lb/gal			
Dry film thickness 385 or 385PA	100 – 200 µm per coat 4 –8 mil per coat			
Number of coats	1 or 2**			
Theoretical coverage				
At 100 microns/4 mil dft	6.8 m^2/l		265 ft^2/gal	
At 200 microns/8 mil dft	3.4 m^2/l		133 ft^2/gal	
Temperature resistance	Dry		Wet	
	°C	°F	°C	°F
Continuous	93	200	60	140
Intermittent	120	250	79	175
Flashpoints	°C		°F	
Cure	43		109	
Resin	26		77	
Mixed	25		77	
Amercoat 9HF	26		79	
Amercoat 66	24		75	
Amercoat 12	24		75	
Thinners	Amercoat 9HF or Amercoat 65			
Cleaner	Amercoat 12			

* Volume solids is measured in accordance with ISO 3233. Slight variations ±3% may occur due to colour and testing variances.

** For immersion service, apply 2 coats of Amercoat 385 at a minimum of 300µm total dry film thickness

Amercoat 385

Chemical Resistance Guide

When applied over suitable primer or intermediate coat:

Splash and Environment	Fumes and Spillage	Weather
Acidic	Very good	Excellent
Alkaline	Very good	Excellent
Salt solutions		
Acidic	Excellent	Excellent
Neutral	Excellent	Excellent
Alkaline	Excellent	Excellent
Water	Excellent	Excellent

This table is only a guide. For specific recommendations, contact your Ameron representative for your particular corrosion protection needs.

Global Systems using Amercoat 385

ISO 12944 classification	First coat	Intermediate	Finish Coat
C5	Dimetcote		Amercoat 385
C5	Amercoat 68 Series	Amercoat 385	Amercoat 450 Series
C4	Amercoat 385	Amercoat 385	Amercoat 450 Series
C3	Amercoat 385		Amercoat 450 Series
I5	Amercoat 385		Amercoat 385

Surface Preparation

PRIMED STEEL - Coating performance is proportional to the degree of surface preparation. Refer to specifications of the specific primer being used. Prior to coating, primed surface must be clean, dry, undamaged and free of all contaminants including salt deposits. Round of all rough welds and remove weld spatter.

Use Amercoat 385PA when inhibitive pigmented primer is specified.

Application Equipment

The following equipment is listed as a guide and suitable equipment from other manufacturers may be used. Adjustments of pressure and change of tip size may be needed to obtain the proper spray characteristics.
AIRLESS SPRAY Standard airless spray equipment, such as Graco, DeVilbiss, Nordson-Bede, Spee-Flo or others having a 0.015 to 0.021 inch (0.38 to 0.53 mm) fluid tip.
CONVENTIONAL SPRAY Industrial equipment such as DeVilbiss MBC or JGA gun with 78 or 765 air cap and "E" fluid tip and heavy mastic spring or Binks No. 18 or 62 with a 66 x 63 PB nozzle setup. Separate air and fluid pressure regulators, mechanical pot agitator and a moisture and oil trap in the main air supply line are recommended.
MIXER Use power mixer powered by an air motor or an explosion proof electric motor.

Application Data

Substrate ..... Steel, aluminium, galvanizing, tightly adhering coatings

Surface preparation
- Steel ..... Abrasive blast cleaning
- Concrete ..... Abrasive blast cleaning
- Aluminium ..... Chemical conversion or light sweepblast
- Galvanizing ..... Amercoat 59 TW or light sweep blast

Application method ..... Airless or conventional spray. Touch-up of small areas can be made by brush or roller.

Mixing ratio (volume)
- Resin ..... 1 part
- Cure ..... 1 part

Environmental conditions

Air temperature	5-50 °C	41-122 °F
Surface temperature	5-60 °C	41-140 °F

Surface temperature must be at least 3°C / 5°F above the dew point to prevent moisture condensation on the surface.

