

Mr. Jim Weber
Texas Commission on Environmental Quality
Environmental Investigator
Water Section
1977 Industrial Blvd.
Abilene, TX 79602-7833

Arcadis U.S., Inc.
10205 Westheimer Road
Suite 800
Houston
Texas 77042
Phone: 713 953 4800
Fax: 713 977 4620
www.arcadis.com

Date: January 14, 2022
Our Ref: 30119470
Subject: Oklaunion, TX – Ethanol Release 1-8-2022
TCEQ Incident Number 372558
NRC#1326160
BNSF Railway
Wilbarger County, Oklaunion, TX

Dear Mr. Weber,

Arcadis U.S., Inc. (Arcadis) prepared this letter on behalf of the BNSF Railway Company (BNSF) to provide written notification and further inform the Texas Commission on Environmental Quality (TCEQ) of the response taken following an ethanol release that occurred on January 8, 2022 on the BNSF mainline track near Oklaunion, Texas. This ethanol release was the result of a train derailment. The coordinates of the release area are 34.1331816 degrees latitude and -099.1620126 degrees longitude. This incident was reported to the National Reporting Center (NRC) on January 8, 2022 and assigned NRC#1326160. The TCEQ assigned incident number is 372558.

1. Name of Responsible Party and Contact

BNSF Railway Company
4515 Kansas Ave.
Kansas City, KS 66106
Contact: Mr. Christopher Fitzgerald
Manager Environmental Remediation
913-██████████

2. Date and Description of the Release Identification

The release occurred on January 8, 2022 at approximately 09:30 Central Standard Time (CST) when 31 tank cars containing denatured ethanol derailed approximately one mile northwest of Oklaunion, TX. Several of the derailed tank cars were compromised and subsequently ignited. The train crew immediately reported the derailment and ethanol release to the BNSF Network Operations Center who subsequently notified the NRC. A location figure is attached.

3. Type and Amount of Substance Released

The type of product released was denatured ethanol and the Safety Data Sheet (SDS) is attached. Twenty-eight of the 31 tank cars were involved in the ensuing fire; the approximate volume of each tank car is 28,800 gallons. It has not been determined if all the tank cars were compromised and leaked. The volume of ethanol consumed

in the fire or released to the ground surface is unknown at this time. It is also unknown how much ethanol remains in the tank cars currently staged on site. This information will be available after detailed inspections and remaining product transfers are completed. Photographs of the release area are attached.

4. Description of Circumstances Causing the Release

A BNSF train was traveling south on the mainline track near Oklaunion, TX. Thirty-one cars containing ethanol derailed and an unknown number were compromised. This ethanol release was the result of the derailment.

5. Description of Release Abatement, Delineation, and Recovery Procedures

Several BNSF contractors, including Hulcher Professional Services (Hulcher) and US Ecology were dispatched to the scene to respond to the derailment and ethanol release. Hulcher provided personnel and equipment to move and stage the derailed tank cars from the incident location to a location north of the mainline track. The current location of the tank cars is shown on the attached figure. US Ecology provided fire suppression teams and product recovery services for the response.

Water and per-and polyfluorinated alkyl substances (PFAS)-free Aqueous Film Forming Foam (AFFF) were used for fire control and suppression. The type of foam used was SOLBERG® VERSAGARD™ AS-100 and this AFFF does not contain PFAS. The SDS and a data sheet for the product are attached. Approximately 2,500 gallons of liquids and fire water were recovered and stored in a frac tank pending offsite disposal. The tank cars were moved to a staging area on the north side of the mainline track. The tank cars will be inspected to determine the amount of ethanol that remains in each. The product will be transported to a facility for recycling. The tank cars will then be scrapped and removed from the site.

The derailment area occupied approximately 550 linear feet of track (see Figure 1). On January 10, 2022, soil samples were collected with a hand auger at 100-foot intervals on both sides of the mainline track. The samples were screened with a photoionization detector (PID). Soil sample screening results confirm that ethanol impacts exist on both sides of the track and are primarily limited to the 0-2 foot surface interval. However, impacts were observed at approximately six feet below ground surface at some locations north and south of the track. Impacted soil delineation will continue and BNSF is evaluating remedial options, including on-site remediation.

Shallow soils within the impacted area may be tilled in place periodically. Soils will be screened with a PID to determine if ethanol concentrations are declining. BNSF will evaluate the results and other remedial options may be considered if the expected decrease in ethanol concentrations is not observed.

