



Ryan Millunzi
Microbiologist
Remediation & Environmental Xperts, LLC
2903 North Birdwell Ln
Big Spring, TX, 79720

INFORMATION ONLY

September 10, 2018

Mr. Bradley Dodson
Operations Manager
Heart River Logistics, LLC
Andrews, TX, 79714

1RP-5200

Mr. Bradley Dodson:

RE: Crude Oil Release / Azalea 111

Please find below Remediation & Environmental Xperts (REX) responses to the questions appearing on New Mexico Oil Conservation Division Form C-141.

1. *Detailed description of proposed remediation technique:*

Remediation & Environmental Xperts takes pride in being a sustainable and environmentally friendly bioremediation company performing in situ treatment of hydrocarbon contaminated soils. We use naturally occurring bacteria supplemented by biosurfactants to degrade hydrocarbon contaminants from the environment. We have used this process on over 2,000+ projects and have found great success treating an array of hydrocarbon contaminated soils. Our process involves the implementation of bacteria and necessary biosurfactants into the soil through the use of both high and low pressure sprayer systems. Please see attached SDS for all corresponding safety data sheets.

2. *Estimated volume of material to be remediated:*

REX personnel were informed by Mr. Bradley Dodson of Heart River Logistics that the volume of the unintended release was 20 barrels. This volume was released into an area approximately 60 ft x 20 ft equaling 1,200 square feet. Upon initial arrival at the site of release, two soil samples were collected prior to any clean up activities being conducted. Please see the table below for analytical data:

<i>Soil Sample</i>	<i>Total TPH (mg/kg) *</i>
<i>Sample #1 – Surface</i>	21,300
<i>Sample #2 – 12 in bgs</i>	17,600

*Please see attached *Analytical Report 597861* for full analytical data.

Based on the data above (high concentration of hydrocarbons at 1 ft bgs) and visual observations at the release site, it is our estimation that contaminants are present down to 2 ft bgs. With an area of 1,200 square feet and a depth of 2 ft, the estimated volume of material to be remediated is 2,400 cubic feet. For a more accurate delineation, further sampling and analytical testing would need to be done.

3. *Proposed Schedule for Remediation:*

REX’s remediation technique involves thoroughly saturating the contaminated soil with biosurfactants and microbial products, followed by a period of 21 days to allow time for biodegradation to occur. After this 21 day period, soil samples will be collected within the release area to assess current levels of contaminants. Based upon these levels, a new remediation plan will be established to treat any remaining contaminants. This typically involves a plan similar to the first treatment, but on a smaller scale more focused on the areas that still contain contaminants.

4. *Detailed Soil Testing Technique:*

All soil testing was performed by Xenco Laboratories of Midland, TX using TPH by SW8015 Mod. Please see *Analytical Report 597861* for more details.

I hope these prove helpful, and if there is anything else you need from us please don’t hesitate to ask.

Kind Regards,

Ryan Millunzi
 Microbiologist
 Remediation & Environmental Xperts, LLC
 2903 North Birdwell Ln
 Big Spring, TX, 79720



Certificate of Analysis Summary 597861

Remediation and Environmental Xperts, LLC, Big Spring, TX



Project Name: Heart River Logistics

Project Id:
Contact: Ryan Millunzi
Project Location: Jal New Mexico

Date Received in Lab: Tue Sep-04-18 10:15 am
Report Date: 06-SEP-18
Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	597861-001		597861-002				
	<i>Field Id:</i>	Sample #1		Sample #2				
	<i>Depth:</i>	Surface-		12- In				
	<i>Matrix:</i>	SOIL		SOIL				
	<i>Sampled:</i>	Sep-03-18 09:00		Sep-03-18 09:05				
TPH by SW8015 Mod	<i>Extracted:</i>	Sep-05-18 13:00		Sep-05-18 13:00				
	<i>Analyzed:</i>	Sep-05-18 22:18		Sep-05-18 22:38				
	<i>Units/RL:</i>	mg/kg	RL	mg/kg	RL			
Gasoline Range Hydrocarbons (GRO)		11100	74.8	9760	74.9			
Diesel Range Organics (DRO)		10200	74.8	7830	74.9			
Motor Oil Range Hydrocarbons (MRO)		<74.8	74.8	<74.9	74.9			
Total TPH		21300	74.8	17600	74.9			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Holly Taylor
Project Manager

Analytical Report 597861
for
Remediation and Environmental Xperts, LLC

Project Manager: Ryan Millunzi
Heart River Logistics

06-SEP-18

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-27), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-13)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-17)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-16)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)



06-SEP-18

Project Manager: **Ryan Millunzi**
Remediation and Environmental Xperts, LLC
P.O. Box 2699
Big Spring, TX 79720

Reference: XENCO Report No(s): **597861**
Heart River Logistics
Project Address: Jal New Mexico

Ryan Millunzi:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 597861. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 597861 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Holly Taylor
Project Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



Sample Cross Reference 597861



Remediation and Environmental Xperts, LLC, Big Spring, TX

Heart River Logistics

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Sample #1	S	09-03-18 09:00	Surface	597861-001
Sample #2	S	09-03-18 09:05	12 In	597861-002



CASE NARRATIVE

Client Name: Remediation and Environmental Xperts, LLC

Project Name: Heart River Logistics

Project ID:
Work Order Number(s): 597861

Report Date: 06-SEP-18
Date Received: 09/04/2018

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 597861



Remediation and Environmental Xperts, LLC, Big Spring, TX Heart River Logistics

Sample Id: Sample #1	Matrix: Soil	Date Received: 09.04.18 10.15
Lab Sample Id: 597861-001	Date Collected: 09.03.18 09.00	Sample Depth: Surface
Analytical Method: TPH by SW8015 Mod		Prep Method: TX1005P
Tech: ARM		% Moisture:
Analyst: ARM	Date Prep: 09.05.18 13.00	Basis: Wet Weight
Seq Number: 3062279		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	11100	74.8	mg/kg	09.05.18 22.18		5
Diesel Range Organics (DRO)	C10C28DRO	10200	74.8	mg/kg	09.05.18 22.18		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<74.8	74.8	mg/kg	09.05.18 22.18	U	5
Total TPH	PHC635	21300	74.8	mg/kg	09.05.18 22.18		5
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	09.05.18 22.18		
o-Terphenyl	84-15-1	127	%	70-135	09.05.18 22.18		