Potlife (°C/°F)	32/90	21/70	10/50
	1½ hrs	3 hrs	5 hrs

Drying times (°C/°F)	32/90	21/70	10/50
Dry to touch	1 hr	2 hrs	3 hrs
Dry through	10 hrs	16 hrs	23 hrs

Recoat or topcoat times (°C/°F)	32/90	21/70	10/50
Minimum time	6 hrs	16 hrs	23 hrs
Maximum time	not limited		

Maximum recoating/topcoating time intervals are dependent on temperature, degree of weathering, type of topcoat, and service conditions of the complete coating system. Consult your Ameron representative for specific recommendations.

Drying times are dependent on temperature, ventilation and film thickness.

Thinner ..... Amercoat 9 HF or Amercoat 66

Equipment cleaner ..... Amercoat 12

Amercoat 385

Application Procedure

Amercoat 385 is packaged in the proper mixing proportions of resin and cure.

Resin	10 L (2.6 gal) in 20 L can
Cure	10 L (2.6 gal) in 13 L can

Thinner: Amercoat 9HF or Amercoat 65
Cleaner: Amercoat 12

1. Flush equipment with Amercoat 12 before use.
2. Stir resin (in the larger container) to an even consistency with a power mixer.
3. Add cure to resin solution and continue stirring for 5 minutes.
   NOTE: Since the potlife is limited and shortened by high temperatures, do not mix more material than will be used in 3 hours at 20°C.
4. Thin only if necessary for workability, add up to 10% by volume of thinner.
5. Apply a wet coat in even, parallel passes. Overlap each pass 50% to avoid bare areas, pinholes or holidays. When applying directly over inorganic zincs at full thickness, bubbling may occur. A test patch is recommended and if bubbling occurs, apply a "mist coat". Consult your Amercoat representative for further information.
6. Double coat all welds, rough spots, sharp edges and corners, rivets, bolts, etc.
7. Application at 220 µm wet film thickness will normally provide 150 µm dry film.
8. Check thickness of dry coating with a non-destructive dry film thickness gauge, such as Mikrotest or Elcometer. If less than specified thickness, apply additional material as needed.
9. Small damaged or bare areas and random pinholes or holidays can be touched up by brush. Repair larger areas by spray.
10. In confined areas ventilate with clean air during application and drying until all solvents are removed. Temperature and humidity of ventilating air must be such that moisture condensation will not form on surface.

\# For conventional spray, use adequate air pressure and volume to ensure proper atomisation.

\# Normal recommended dry film thickness is 100 to 200 µm. However, if greater thickness is applied in local areas because of overlapping, no runs or sags will normally occur at a dry film thickness up to 250 µm. Total dry film thickness must not exceed 400 µm.

11. Clean all equipment with Amercoat 12 immediately after use or at least after each working day or shift. When left in spray equipment, Amercoat 385 will cure and cause clogging.

Shipping Data

Packaging		
Resin	10 L (2.6 gal) in 20 L can	
Cure	10 L (2.6 gal) in 13 L can	
Shipping weight	kg	lb
Resin	approx. 16.5	36
Cure	approx. 15	33
Shelf life		
Resin and cure	1 year from shipment date when stored indoors in unopened, original containers at 5 to 40°C (41 to 104°F)	

Amercoat 385

Caution
This product is flammable. Keep away from heat and open flame. Keep container closed. Use with adequate ventilation. Avoid prolonged and repeated contact with skin. If used in confined areas, observe the following precautions to prevent hazards of fire or explosion or damage to the health:

1. circulate adequate fresh air continuously during application and drying;
2. use fresh air masks and explosion proof equipment;
3. prohibit all flames, sparks, welding and smoking.

Do not empty into drains. Take precautionary measures against static discharges. For specific information on hazardous ingredients, required ventilation, possible consequences of contact and safety measures see Safety Data Sheet.

Safety
Since improper use and handling can be hazardous to health and cause of fire or explosion, safety precautions included with application instructions must be observed during all storage, handling, use and drying periods.
To avoid any confusion that may arise through translation into other languages, the English version of the Product Data/Application Instructions will be the governing literature and must be referred to in case of deviations with product literature in other languages.