When site conditions are expected to represent pre-release conditions, confirmation soil samples will be collected from locations on both sides of the track at 100-foot intervals. The samples will be delivered to Pace Laboratories (Pace) located in Mount Juliet, TN for ethanol and benzene, toluene, ethylbenzene, and xylenes (BTEX) analyses using Method 8260¹.

Surface soil conditions will also be evaluated on the adjacent property north of the track where the tank cars have been staged. This will be completed following removal of all tank cars and debris from the property. Soil samples will be collected and screened with a PID. These samples will be collected from areas where suspected ethanol releases may have occurred during the tank car movement and staging process. Appropriate remedial action will be taken based on sample screening results. Soil samples will be collected, delivered to Pace and analyzed for ethanol and BTEX following any remedial action that may be required and to confirm achievement of closure conditions.

¹ Samples will be collected using EPA Test Method 5035.

Mr. Jim Weber
Texas Commission on Environmental Quality
January 14, 2022

It is anticipated the soil screening sample collection and delineation will be completed during the week of January 10, 2022, and remedial actions will follow. BNSF anticipates it will require more than 30 days to complete site remediation and restoration activities.

A final report will be completed following completion of all environmental remediation activities. The report will include a description of on-site and off-site activities completed, analytical data summary, laboratory reports, photographs, disposal/recycling documentation, conclusions, and recommendations.

If you have any questions concerning this incident, please do not hesitate to contact me at 713. [REDACTED]

[REDACTED], or Chris Fitzgerald at (913) [REDACTED]

Sincerely,
Arcadis U.S., Inc.

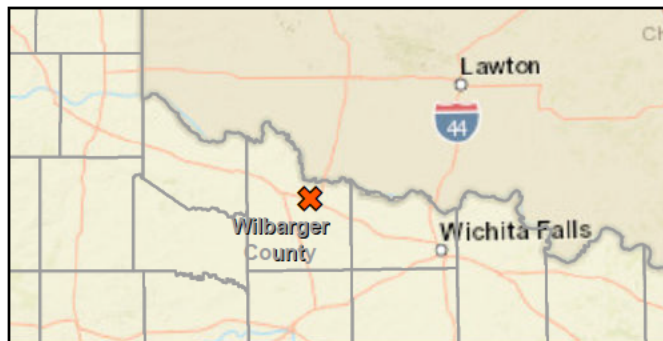
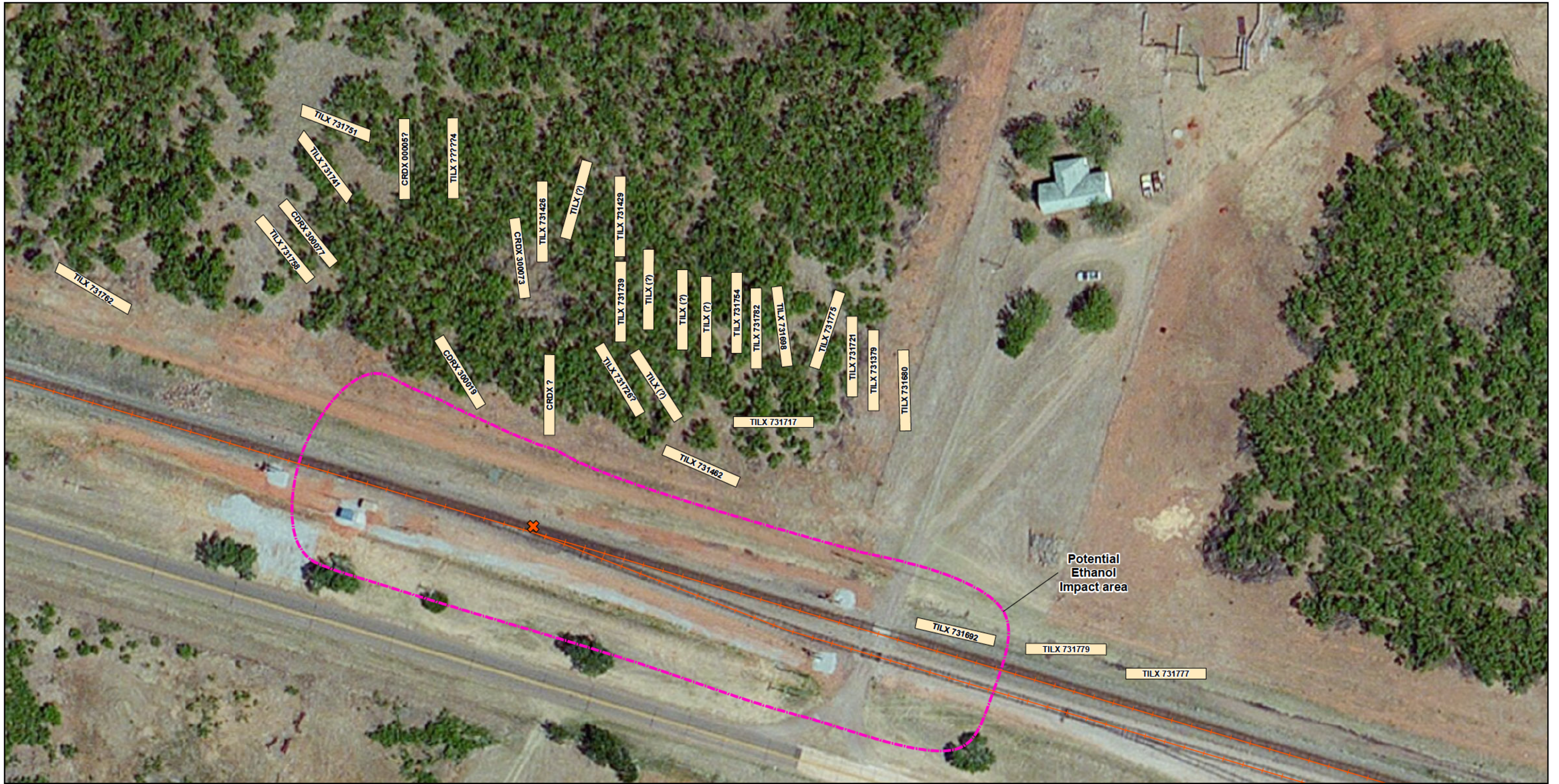
Roy T. Hurta, P.G.
Principal Scientist