Certificate of Analytical Results 597861



Remediation and Environmental Xperts, LLC, Big Spring, TX Heart River Logistics

Sample Id: Sample #2	Matrix: Soil	Date Received: 09.04.18 10.15
Lab Sample Id: 597861-002	Date Collected: 09.03.18 09.05	Sample Depth: 12 In
Analytical Method: TPH by SW8015 Mod		Prep Method: TX1005P
Tech: ARM		% Moisture:
Analyst: ARM	Date Prep: 09.05.18 13.00	Basis: Wet Weight
Seq Number: 3062279		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	9760	74.9	mg/kg	09.05.18 22.38		5
Diesel Range Organics (DRO)	C10C28DRO	7830	74.9	mg/kg	09.05.18 22.38		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<74.9	74.9	mg/kg	09.05.18 22.38	U	5
Total TPH	PHC635	17600	74.9	mg/kg	09.05.18 22.38		5
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3		108	%	70-135	09.05.18 22.38	
o-Terphenyl	84-15-1		109	%	70-135	09.05.18 22.38	



Remediation and Environmental Xperts, LLC
Heart River Logistics

Analytical Method: TPH by SW8015 Mod
Seq Number: 3062279
MB Sample Id: 7661747-1-BLK

Matrix: Solid
LCS Sample Id: 7661747-1-BKS

Prep Method: TX1005P
Date Prep: 09.05.18
LCSD Sample Id: 7661747-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	919	92	878	88	70-135	5	20	mg/kg	09.05.18 15:20	
Diesel Range Organics (DRO)	<8.13	1000	962	96	925	93	70-135	4	20	mg/kg	09.05.18 15:20	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		117		118		70-135	%	09.05.18 15:20
o-Terphenyl	108		103		101		70-135	%	09.05.18 15:20

Analytical Method: TPH by SW8015 Mod
Seq Number: 3062279
Parent Sample Id: 597793-004

Matrix: Soil
MS Sample Id: 597793-004 S

Prep Method: TX1005P
Date Prep: 09.05.18
MSD Sample Id: 597793-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<7.98	997	858	86	829	83	70-135	3	20	mg/kg	09.05.18 16:20	
Diesel Range Organics (DRO)	<8.10	997	921	92	898	90	70-135	3	20	mg/kg	09.05.18 16:20	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	125		110		70-135	%	09.05.18 16:20
o-Terphenyl	98		95		70-135	%	09.05.18 16:20

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Setting the Standard since 1990
 Stafford, Texas (281-240-4200)
 Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 1 of 2

San Antonio, Texas (210-509-3334)
 Midland, Texas (432-704-5251)

WWW.XENCO.COM

Phoenix, Arizona (480-355-0900)

Client / Reporting Information		Project Information		Analytical Information		Matrix Codes											
Company Name / Branch: REMEDIATION AND ENVIRONMENTAL EXPERTS, LLC (REX, LLC)		Project Name/Number: Heart River Logistics		Xenoco Quote #		Xenoco Job #											
Company Address: P. O. BOX 2699 BIG SPRING, TX 79720		Project Location: SAL New Mexico		50781													
Email: REX@OILANDSALTREMEDIATION.COM RYAN@OILANDSALTREMEDIATION.COM ADMIN@OILANDSALTREMEDIATION.COM ANNE@OILANDSALTREMEDIATION.COM		Phone No: 432-213-3111 (Invoice To)		Xenoco Matrix		TPH CHLORIDES											
Sampler's Name: Tash A. OLANDSALT Remediation		Invoice No:		Matrix Codes		W = Water S = Soil/Sed/Solid GW = Ground Water DW = Drinking Water P = Product SW = Surface water SL = Sludge OW = Ocean/Sea Water WI = Wipe O = Oil WW = Waste Water A = Air											
No.	Field ID / Point of Collection	Collection	Sample Depth	Date	Time	Matrix	# of bottles	CI	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	Field Comments	
1	SAMPLE #1		5'±	9-4-18	9:00		1										
2	SAMPLE #1		12"	9-3-18	9:05		1										
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
Turnaround Time (Business days)		Data Deliverable Information		Notes:													
<input type="checkbox"/> Same Day TAT		<input checked="" type="checkbox"/> 6 Day TAT		<input type="checkbox"/> Level II Std QC		<input type="checkbox"/> Level IV (Full Data Pkg /raw data)											
<input type="checkbox"/> Next Day EMERGENCY		<input type="checkbox"/> 7 Day TAT		<input type="checkbox"/> Level III Std QC+ Forms		<input type="checkbox"/> TRRP Level IV											
<input type="checkbox"/> 2 Day EMERGENCY		<input type="checkbox"/> Contract TAT		<input type="checkbox"/> Level 3 (CLP Forms)		<input type="checkbox"/> UST / RG -411											
<input type="checkbox"/> 3 Day EMERGENCY				<input type="checkbox"/> TRRP Checklist													
TAT Starts Day received by Lab, if received by 5:00 pm																	
Relinquished by Sampler:		SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY		FED-EX / UPS: Tracking #													
Date Time:		9-4-18 9:21		Received By:		1. [Signature]		Date Time:		9-4-18 10:15		Received By:		2. [Signature]			
Relinquished by:		Date Time:		Received By:		3. [Signature]		Date Time:		9-4-18 10:15		Received By:		4. [Signature]			
Relinquished by:		Date Time:		Received By:		4. [Signature]		Date Time:		9-4-18 10:15		Received By:		5. [Signature]			
Relinquished by:		Date Time:		Received By:		5. [Signature]		Date Time:		9-4-18 10:15		Received By:		6. [Signature]			

Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenoco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenoco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenoco. A minimum charge of \$75 will be applied to each project. Xenoco's liability will be limited to the cost of samples. Any samples received by Xenoco but not analyzed will be invoiced at \$5 per sample. These terms will be enhanced unless previously negotiated under a fully executed client contract.



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: Remediation and Environmental Xperts,
Date/ Time Received: 09/04/2018 10:15:00 AM
Work Order #: 597861

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.2
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6* Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	N/A
#18 Water VOC samples have zero headspace?	N/A

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:

PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 09/04/2018
Brianna Teel

Checklist reviewed by: Holly Taylor Date: 09/04/2018
Holly Taylor

1. IDENTIFICATION

Product Name (as labeled): ***TerraSolve-100TM (TS-100TM)***

Description: TerraSolve is a 100% natural fatty acid methyl ester and ethyl ester biodegradable in 28 days.