Warranty
Ameron warrants its products to be free from defects in material and workmanship. Ameron's sole obligations and Buyer's exclusive remedy in connection with the products shall be limited, at Ameron's option, to either replacement of products not conforming this warranty or credit to Buyer's account in the invoiced amount of the non-confirming products. Any claim under this warranty must be made by Buyer to Ameron in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify Ameron of such non-conformance as required herein shall bar Buyer from recovery under this warranty.

Ameron makes no other warranties concerning the product. No other warranties, whether express, implied or statutory, such as warranties of merchantability or fitness particular purpose, shall apply. In no event shall Ameron be liable for consequential or incidental damages.

Any recommendations or suggestion relating to the use of the products made by Ameron, whether in its technical literature, or response to specific enquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyer's having requisite skill and know-how in the industry, and therefore it is Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, as its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

Limitation of Liability
Ameron's liability on any claim of any kind, including claims based upon Ameron's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim.
In no event shall Ameron be liable for consequential or incidental damages.

Condition of Sale
All our transactions are subject to our Terms and Conditions of Sale.

Andrews Coatings Ltd
Carver Building, Littles Lane, Wolverhampton WV1 1JY.
Tel: 01902 429190 Fax: 01902 426574 www.amerondirect.co.uk info@andrewscoatings.co.uk

Revision date: 15-11-2004

AMERON PROTECTIVE COATINGS -- AMERCOAT, 335 RESN -- 8030-00N014774

========== Product Identification ==========

Product ID:AMERCOAT, 335 RESN
MSDS Date:10/24/1994
FSC:8030
NIIN:00N014774
MSDS Number: BXWSX
=== Responsible Party ===
Company Name:AMERON PROTECTIVE COATINGS
Address:201 NORTH BERRY ST
City:BREA
State:CA
ZIP:92622-1020
Country:US
Info Phone Num:714-529-1951
Emergency Phone Num:800-424-9300 (CHEMTREC)
Preparer's Name:H KLINE
CAGE:0Y2E4
=== Contractor Identification ===
Company Name:AMERON INTERNATIONAL PROTECTIVE COATINGS GROUP
Address:201 NORTH BERRY ST.
Box:City:BREA
State:CA
ZIP:92821
Country:US
Phone:714-529-1951
CAGE:55849
Company Name:AMERON PROTECTIVE COATINGS
Address:201 NORTH BERRY STREET
Box:1020
City:BREA
State:CA
ZIP:92622-1020
Country:US
Phone:714-529-1951
CAGE:0Y2E4

========== Composition/Information on Ingredients ==========

Ingred Name:ACRYLIC RESIN. VP:54 @ 68F. LD50:(ORAL,RAT) 5 G/KG
Fraction by Wt: <35%
OSHA PEL:25 PPM (MFR)
ACGIH TLV:N/K

Ingred Name:TITANIUM OXIDE; (TITANIUM DIOXIDE). LD50:(ORAL,RAT) 24 G/KG
CAS:13463-67-7
RTECS #:XR2275000
Fraction by Wt: <25%
OSHA PEL:15 MG/M3 TDUST
ACGIH TLV:10 MG/M3 TDUST

Ingred Name:PERM-YELLOW
CAS:6358-31-2
Fraction by Wt: <15%
OSHA PEL:5 PPM (MFR)
ACGIH TLV:5 PPM (MFR)

Ingred Name:ETHANOL, 2-PROPOXY-; (ETHYLENE GLYCOL MONOPROPYL ETHER).
VP:1.3 @ 68F. LD50:(ORAL,RAT) 3.1 G/KG
CAS:2807-30-9
RTECS #:KM2800000
Fraction by Wt: 8.20%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingred Name:IRON OXIDE. LD50:(ORAL,RAT) >10 G/KG
CAS:51274-00-1
Fraction by Wt: <5%
OSHA PEL:5 PPM (MFR)
ACGIH TLV:5 PPM (MFR)

Ingred Name:CARBON BLACK
CAS:1333-86-4
RTECS #:FF5800000
Fraction by Wt: <5%
OSHA PEL:3.5 MG/M3
ACGIH TLV:3.5 MG/M3