Email: [REDACTED]
Direct Line: 713.953.4839
Mobile: 713 [REDACTED]

CC. Christopher Fitzgerald
File

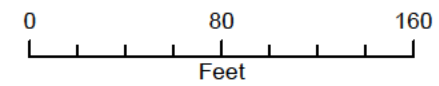
Enclosures:
Figure
SDS
Photo Log

Figure



Legend

- Incident_Location
- Potential Ethanol Impact area
- Rail_Lines_USDOT_BTS_20181010
- Tank Car Locations and Orientation



Map Date: 1/11/2022

BNSF Derailment
Oklaunion, TX

INCIDENT DETAIL MAP

DRAFT



FIGURE

SDS



Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

- Product Name** • Ethyl Alcohol, Anhydrous, Denatured
Synonyms • E-95; E-98; Fuel Ethanol

1.2 Relevant identified uses of the substance or mixture and uses advised against

- Relevant identified use(s)** • Blending with gasoline for spark ignition engine fuel

1.3 Details of the supplier of the safety data sheet

- Manufacturer** • RPMG, Inc.
1157 Valley Park Drive, Suite 100
Shakopee, MN 55379
United States
www.rpmgllc.com
Telephone (General) • (952) 465-3220

1.4 Emergency telephone number

- Manufacturer** • 1-800-424-9300 - CHEMTREC

Section 2: Hazards Identification

UN GHS

According to Third Revised Edition

2.1 Classification of the substance or mixture

- UN GHS**
- Flammable Liquids 2 - H225
 - Skin Irritation 2 - H315
 - Eye Irritation 2A - H319
 - Carcinogenicity 1A - H350
 - Germ Cell Mutagenicity 1B - H340
 - Hazardous to the aquatic environment Acute 3 - H402
 - Hazardous to the aquatic environment Chronic 3 - H412

2.2 Label elements

UN GHS

DANGER



Hazard statements

- H225 - Highly flammable liquid and vapour.
- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.