Manufacturer's Name: TerraHydroChem, Inc.
Address: 217 Deborah Drive, New Braunfels, TX 78130
Emergency Phone: For Hazardous Materials Incident Call CHEMTREC – 1-800-424-9300
Email: info@terrahidrochem.com

Recommended Use: Solvent
Recommended Restrictions: None known

2. HAZARD(S) IDENTIFICATION

Physical Hazards: Not classified

Health Hazards: Skin Irritant Category 2 H315
Causes eye irritation Category 2B H320

Label Elements:

GHS Label Elements:

The substance is classified and labeled according to the Globally Harmonized System (GHS).

Hazard Pictogram:



GHS07

Signal Word: Warning
Hazard Statement: May cause skin and eye irritation.
Precautionary Statement:

Prevention: Wear protective gloves and safety glasses as needed. Wash thoroughly after handling.

Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment (see supplementary first aid instructions on this Safety Data Sheet. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse.

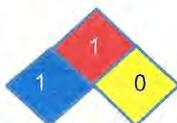
Unknown Acute Toxicity: 100% of the mixture consists of ingredient(s) of unknown toxicity.

Version 1.1

Revision Date: 12/7/2015

Product Name (as labeled): TerraSolve-100[™] (TS-100[™])

Classification System:
NFPA Ratings (scale 0-4)



Health = 1
Fire = 1
Reactivity = 0

Hazard(s) Not Otherwise Classified (HNOC): None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS-NO.	CONCENTRATION*
Proprietary	Proprietary	Proprietary

4. FIRST AID MEASURES

Inhalation: Not a normal route of entry
Skin Contact: If irritation occurs, wash area with soap and water.
Eye Contact: Rinse opened eye for at least 15 minutes under running water. If symptoms persist, consult a doctor.
Ingestion: Call a doctor if irritation or symptoms develop.
Most Important Symptoms/Effects, Acute and Delayed: No further relevant information available.
Indication of Immediate Medical Attention and Special Treatment Needed: No further relevant information available.

5. FIRE FIGHT MEASURES

Suitable Extinguishing Media: Use firefighting measures that suit the environment.
Specific Hazards Arising From the Chemical: Rags soaked with any solvent present a fire hazard and should always be stored in UL listed or Factory Mutual approved covered containers. Improperly stored rags can create conditions that lead to oxidation. Oxidation, under certain conditions, can lead to spontaneous combustion.
Special Protective Equipment and Precautions for Firefighters: Treat as an oil fire.
Fire Fighting Equipment and Instructions: As in any fire, wear self-contained apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Version 1.1

Revision Date: 12/7/2015

Product Name (as labeled): TerraSolve-100™ (TS-100™)

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear protective equipment. Keep unprotected persons away.

SPILL CLEANUP METHODS: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Large Spillages: Flush area with water. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

ENVIRONMENTAL PRECAUTIONS: Contain spilled material. Transfer to secure containers. Where necessary, collect using absorbent material. Prevent entry into waterways, sewers or basements or confined areas.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Ensure good ventilation/exhaustion at the workplace. Prevent formation of aerosols.

Information about protection against explosions and fires: No special measures required.

Conditions for Safe Storage,

Including any Incompatibilities: Store in cool, dry, well ventilated area away from direct sunlight and any incompatible materials (see section 10)

Further Information: Keep receptacle tightly sealed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Additional information about design of technical systems: No further data; see section 7.

Control parameters

Components with occupational exposure limits:

Additional information: The lists that were valid during the creation of this SDS were used as basis.

Exposure controls

Personal Protective Equipment:

General Protective and Hygienic Measures: The usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing and wash before reuse. Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

Not required

Breathing Equipment:

Protection of Hands:



Protective Gloves

The glove material has to be impermeable and resistant to the product/the substance/the preparation. Due to missing tests no recommendation to the glove material can be given for the product/the preparation/the chemical mixture. Select glove material based on penetration times, rates of diffusion and degradation.

Version 1.1

Revision Date: 12/7/2015

Product Name (as labeled): TerraSolve-100™ (TS-100™)

Material of Gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Penetration Time of Glove Material: The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.

Eye Protection:



Safety Glasses

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

General Information

Appearance:

Form:	Liquid
Color:	Light yellow
Odor:	Light vegetable oil/citrus oil
Odor Threshold:	Not determined.
pH-value:	6.5-7
Kauri-Butanol Values:	61
Boiling point/Boiling range:	632 °F
Flash Point:	>300 °F
Flammability (solid, gaseous):	Not applicable.
Percent VOC:	7.29
Decomposition Temperature:	Not determined.
Auto igniting:	Not determined.
Danger of Explosion:	Product does not present an explosion hazard.
Explosion Limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor Pressure:	0.4 mm Hg @ 25° C
Density @ 20 °C (68 °F):	<1.0
Relative density:	Not determined.
Vapor density:	<1.0
Evaporation rate:	<0.006 @ 25° C (NBAC = 1.00)

Solubility in / Miscibility with

Water: Insoluble.

Partition coefficient (n-octanol/water): Not determined.

Viscosity:	4.50 @ 25° C
Dynamic:	Not determined.
Kinematic:	Not determined.

Other information: No further relevant information available.

Version 1.1

Revision Date: 12/7/2015

Product Name (as labeled): TerraSolve-100™ (TS-100™)

10. STABILITY AND REACTIVITY

Reactivity: No further relevant information available.
Chemical stability: Stable under normal conditions.
Thermal decomposition / conditions to be avoided: Thermal decomposition will produce toxic oxides of carbon.
Possibility of hazardous reactions: No dangerous reactions known.
Conditions to avoid: Strong oxidizers, acids and alkalis.
Incompatible materials:
Hazardous decomposition products: Oxides of carbon (COx)

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:
Primary Irritant Effect:
On the Skin: May be irritating.
On the Eye: May be irritating.
Additional Toxicological Information:
Carcinogenic Categories
IARC (International Agency for Research on Cancer) Substance is not listed.
NTP (National Toxicology Program) Substance is not listed.
OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.

12. ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Behavior in environmental systems:
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Additional ecological information:
General notes: Not known to be hazardous to water.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No further relevant information available.

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Uncleaned Packagings Recommendation: Disposal must be made according to official regulations.

Version 1.1

Revision Date: 12/7/2015

Product Name (as labeled): TerraSolve-100™ (TS-100™)

14. TRANSPORT INFORMATION

UN-Number	
DOT, ADR, ADN, IMDG, IATA	Non-Regulated Material
UN Proper Shipping Name:	
DOT, ADR, ADN, IMDG, IATA	Non-Regulated Material
Transport hazard class(es):	
DOT, ADR, ADN, IMDG, IATA	
Class:	Non-Regulated Material
Packing group:	
DOT, ADR, IMDG, IATA	Non-Regulated Material
Environmental hazards:	Not applicable.
Special precautions for user:	Not applicable.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	Not applicable.
UN "Model Regulation":	-

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

Sara

Section 355 (extremely hazardous substances):	Substance is not listed.
Section 313 (Specific toxic chemical listings):	Substance is not listed.
TSCA (Toxic Substances Control Act):	Substance is listed.

California Proposition 65

Chemicals known to cause cancer:	Substance is not listed.
Chemicals known to cause reproductive toxicity for females:	Substance is not listed.
Chemicals known to cause reproductive toxicity for males:	Substance is not listed.
Chemicals known to cause developmental toxicity:	Substance is not listed.

Carcinogenic Categories

EPA (Environmental Protection Agency)	Substance is not listed.
TLV (Threshold Limit Value established by ACGIH)	Substance is not listed.
NIOSH-Ca (National Institute for Occupational Safety and Health)	Substance is not listed.
GHS label elements:	The substance is classified and labeled according to the Globally Harmonized System (GHS).

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Product Name (as labeled): TerraSolve-100TM (TS-100TM)

Hazard Pictograms:



GHS07

Signal Word:

Warning

Hazard Statements:

May cause skin and eye irritation.

Precautionary Statements:

Wear protective gloves and safety glasses as needed. Wash thoroughly after handling.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

If on skin: Wash with plenty of water.

Take off contaminated clothing and wash it before reuse.

Non-regulated material.

National Regulations:

State Right to Know:

67762-37-2 Methyl ester  Skin Irrit.2, H315; Eye Irrit.2B, H320 100%

Chemical Safety Assessment:

A chemical Safety Assessment has not been carried out.

16. ADDITIONAL INFORMATION

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

Date of preparation / last revision
12/29/2015 / 5

Abbreviations and acronyms:

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2

Eye Irrit. 2B: Serious eye damage/eye irritation, Hazard Category 2B

1. IDENTIFICATION

Product Name (as labeled): **TerraCleanse-WBS™ (TC-WBS™)**

Description: TerraCleanse WBS is a natural, 100% biodegradable in 28 days, active-colloid based formulation, consisting of natural surfactants, emulsifying agents and sequestrates derived from vegetable fatty-acids, other nutrients, and natural non-toxic proprietary formulas.

Manufacturer's Name: TerraHydroChem, Inc.
Address: 217 Deborah Drive, New Braunfels, TX 78130
Emergency Phone: CHEMTREC – 1-800-424-9300
Email: info@terrahidrochem.com

Recommended Use: Surfactant
Recommended Restrictions: None known

2. HAZARDOUS IDENTIFICATION

Physical Hazards: Not classified.
Health Hazards: Acute toxicity, oral Category 4
 Acute toxicity, inhalation Category 4
 Skin Corrosion/irritation Category 2
 Serious eye damage/eye irritation Category 2
 Specific target organ toxicity, single exposure Category 3

Environmental Hazards: Hazardous to the aquatic environment, acute hazard Category 2

OSHA Defined Hazards: Not classified

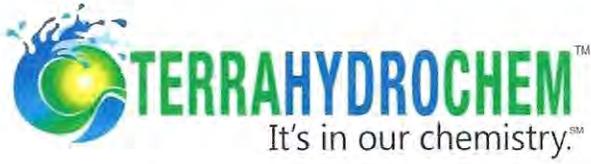


Signal Word: Warning Flammable Marine Pollutant
Hazard Statement: Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. Harmful if inhaled. May cause respiratory irritation. Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Prevention: Use only outdoors or in a well-ventilated area. Avoid breathing mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves. Wear eye/face protection.
Response: Collect spillage. If swallowed: Call a poison center/doctor if you feel unwell. If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor. Rinse mouth. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Storage: Store away from incompatible materials.
Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Environmental Hazards: Hazardous to aquatic environment, acute hazard Category 2

Hazard(S) Not Otherwise Classified (HNOC): None known.
Supplemental Information: Not applicable.



3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	%
N,N-dimethyl 9-decenamide	1356964-77-6	36-54
Terpene hydrocarbons	68956-56-9	32-48
Polyoxyethylene (20) Sorbitan monooleate	9005-65-6	4-12
*Other components below reportable levels or trade secret		0 - <2

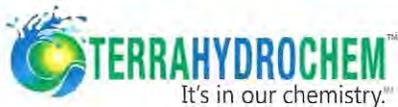
* Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Inhalation:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician. Move to fresh air. Call a physician if symptoms develop or persist.
Skin Contact:	Wash off with plenty of soap and water. If skin irritation occurs: Get medical attention if irritation develops and persists. Take off contaminated clothing and wash before reuse.
Eye Contact:	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion:	Rinse mouth. If SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Do not induce vomiting without advice from a poison control center.
Most Important Symptoms/Effects, Acute and Delayed:	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.
Indication of Immediate Medical Attention and Special Treatment Needed:	Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General Information:	Ensure that medical personnel are aware of the materials(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable Extinguishing:	Do not use water jet as an extinguisher, as this will spread the fire.
Specific Hazards Arising from the Chemical:	During fire, gases hazardous to health may be formed.
Special Protective Equipment and precautions for firefighters:	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire Fighting Equipment/Instructions:	Move containers from fire area if you can do so without risk.
Specific Methods:	Use standard firefighting procedures and consider the hazards of other involved materials.
General Fire Hazards:	No unusual fire or explosion hazards noted.