Ingred Name:XYLENE (SARA 313) (CERCLA). VP:6.6 @ 68F. LD50:(ORAL,RAT)
4.3 K/KG
CAS:1330-20-7
RTECS #:ZE2100000
Fraction by Wt: 2.51%
OSHA PEL:100 PPM
ACGIH TLV:100 PPM/150 STEL
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:TRIETHYLAMINE (CERCLA). VP:54 @ 68F. LD50:(ORAL,RAT)0.5
G/KG
CAS:121-44-8
RTECS #:YE0175000
Fraction by Wt: <5%
OSHA PEL:25 PPM
ACGIH TLV:S 1 PPM/5 STEL
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

Ingred Name:SILICA, AMORPHOUS, PRECIPITATED AND GEL; (AMORPHOUS SILICA
GEL). LD50:(ORAL,RAT) 10 G/KG
CAS:112926-00-8
RTECS #:VV7315000
Fraction by Wt: <5%
OSHA PEL:8 PPM (MFR)
ACGIH TLV:10 PPM (MFR)

Ingred Name:IRON (III) OXIDE; (IRON OXIDE)
CAS:1309-37-1
RTECS #:NO7400000
Fraction by Wt: <5%
OSHA PEL:10 MG/M3 (FE)
ACGIH TLV:5 MG(FE)/M3 FUME, B2

Ingred Name:VOLATILE ORGANIC CONTENT (MIXED):2.4 LB/GAL. 288 G/L
RTECS #:9999999VO
OSHA PEL:N/K

ACGIH TLV:N/K

Hazards Identification

LD50 LC50 Mixture:SEE INGREDIENTS
Routes of Entry: Inhalation:YES Skin:YES Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:ACUTE:VAPOR OR SPRAY MIST CAN BE HARMFUL. IRRITATING TO EYES, SKIN, NOSE & THROAT. EXCESSIVE INHALATION CAN CAUSE HEADACHE, NAUSEA, OR DIZZINESS. CAN BE HARMFUL OR FATAL IF SWALLOWED. CAN BE HARMFUL I F INHALED OR ABSORBED THRU SKIN. OVEREXPOSURE CAN DAMAGE BLOOD, KIDNEYS, CENTRAL NERVOUS SYSTEM. (EFTS OF OVEREXP)
Explanation of Carcinogenicity:NOT RELEVANT.
Effects of Overexposure:HLTH HAZ:OVEREXPOSURE CAN CAUSE SKIN AND EYE BURNS AND/OR INJURY. SKIN SENSITIZATION OR ALLERGIC REACTION CAN OCCUR SUCH AS RASH OR HIVES.
Medical Cond Aggravated by Exposure:RESPIRATORY, ALLERGIES, SKIN, EYES.

First Aid Measures

First Aid:INHAL:PROVIDE FRESH AIR; IF BRTHG LABORED, GIVE OXYG/ARTF RESP. SKIN:WASH THORO W/SOAP & WATER. EYES:FLUSH IMMED W/PLENTY OF WATER FOR @ LEAST 15 MINS & GET MED ATTN. INGEST:DRINK 1-2 GLASSES OF WATER TO DILUTE. DO NOT INDUCE VOMIT. CONSULT PHYS OR POIS CTL CTR IMMED. TREAT SYMPTOMATICALLY.

Fire Fighting Measures

Flash Point Method:SCC
Flash Point:175F,79C
Lower Limits:1.0%
Upper Limits:15.80%
Extinguishing Media:FOAM, CO*2, DRY CHEMICAL.
Fire Fighting Procedures:NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP . WATER MAY BE USED TO COOL CLSD CNTNRS TO PVNT STEAM BUILDUP.
Unusual Fire/Explosion Hazard:CLSD CNTNRS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. KEEP AWAY FROM HEAT & OPEN FLAME. PVNT STATIC DISCHARGE. AN INGRED MAY PRDCE A FLOATING FIRE HAZARD.