- H340 - May cause genetic defects.
- H350 - May cause cancer.
- H402 - Harmful to aquatic life.
- H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements

- Prevention**
 - P201 - Obtain special instructions before use.
 - P202 - Do not handle until all safety precautions have been read and understood.
 - P210 - Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
 - P233 - Keep container tightly closed.
 - P235 - Keep cool.
 - P240 - Ground and/or bond container and receiving equipment.
 - P241 - Use explosion-proof - electrical, ventilating and/or lighting equipment.
 - P242 - Use only non-sparking tools.
 - P243 - Take precautionary measures against static discharge.
 - P264 - Wash thoroughly after handling.
 - P273 - Avoid release to the environment.
 - P280 - Wear protective gloves and eye/face protection.
 - P281 - Use personal protective equipment as required.

- Response**
 - P370+P378 - In case of fire: Use appropriate media Carbon Dioxide, "alcohol-type foam," or dry chemical for extinction.
 - P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
 - P362 - Take off contaminated clothing and wash before reuse.
 - P332+P313 - If skin irritation occurs: Get medical advice/attention.
 - P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P337+P313 - If eye irritation persists: Get medical advice/attention.
 - P321 - Specific treatment, see supplemental first aid information.
 - P308+P313 - IF exposed or concerned: Get medical advice/attention.

- Storage/Disposal**
 - P405 - Store locked up.
 - P403+P235 - Store in a well-ventilated place. Keep cool.
 - P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

UN GHS

- According to the Globally Harmonized Standard for Classification and Labeling (GHS) this product is considered hazardous.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS

- Flammable Liquid
- Flammable/Combustible Class IC
- Carcinogen
- Irritant
- Target Organ Effects - Central Nervous System (CNS)

2.2 Label elements

OSHA HCS

- Not required

2.3 Other hazards

OSHA HCS

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS

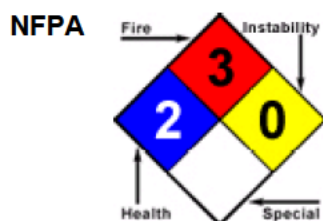
- Flammable Liquids - B2
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

2.2 Label elements**WHMIS**

- Flammable Liquids - B2
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

2.3 Other hazards**WHMIS**

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information**Section 3 - Composition/Information on Ingredients****3.1 Substances**

- Material does not meet the criteria of a substance according to United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

3.2 Mixtures**Hazardous Components**

Chemical Name	Identifiers	%(weight)	LD50/LC50	Classifications According to Regulation/Directive	Comments
Ethanol	CAS:64-17-5 EC Number:200-578-6 UN:UN1170	95% TO 98%	Ingestion/Oral-Rat LD50 · 7060 mg/kg Inhalation-Rat LC50 · 124700 mg/m ³ 4 Hour (s)	UN GHS: Flam. Liq. 2; Eye Irrit. 2A; Skin Irrit. 2;	NDA
Gasoline, natural	CAS:8006-61-9 EC Number:232-349-1 UN:UN1203	2% TO 5%	Inhalation-Rat LC50 · 300 g/m ³ 5 Minute(s)	UN GHS: Eye Irrit 2; Skin Irrit 2; Carc. 2; STOT SE 3: Narc.; Aquatic Acute 2; Aquatic Chronic 2;	NDA
Hexane	CAS:110-54-3 EC Number:203-777-6	0% TO 1.1%	Ingestion/Oral-Rat LD50 · 25 g/kg Inhalation-Rat LC50 · 48000 ppm 4 Hour(s)	UN GHS: Flam Liq. 2; Eye Irrit. 2; Skin Irrit. 2; STOT SE 3: Narc.; Aquatic Acute 3;	Component of Gasoline, natural

2-Methylbutane (In Liquid form)	CAS: 78-78-4 EC Number: 201-142-8	0% TO 0.75%	Inhalation-Rat LC50 · 280000 mg/m ³ 4 Hour (s)	UN GHS: Eye Irrit. 2; Skin Irrit. 2; STOT SE 3: Narc. & Resp. Irrit.;	Component of Gasoline, natural
Pentane	CAS: 109-66-0 EC Number: 203-692-4 UN: UN1265	0% TO 0.75%	Inhalation-Rat LC50 · 364 g/m ³ 4 Hour(s) Ingestion/Oral-Rat LD50 · >2000 mg/kg	UN GHS: Eye Irrit 2, Skin Irrit 2, Acute Tox 5 (oral), Aquatic Acute 1	Component of Gasoline, natural
Benzene	CAS: 71-43-2 EC Number: 200-753-7 UN: UN1114	0% TO 0.13%	Skin-Rabbit LD50 · >9400 µg/kg Inhalation-Rat LC50 · 10000 ppm 7 Hour(s) Ingestion/Oral-Rat LD50 · 1800 mg/kg	UN GHS: Eye Irrit 2, Skin Irrit. 2; Carc. Cat 1A; Muta. 1B; Acute Tox 4-Inhl; Aquatic Acute 3; Aquatic Chronic 3;	Component of Gasoline, natural
Butane	CAS: 106-97-8 EC Number: 203-448-7 UN: UN1011	0% TO 0.13%	Inhalation-Rat LC50 · 658 g/m ³ 4 Hour(s)	UN GHS: Eye Irrit. 2; Skin Irrit. 2;	Component of Gasoline, natural