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6. ACCIDENTAL RELEASE MEASURES

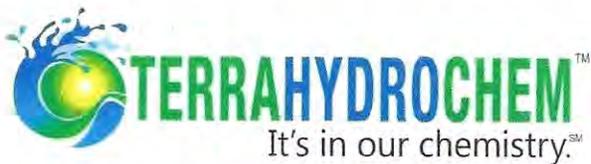
Personal Precautions	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 of the SDS.
Protective Equipment and Emergency Procedures:	
Methods and Materials for Containment and Clean Up:	Large Spills: Stop the flow of material if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal see section 13 of the SDS.
Environmental Precautions:	Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. HANDLING AND STORAGE

Precautions for Safe Handling:	Do not taste or swallow. Avoid breathing vapor. Avoid contact with skin. Avoid contact with eyes. Avoid contact with clothing. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.
Conditions for Safe Storage, Including any Incompatibilities:	Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see section 10)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure Limits:	No exposure limits noted for ingredients.
Biological Limit Values:	No biological exposure limits noted for the ingredients.
Appropriate Engineering Controls:	Ensure adequate ventilation, especially in confined areas. Eye wash facilities and emergency shower must be available when handling this product.
Individual protection measures, such as personal protective equipment:	
Eye/Face protection:	Wear safety glasses with side shields (goggles). Wear a full face respirator, if needed.
Hand Protection:	Wear appropriate chemical resistant gloves.
Skin Protection – Other:	Wear appropriate chemical resistant clothing. Use impervious gloves. Avoid nitrile rubber gloves.
Respiratory Protection:	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal Hazards:	Wear appropriate thermal protective clothing when necessary.
General Hygiene Measures:	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.



9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Physical State: Liquid.
Form: Liquid.
Color: Amber

Odor:

Mild

Odor Threshold:

Not available.

pH:

4.8 at 25°C

Melting/Freezing Point:

14.9 °F (-9.5 °C) /3.2 °F (-16 °C)

Initial Boiling Point and Range:

232°F (111.11 °C)

Flash Point:

176.2 °F (80.0 °C) Pensky-Martens Closed Cup

Evaporation Rate:

Not available.

Flammability (solid, gas):

Not available.

Upper/Lower Flammability or explosive limits:

Flammability limit – Lower (%): Not available.

Flammability limit – Upper (%): Not available.

Explosive limit – Lower (%): Not available.

Explosive limit- Upper (%): Not available.

Vapor Pressure:

0.002500 mm Hg @ 20C

Vapor Density:

Not available.

Relative Density:

Not available.

Solubility(ies):

Solubility (Water)

Not available.

Partition Coefficient:

Not available.

(n-octanol/water)

Auto-Ignition Temperature:

464 °F (240 °C)

Decomposition temperature:

Not available.

Viscosity:

4 cP @ 25C

Other Information:

Density:

7.40 lb/gal

Pour Point:

6.8 °F (-14 °C)

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10. STABILITY AND REACTIVITY

Reactivity:	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical Stability:	Material is stable under normal conditions.
Possibility of Hazardous Reactions:	No dangerous reaction known under conditions of normal use.
Conditions to avoid:	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials:	Strong oxidizing agents. Strong acids.
Hazardous Decomposition ammonia, Products:	Upon decomposition, this product may yield oxides of nitrogen and carbon dioxide, carbon monoxide and other low hydrocarbons.
molecular weight	

11. TOXICOLOGICAL INFORMATION
Information on Likely Routes of Exposure

Inhalation:	Harmful if inhaled.
Skin Contact:	Causes skin irritation.
Eye Contact:	Causes serious eye irritation.
Ingestion:	Harmful if swallowed.

Symptoms Related to the Physical, Chemical and Toxicological

Symptoms may include stinging, tearing, redness, swelling and blurred vision. Skin irritation. May cause redness and pain.

Characteristics:
Information of
Toxicological Effects
Acute Toxicity: Harmful if inhaled. Harmful if swallowed. May be harmful in contact with skin.

	Species	Test Results
Acute Dermal LD50	Rabbit	>2000 mg/kg
Inhalation LD50		>3500 mg/kg
Oral LD50	Rat	550 mg/kg

Skin Corrosion/Irritation:	Causes skin irritation
Serious Eye Damage/Eye Irritation:	Causes serious eye irritation.

Respiratory or Skin Sensitization
Respiratory Sensitization: Not available

Germ Cell Mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.



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Reproductive Toxicity: This product is not expected to cause reproductive or developmental effects.

Specific Target Organ Toxicity - Single Exposure: Respiratory tract irritation.

Specific Target Organ Toxicity - Repeated Exposure: Not applicable.

Aspiration Hazard: Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Product	Species	Test Results
TC-TEM <i>Acute</i>		
Algae	EC50	Algae 5.6 mg/l, 72 hours
Crustacea	EC50	Daphnia 2.8 mg/l, 48 hours
Fish	LC50	Fish 5.6 mg/l, 96 hours

Persistence and Degradability: Readily biodegradable.

Bioaccumulative potential: No data available.

Mobility in Soil: No data available.

Other Adverse Effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. DISPOSAL CONSIDERATIONS

Disposal Instructions: Dispose of contents/container in accordance with local, regional, national international regulations.

Hazardous Waste Code: The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from Residues/Unused: may Products Dispose of in accordance with local regulations. Empty containers or liners retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated Packaging: even Since emptied containers may retain product residue, follow label warnings after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

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14. TRANSPORT INFORMATION**UN Number**US DOT/ADR/RID: UN2319
IMDG: UN2319
IATA/ICAO: UN2319**Transport hazard class: 3****Label:** 3 Flammable Liquid, Symbol fish and tree**Label/Placard:** exception §173.150 (f) applies (US DOT only)**Packing Group:** III**Environmental hazards:** Marine pollutant**15. REGULATORY INFORMATION****US Federal Regulations**

Hazard

This product is a "Hazardous Chemical" as defined by the OSHA

Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4):

Not Listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

Not listed.

**Superfund Amendments and Reauthorization Act of
1986(SARA) Hazard Categories:**

Immediate Hazard –

Yes

Delayed

Hazard –

No Fire

Hazard –

No

Pressure

Hazard –

No

Reactivity

Hazard –

No

SARA 302 Extremely Hazardous Substance:

No

SARA 311/312 Hazardous

Yes

Chemical:**SARA 313 (TRI reporting):**

Not regulated.