Accidental Release Measures

Spill Release Procedures:AVOID BRTHG OF VAPS. USE ABSORB CLEANUP MATLS. PLACE IN SEPARATE CNTNR. KEEP OUT OF SEWERS & WATERWAYS. IF ENTRY IS THREATENED OR OCCURS, NOTIFY LOCAL AUTHORITIES. ELIMINATE ALL SOURCES OF IGNITION.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

Handling and Storage

Handling and Storage Precautions:KEEP CNTNR CLSD, UPRIGHT WHEN NOT IN USE. STORE IN COOL, DRY, WELL-VENTILATED AREA. AVOID STOR TEMPS ABOVE 100F. PROTECT FROM FREEZING.
Other Precautions:DO NOT TAKE INTERNALLY. AVOID PRLNGD BRTHG OF VAPS/SPRAY MIST/CONT W/SKIN & EYES. DESTROY CONTAMD LEATHER & ABSORB SHOES WHICH CANNOT BE DECONTAMD. GROUND CNTNRS WHEN POURING.

Exposure Controls/Personal Protection

Respiratory Protection:NIOSH/MSHA APPRVD CERTIFIED RESPIRATOR. FOR SPECIFIC CNDTNS, REFER TO CURRENT NIOSH/MSHA POCKET GUIDE TO CHEM HAZ, USE NIOSH/MSHA APPRVD AIR-LINE RESPS IN CONFINED/RESTRICTED VENT AREAS. REFER TO 29 C FR, OSHA PARTS 1910 & 1915, (SUPDAT)
Ventilation:SUFFICIENT VENT, IN VOL & PATTERN, SHOULD BE PROVIDED TO KEEP AIR CONTAMINANT CONC BELOW TLV LIM. REMOVE WELDING(SUPDAT)
Protective Gloves:NEOPRENE GLOVES.
Eye Protection:ANSI APPRVD CHEM WORK GOGGLES .
Other Protective Equipment:ANSI APPRVD EMERGENCY EYE WASH & DELUGE SHOWER .
Work Hygienic Practices:WASH THORO BEFORE EATING, SMOKING/USING WASHROOM. LAUNDER CONTAMD CLTHG BEFORE REUSE.
Supplemental Safety and Health
EVAP RATE:BUTYL ACETATE =1. LOW:0.22, HIGH:0.60. RESP PROT:FOR COATING OPERATIONS. VENT:OR FLAME CUTTING DECOMP PRODS. REFER TO 29 CFR, OSHA PARTS 1910 & 1915, FOR COATING OPERATIONS.

========== Physical/Chemical Properties ==========

Boiling Pt:B.P. Text:>276F,>136C
Vapor Pres:SEE INGS
Vapor Density:HVR/AIR
Spec Gravity:1.05-1.23
Evaporation Rate & Reference:SUPP DATA
Solubility in Water:SOME
Appearance and Odor:LIQUID, SOLVENT ODOR.
Percent Volatiles by Volume:64

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZERS, ACIDS, ALKALIES.
Stability Condition to Avoid:HEAT, OPEN FLAME, ARC OR SPARKS.
Hazardous Decomposition Products:BY FIRE, BURNING OR WELDING:CO & CO*2. ALDEHYDES.

========== Disposal Considerations ==========

Waste Disposal Methods:IN SEPARATE, CLOSED METAL CONTAINER IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS. EPA WASTE NO:D001.

AMERON INC PROTECTIVE COATINGS DIV -- AMERCOAT, 385 CURE -- 8010-01-363-2803

========== Product Identification ==========

Product ID:AMERCOAT, 385 CURE
MSDS Date:11/20/1992
FSC:8010
NIIN:01-363-2803
Kit Part:Y
MSDS Number: BTWSX
=== Responsible Party ===
Company Name:AMERON INC PROTECTIVE COATINGS DIV
Address:201 N BERRY ST
City:BREA
State:CA
ZIP:92621-3904
Country:US
Info Phone Num:714-529-4597 / 714-990-0437
Emergency Phone Num:714-529-4597 / 714-990-0437
CAGE:55849
=== Contractor Identification ===
Company Name:AMERON INTERNATIONAL PROTECTIVE COATINGS GROUP
Address:201 NORTH BERRY ST.
Box:City:BREA
State:CA
ZIP:92821
Country:US
Phone:714-529-1951
CAGE:55849