Other Federal Regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List:**

Not regulated.

Clean Air Act (CAA) Section 112® Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated

US State Regulations**US. Massachusetts RTK - Substance List:**

Not regulated.

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

or other
 WARNING: This product contains a chemical known to the State of California to cause birth defects or reproductive harm.

US. California Proposition 65 – CRT: Listed date/Developmental toxin

Methanol (CAS 67-56-1)

Listed March 16, 2012

International Inventories

Country(s) or Region	Inventory Name	On Inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. OTHER INFORMATION**Further information****NFPA Ratings:**

Health: 2

Flammability: 1

Instability: 0

Disclaimer:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in text.

1. IDENTIFICATION

Product Name (as labeled): TerraCleanse-1200™ (TC-1200™)
Description: TerraCleanse is a natural, 100% biodegradable in 28 days, active-colloid based formulation, consisting of natural surfactants, emulsifying agents and sequestrants derived from vegetable fatty-acids, other nutrients, and natural non-toxic proprietary formulas.

Manufacturer's Name: TerraHydroChem, Inc.
Address: 217 Deborah Drive, New Braunfels, TX 78130
Emergency Phone: 888-567-4374
Email: info@terrahydrochem.com

Recommended Use: Surfactant
Recommended Restrictions: None known

2. HAZARDOUS IDENTIFICATION

Physical Hazards: Not classified
Health Hazards: Acute toxicity, oral Category 4
 Serious eye damage/eye irritation Category 2A
Environmental Hazards: Not classified
OSHA Defined Hazards: Not classified
Label Elements:



Signal Word: Warning
Hazard Statement: Harmful if swallowed. Causes serious eye irritation.

Precautionary Statement:

Prevention: Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear eye/face protection.
Response: If swallowed: Call a poison center/doctor if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse mouth. If eye irritation persists: Get medical advice/attention.
Storage: Store away from incompatible materials.
Disposal: Dispose of contents/container in accordance with local, regional, national, and/or international regulations.

Environmental Hazards: Hazardous to aquatic environment, acute hazard Category 2
Hazard(S) Not Otherwise Classified (HNOC): Toxic to aquatic life.
Supplemental Information: None



3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	%
Benzenesulfonic Acid, C10-16-alkyl Derivs., Compds. With 2-propanamine	68584-24-7	40-60
Polyoxyethylene (20) Sorbitan Monooleate	9005-65-6	30-40
*Other components below reportable levels or trade secret		0 - <15

* Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

Composition comments Occupational Exposure Limits for impurities are listed in Section 8.

4. FIRST AID MEASURES

Inhalation: Move to fresh air. Call a physician if symptoms develop or persist.

Skin Contact: Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.

Most Important Symptoms/Effects, Acute and Delayed: Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Indication of Immediate Medical Attention and Special Treatment Needed: Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General Information: Ensure that medical personnel are aware of the materials(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable Extinguishing: Do not use water jet as an extinguisher, as this will spread the fire.

Specific Hazards Arising From the Chemical: During fire, gases hazardous to health may be formed.

Special Protective Equipment and Precautions for Firefighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire Fighting Equipment and Instructions: Move containers from fire area if you can do so without risk.

Specific Methods: Use standard firefighting procedures and consider the hazards of other involved materials.

General Fire Hazards: No unusual fire or explosion hazards noted.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Protective Equipment and Emergency Procedures: Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 of the SDS.

Methods and Materials for Containment and Cleaning Up: This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover the plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see Section 13 of the SDS.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Avoid contact with eyes. Do not taste or swallow. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly and handling. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for Safe Storage, Including any Incompatibilities: Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).



8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits: No exposure limits noted for ingredient(s).

Biological limit values: No biological exposure limits noted for the ingredient(s).

Engineering Controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Personal Protective Equipment

Eye/Face Protection: Face shield is recommended. Wear safety glasses with side shields (or goggles).

Skin Protection/Hand Protection: Wear appropriate chemical resistant gloves.

Other: Wear suitable protective clothing.

Respiratory Protection: Not required for properly ventilated areas.

Thermal Hazards: Wear appropriate thermal protective clothing, when necessary.

General Hygiene: Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear Viscous.

Physical State: Liquid.

Form: Liquid.

Color: Reddish.

Odor: Slight Amine-like

Odor Threshold: Not available.

pH: 7.11

Melting/Freezing Point: Not available

Initial Boiling Point and Range: >212 °F (>100 °C)

Flash Point: Cleveland Open Cup, None to decomposition

Evaporation Rate: Not available.

Flammability (solid, gas): Not applicable.

Upper/Lower Flammability or explosive limits:

Flammability limit – Lower (%): Not available.

Flammability limit – Upper (%): Not available.

Explosive limit – Lower (%):	Not available.
Explosive limit- Upper (%):	Not available.
Vapor Pressure:	Not available.
Vapor Density:	Not available.
Relative Density:	Not available.
Solubility(ies):	
Solubility (Water)	Completely soluble.
Partition Coefficient: (n-octanol/water)	Not available.
Auto-ignition Temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	2400 – 3600 cP @ 25 deg C
Other Information:	
Density:	8.40 lb/gal
Molecular Weight:	379
Specific Gravity:	1.01

10. STABILITY AND REACTIVITY

Reactivity:	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical Stability:	Material is stable under normal conditions.
Possibility of Hazardous Reactions:	No dangerous reaction known under conditions of normal use.
Conditions to avoid:	Contact with incompatible materials.
Incompatible materials:	Strong oxidizing agents.
Hazardous Decomposition Products:	No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation:	No adverse effects due to inhalation are expected.
Skin Contact:	No adverse effects due to skin contact are expected.
Eye Contact:	Causes serious eye irritation.
Ingestion:	Harmful if swallowed.
Symptoms Related to the Physical, Chemical and Toxicological Characteristics:	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling and blurred vision.

Information of Toxicological Effects

Acute Toxicity:	Harmful if swallowed.
------------------------	-----------------------



Components	Species	Test Results
Benzenesulfonic Acid, C10-16 Alkyl Derivs., Compds. With 2 propanamine (CAS 68584-24-7)		
Acute		
Oral		
LD50	Rat	1300 mg/kg
Dermal		
LD50	Rabbit	>5000 mg/kg
Oral		
Rat	Rat	>5000 mg/kg

*Estimates for product may be based on additional component data not shown.