========== Composition/Information on Ingredients ==========

Ingred Name:TALC
CAS:14807-96-6
RTECS #:MW2700000
Fraction by Wt: <50%
Other REC Limits:NONE RECOMMENDED
OSHA PEL:0.2 FIBERS/CC
ACGIH TLV:0.2 FIBERS/CC; 9394

Ingred Name:POLYAMIDE
CAS:68082-29-1
Fraction by Wt: <15%
Other REC Limits:NONE RECOMMENDED

Ingred Name:NAPHTHA, LIGHT AROMATIC
CAS:64742-95-6
Fraction by Wt: 10.05%
Other REC Limits:NONE RECOMMENDED
OSHA PEL:100 PPM
ACGIH TLV:100 PPM 9091

Ingred Name:HEAVY AROMATIC NAPHTHA
CAS:64742-94-5
RTECS #:WF3100000
Fraction by Wt: 8.07%
Other REC Limits:NONE RECOMMENDED

Ingred Name:NONYL PHENOL

Fraction by Wt: <10%
Other REC Limits:NONE RECOMMENDED

Ingred Name:1,2,4-TRIMETHYLBENZENE (SARA III)
CAS:95-63-6
RTECS #:DC3325000
Fraction by Wt: 4.88%
Other REC Limits:NONE RECOMMENDED
OSHA PEL:25 PPM
ACGIH TLV:25 PPM; 9394

Ingred Name:TRIMETHYL BENZENE (SARA III)
CAS:25551-13-7
RTECS #:DC3220000
Fraction by Wt: 2.63%
Other REC Limits:NONE RECOMMENDED
OSHA PEL:25 PPM
ACGIH TLV:25 PPM; 9394

Ingred Name:XYLENES (O-,M-,P- ISOMERS) (SARA III)
CAS:1330-20-7
RTECS #:ZE2100000
Fraction by Wt: 1.46%
Other REC Limits:NONE RECOMMENDED
OSHA PEL:100 PPM
ACGIH TLV:100 PPM/150STEL;9394
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

========== Hazards Identification ==========

Routes of Entry: Inhalation:YES Skin:YES Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:VAPOR OR SPRAY MIST CAN BE HARMFUL. IRRITATING TO EYES, SKIN, NOSE & THROAT. REPEATED & PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS IS ASSOCIATED WITH PERMANENT BRAIN & NERVOUS SYSTEM DAMAGE. CAN BE HARMFUL IF INHALED. CAN BE HARMFUL OR FATAL IF SWALLOWED. OVEREXPOSURE CAN DAMAGE CENTRAL NERVOUS SYSTEM.
Explanation of Carcinogenicity:THIS COMPOUND CONTAINS NO INGREDIENTS AT CONCENTRATIONS OF 0.1% OR GREATER THAT ARE CARCINOGENS OR SUSPECT CARCINOGENS.
Effects of Overexposure:EXCESSIVE INHALATION CAN CAUSE HEADACHE, NAUSEA OR DIZZINESS. OVEREXPOSURE OR INGESTION CAN CAUSE LUNG, KIDNEY AND/OR LIVER DAMAGE. OVEREXPOSURE CAN CAUSE SKIN & EYE BURNS AND/OR INJURY. OVEREXPOSURE CAN CAUSE SEVERE EYE INJURY. CHEMICAL PNEUMONIA. ASPIRATION HAZARD.
Medical Cond Aggravated by Exposure:RESPIRATORY. ALLERGIES. SKIN. EYES.

========== First Aid Measures ==========

First Aid:OVEREXPOSURE TO VAPOR OR SPRAY MISTS-PROVIDE FRESH AIR; IF BREATHING LABORED, GIVE OXYGEN OR ARTIFICIAL RESPIRATION. FOR SKIN CONTACT, WASH THOROUGHLY WITH SOAP & WATER. FOR EYES, FLUSH IMMEDIATELY WI TH PLENTY OF WATER FOR AT LEAST 15 MIN & GET MEDICAL ATTENTION. IF SWALLOWED, DRINK 1 OR 2 GLASSES OF WATER TO DILUTE. DO NOT INDUCE VOMITING. CONSULT PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY.

Fire Fighting Measures

Flash Point Method:SCC
Flash Point:118F,48C
Lower Limits:0.5
Upper Limits:7.00
Extinguishing Media:FOAM, CARBON DIOXIDE, DRY CHEMICAL. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT.
Fire Fighting Procedures:WEAR FULL PROTECTIVE EQUIPMENT, SELF-CONTAINED BREATHING APPARATUS. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS & OPEN FLAMES.
Unusual Fire/Explosion Hazard:PREVENT STATIC DISCHARGE. AN INGREDIENT MAY PRODUCE A FLOATING FIRE HAZARD.

Accidental Release Measures

Spill Release Procedures:AVOID BREATHING OF VAPORS. USE ABOSRBENT CLEANUP MATERIALS. PLACE IN SEPERATE CONTAINER. KEEP OUT OF SEWERS AND WATERWAYS. IF ENTRY IS TREATENED OR OCCURS, NOTIFY LOCAL AUTHORITIES. ELIMINATE ALL SOUR CES OF IGNITION.

Handling and Storage

Handling and Storage Precautions:KEEP CONTAINER CLOSED, UPRIGHT WHEN NOT IN USE. STORE IN COOL, DRY, WELL-VENTILATED AREA. AVOID STORAGE TEMPERATURES ABOVE 100 DEGREES FAHRENHEIT.
Other Precautions:DO NOT TAKE INTERNALLY. AVOID PROLONGED BREATHING OF VAPORS OR SPRAY MISTS OR CONTACT WITH SKIN AND EYES. DESTROY CONTAMINATED LEATHER AND ABSORBENT SHOES WHICH CANNOT BE DECONTAMINATED. DO NOT WELD O R FLAME CUT AN EMPTY CONTAINER.

Exposure Controls/Personal Protection

Respiratory Protection:NIOSH/MSHA CERTIFIED RESPIRATOR. FOR SPECIFIC CONDITIONS. REFER TO CURRENT NIOSH POCKET GUIDE TO CHEMICAL HAZARDS. USE AIR-LINE RESPIRATORS IN CONFINED OR RESTRICTED VENTILATION AREAS. REFER TO 29 CFR , OSHA PARTS 1910 AND 1915, FOR COATINGS
Ventilation:SUFFICIENT VENTILATION IN VOLUME PATTERN SHOULD BE PROVIDED TO KEEP AIR CONTAMINANT CENCENTRATIONS BELOW TLV LIMIT.
Protective Gloves:NEOPRENE OR OTHER IMPERVIOUS GLOVES.
Eye Protection:SPLASH-PROOF GOGGLES OR FACE SHIELD.
Other Protective Equipment:FULL PROTECTIVE CLOTHING. SPARK-PROOF EQUIPMENT.
Work Hygienic Practices:WASH THOROUGHLY BEFORE EATING, SMOKING OR USING WASHROOM. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
Supplemental Safety and Health
CONTACT LENSES SHOULD NOT BE WORN WHEN USING THIS PRODUCT. GROUND CONTAINERS WHEN POURING.

Physical/Chemical Properties

HCC:F4
Boiling Pt:B.P. Text:276-352F
Vapor Density:>AIR
Evaporation Rate & Reference:LOW=0.13 HIGH=0.60
Appearance and Odor:LIQUID, SOLVENT ODOR.
Percent Volatiles by Volume:45

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZERS, ACIDS, ALKALIES. EPOXIES UNDER UNCONTROLLED CONDITIONS.
Stability Condition to Avoid:HEAT, OPEN FLAMES, ARC OR SPARK.
Hazardous Decomposition Products:CARBON MONOXIDE AND CARBON DIOXIDE. OXIDES OF NITROGEN. ALDEHYDES.

========== Disposal Considerations ==========

Waste Disposal Methods:IN SEPERATE, CLOSED METAL CONTAINER IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS. EPA WASTE NO: D001 D002.