Skin Corrosion/Irritation Prolonged skin contact may cause temporary irritation.
Serious Eye Damage/Eye Irritation: Causes serious eye irritation.

Respiratory or Skin Sensitization

Respiratory Sensitization: Not a respiratory sensitizer
Germ Cell Mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive Toxicity: This product is not expected to cause reproductive or developmental effects.

Specific Target Organ Toxicity- Single Exposure Not classified

Specific Target Organ Toxicity- Repeated Exposure Not classified

Aspiration Hazard: Not an aspiration hazard.

12. ECOLOGICAL INFORMATION

Components	Species	Test Results
Benzenesulfonic Acid, C10-16-alkyl Derivs., Compds. With 2-propanamine (CAS 68584-24-7)		
Aquatic		
Acute		
Crustacea	EC50	Daphnia 0.009 mg/l, 48 h
Fish	LC50	Fathead minnow (Pimephales Promelas) 22 mg/l, 96 h
Sorbitan Monooleate		
Toxicity to Fish	LC50	Rainbow Trout (Oncorhynchus mykiss) 471 mg/l 96 h
Toxicity to Crustacea	LC50	Daphnia 165 mg/l 96 h
Toxicity to Bacteria		ICO (Pseudomonas Putida) >10,000 mg/l

Persistence and Degradability: This product is expected to be readily biodegradable.

Bioaccumulative potential

Mobility in Soil: No data available.

Other Adverse Effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. DISPOSAL CONSIDERATIONS

Disposal Instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local, regional, national international regulations.

Local Disposal Regulations: Dispose in accordance with all applicable regulations.

Hazardous Waste Code: The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from Residues/Unused Products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated Packaging: Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT

UN Number: UN3082

UN Proper Shipping Name: Environmentally hazardous substances, liquid, n.o.s. (Alkylbenzene sulfonate, Alcohols, ethoxylated)

Transport Hazard Class(es)

Class: 9

Subsidiary Risk: -

Label(s): 9

Packing Group: III

Environmental Hazards

Marine Pollutant: Yes

Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

Special provisions: 8, 146, 335, IB3, T4, TP1, TP29

Packaging exceptions: 155

Packaging non bulk: 203

Packaging bulk: 241

DOT NON-BULK Not regulated as dangerous goods.



IATA

UN Number UN3082
UN Proper Shipping Name: Environmentally hazardous substances, liquid, n.o.s. (Alkylbenzene sulfonate, Alcohols, ethoxylated)
Transport Hazard Class(es)
 Class: 9
 Subsidiary Risk: -
Packing Group: III
Environmental Hazards: No.
ERG Code: 9L
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.
Other Information
 Passenger and Cargo Aircraft: Allowed.
 Cargo Aircraft Only: Allowed.

IMDG

UN Number UN3082
UN Proper Shipping Name: Environmentally hazardous substances, liquid, n.o.s. (Alkylbenzene sulfonate, Alcohols, ethoxylated)
Transport Hazard Class(es)
 Class: 9
 Subsidiary Risk: -
Packing Group: III
Environmental Hazards:
 Marine Pollutant: Yes
EmS: F-A, S-F
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not established.

DOT; IATA; IMDG





General Information: DOT Regulated Marine Pollutant. IMDG Regulated Marine Pollutant.

15. REGULATORY INFORMATION

US Federal Regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D):

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4):

Not Listed.

SARA 304 Emergency Release Notification:

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard Categories: Immediate Hazard – Yes
Delayed Hazard – No
Fire Hazard – No
Pressure Hazard – No
Reactivity Hazard – No

SARA 302 Extremely Hazardous Substance:

Not listed.

SARA 311/312 Hazardous Chemical: No

SARA 313 (TRI reporting):

Not regulated.

Other Federal Regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List:

Not regulated.

Clean Air Act (CAA) Section 112® Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.



US State Regulations

US. California controlled substances. CA Department of Justice (California Health and Safety Code Section 11100):

Not listed.

US. Massachusetts RTK - Substance List:

Not regulated.

US. New Jersey Worker and Community Right-to-Know Act:

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law:

Not listed.

US. Rhode Island RTK

Not regulated.

International Inventories

Country(s) or Region	Inventory Name	On Inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. OTHER INFORMATION

Further information

NFPA Ratings:

Health: 2
 Flammability: 1
 Instability: 0

Disclaimer:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in text.

MicroTex II, Earth Brew Safety Data Sheet



Version: 1.1

Revision Date: 07/04/2018

Section 1 - Product and Company Identification:

Product Identifier:

Name as Labeled: MicroTex II, Earth Brew

WHMIS Classification:

Non-corrosive, non-flammable, nontoxic soil borne microorganisms.

Product Use:

This product is suitable for bioremediation of contaminated soils via hydrocarbon degradation. This product may also be used as a soil amendment to enhance the vitality and viability of soil as it pertains to plant growth.

Restrictions:

No known restricted uses.

Manufacturer:

Lone Star Microbial Sciences
8956 Dilly Road
San Angelo, TX, 76901
Emergency Contact: Steven W. Hines ND, (325) 947-5266

Supplier:

Remediation & Environmental Xperts, LLC
2903 North Birdwell Lane
Big Spring, TX, 79720
Emergency Contact: Ryan Millunzi, (432) 213-3105, ryan@oilsaltsremediation.com
MSDS Preparation Date: 07/04/2018
MSDS Prepared by: Ryan Millunzi

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Section 2 – Hazardous Identification:

OSHA/HCS Status:

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910. 1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

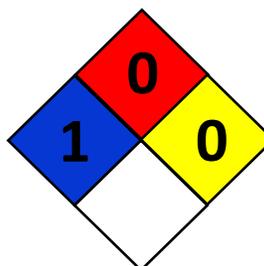
Label Elements:

GHS Label Elements: This substance is classified and labeled according to the Globally Harmonized System (GHS).

Signal Word: No Signal Word.

Classification System: NFPA Rating (Scale 0-4)

Health = 1
Fire = 0
Reactivity = 0



Hazard Statements:

Hazard Statements: No known significant effects or critical hazards.

Precautionary statements: Not applicable.

Hazards not otherwise classified: None Known.

Environmental Hazards: Does not pose any hazards to environments.

Section 3 – Composition/Information on Ingredients:

Chemical Name	CAS-NO.	Concentration
*Proprietary	*Proprietary	*Proprietary
Water	7732-18-5	80% - 90%

Information withheld as a trade secret

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Section 4 – First Aid Measures:

Routes of Entry:

Skin Contact: No known toxicity to skin. If contact occurs, wash area well with water and antimicrobial soap.

Skin Absorption: Nonabsorbable by skin, same properties as water.

Eye Contact: No known adverse effects from eye contact. Recommend to rinse thoroughly with water if contact does occur.

Inhalation: No known inhalation hazard, if irritation occurs after inhalation move to fresh air and consult your physician.

Ingestion: If ingested consult your physician. No known hazards, but there is potential for adverse side effects in immunocompromised individuals.

Section 5 – First Aid Measures:

Extinguishing Media:

Suitable Extinguishing Media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable Extinguishing Media: None known.

Specific Hazards Arising from the Product:

No specific fire or explosion hazard. Comparable properties to water.

Hazardous Thermal Decomposition Products: None Known.

Special Protective Actions/Equipment:

No special measures or equipment needed by fire-fighters, other than the ones suitable for the surrounding fire.

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Section 6 – Accidental Release Measures:

Precautions and Protective Equipment:

Personnel Precautions: Keep unnecessary personnel away from release. Avoid ingestion/inhalation of product if able to.

Protective Equipment: If unable to avoid ingestion/inhalation of product, recommend use of a mask to minimize exposure.

Methods and Materials for Containment and Clean Up:

Large Spills: Make all possible efforts to first stop the cause of the spill. Dike or create berms where possible to prevent further spread of material. Dilute product with fresh water and flush area thoroughly with more fresh water. Product will readily biodegrade with the only remnants left behind being trace amounts of organic matter.

Small Spills: Make all possible efforts to first stop the cause of the spill. Wipe up with absorbent material and clean the surface thoroughly to remove residual product. If possible, clean area with antimicrobial soap.

Environmental Precautions:

No known hazards to environment. Product is comprised of naturally occurring, soil borne microorganisms that will readily degrade, with the only remnants left behind being trace amounts of organic matter.

Section 7 – Handling And Storage:

Precautions for Safe Handling:

Do not taste or swallow. Cover all open cuts or sores before handling.

Conditions for Safe Storage, Including Incompatibilities:

For maximum shelf life store in a cool dry place, avoid direct sunlight.

No Known incompatible materials.

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Section 8 – Exposure Controls/Personal Protections:

Occupational Exposure Limits: No exposure limits known.

Biological Limit Values: No known values.

Appropriate Engineering: None needed.

Individual Protection Measures, Personal Protective Equipment (PPE):

Eye/Face Protection: Recommend safety glasses, mask if necessary to prevent ingestion.

Hand Protection: Recommend gloves.

Skin Protection: Recommend covering all open cuts or sores before handling. Nonabsorbent through skin.

Section 9 – Physical and Chemical Properties:

Information on Basic Physical and Chemical Properties:

Appearance: Clear, brown liquid.

Form: Liquid

Color: Light to Dark Brown.

Odor: None to slightly foul-smelling odor.

pH: 8.51

Boiling Point: 212 F

Flash Point: >180 F

Flammability: None, similar to water.

Percent VOC: 0%

Decomposition Temperature: Not known.

Auto Igniting: None, similar to water.

Density: 1.0 g/cm³

Solubility in Water: Soluble.

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Section 10 – Stability and Reactivity:

Reactivity: Not Known.

Chemical Stability: Stable

Thermal Decomposition/Conditions to Avoid: Not Known.

Possibility of hazardous reactions: None Known.

Conditions to avoid: None Known.

Incompatible materials: None Known.

Hazardous Decomposition Products: None Known.

Section 11 – Toxicological Information:

Toxicological Effects:

Acute Toxicity: No Data Available.

Irritation/Corrosion: No Data Available.

Sensitization: No Data Available.

Mutagenicity: No Data Available.

Carcinogenicity: No Data Available.

Reproductive Toxicity: No Data Available.

Teratogenicity: No Data Available.

Specific Target Organ Toxicity (Single and Repeated Exposure): No Data Available.

Aspiration Hazard: No Data Available.

Section 12 – Ecological Information:

Toxicological Effects:

Aquatic Toxicity: No Data Available.

Persistence and Degradability: No Data Available.

Behavior in Environmental Systems: No Data Available.

Bioaccumulative Potential: No Data Available.

Mobility in Soil: No Data Available.

Additional Ecological Information: No Data Available.

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Section 13 – Disposal Considerations:

Waste Treatment Methods:

Recommended to be disposed of in a dilute form of at least 10% concentration.

Uncleaned Packaging:

Recommended disposal made according to official regulations.

Section 14 – Transport Information:

UN-Number: Non-Regulated Material.

UN Proper Shipping Name: Non-Regulated Material.

Transport hazard class(es): Non-Regulated Material.

Class: Non-Regulated Material.

Packing Group: Non-Regulated Material.

Environmental hazards: Not applicable.

Special Precautions for User: Not Applicable.

Transport in Bulk According to Annex II of MARPOL73/78 and IBC Code: Not Applicable.

UN "Model Regulation": -

Section 15 – Regulatory Information:

Safety, Health and Environmental Regulations/Legislation Specific for the Substance/Mixture:

SARA:

Section 355 (Extremely Hazardous Substances): Substance is not listed.

Section 313 (Specific Toxic Chemical Listings): Substance is not listed.

TSCA (Toxic Substances Control Act): Substance is not listed.

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California Proposition 65:

Chemicals Known to Cause Cancer: Substance is not listed.

Chemicals Known to Cause Reproductive Toxicity for Females: Substance is not listed.

Chemicals Known to Cause Reproductive Toxicity for Males: Substance is not listed.

Chemicals Known to Cause Developmental Toxicity: Substance is not listed.

Carcinogenic Categories:

EPA (Environmental Protection Agency): Substance is not listed.

TLV (Threshold Limit Value Established by ACGIH): Substance is not listed.

NIOSH-Ca (National Institute for Occupational Safety and Health): Substance is not listed.

GHS Label Elements: This product is classified and labeled according to the Globally Harmonized System (GHS).

Section 16 – Additional Information:

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.