Percentages provided for components of Gasoline, natural are percentages of these components in the product.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing.

Skin

- IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If irritation develops and persists, get medical attention.

Eye

- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

Ingestion

- If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Drink (one glass) (two glasses) of water. Call a physician (or poison control center immediately) Never give anything by mouth to an unconscious person. Get medical attention immediately if symptoms occur.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

- Immediate medical attention after exposure to this material not expected to be necessary. No special treatment indicated related to exposure to this material.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media

- SMALL FIRES: Dry chemical, CO₂, water spray or alcohol-resistant foam.
LARGE FIRES: Water spray, fog or alcohol-resistant foam.
CAUTION: For mixtures containing a high percentage of an alcohol or polar solvent, alcohol-resistant foam may be more effective.

Unsuitable Extinguishing Media

- No data available.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames. Alcohol flames may be difficult to see because they are virtually colorless. Vaporizes easily at normal temperatures. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated.

Hazardous Combustion Products

- May form toxic materials, carbon dioxide and carbon monoxide.

5.3 Advice for firefighters

- Structural firefighters' protective clothing will only provide limited protection. Wear positive pressure self-contained breathing apparatus (SCBA).

Section 6 - Accidental Release Measures**6.1 Personal precautions, protective equipment and emergency procedures****Personal Precautions**

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate enclosed areas. Stay upwind.

Emergency Procedures

- **ELIMINATE** all ignition sources (no smoking, flares, sparks or flames in immediate area) As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. If tank, rail car or tank truck is involved in a fire, **ISOLATE** for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. **LARGE SPILL:** Consider initial downwind evacuation for at least 300 meters (1000 feet) Keep unauthorized personnel away. Stay upwind. Keep out of low areas.

6.2 Environmental precautions

- Prevent entry into waterways or sewers.

6.3 Methods and material for containment and cleaning up**Containment/Clean-up Measures**

- Stop leak if you can do it without risk. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material. A vapor suppressing foam may be used to reduce vapors. All equipment used when handling the product must be grounded.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage**7.1 Precautions for safe handling****Handling**

- Use good safety and industrial hygiene practices. Keep away from heat and sparks. Take precautionary measures against static charges. Do not use sparking tools. Ground container when transferring product. Use only with adequate ventilation.

7.2 Conditions for safe storage, including any incompatibilities**Storage**

- Store locked up. Store in a cool, dry, well-ventilated place. Keep away from fire. Keep container closed when not in use.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Brazil	Canada Ontario	Canada Quebec	NIOSH
Pentane (109-66-0)	TWAs	600 ppm TWA	470 ppm TWA; 1400 mg/m ³ TWA	600 ppm TWAEV; 1770 mg/m ³ TWAEV	120 ppm TWAEV; 350 mg/m ³ TWAEV	120 ppm TWA; 350 mg/m ³ TWA
	STELs	Not established	Not established	750 ppm STEV; 2210 mg/m ³ STEV	Not established	Not established
	Ceilings	Not established	Not established	Not established	Not established	610 ppm Ceiling (15 min); 1800 mg/m ³ Ceiling (15 min)
Butane (106-97-8)	TWAs	1000 ppm TWA	470 ppm TWA; 1090 mg/m ³ TWA	800 ppm TWAEV; 1900 mg/m ³ TWAEV	800 ppm TWAEV; 1900 mg/m ³ TWAEV	800 ppm TWA; 1900 mg/m ³ TWA
Benzene (71-43-2)	STELs	2.5 ppm STEL	Not established	2.5 ppm STEV (applies to workplaces to which the designated substance regulation does not apply); 2.5 ppm STEV (designated substances regulation)	5 ppm STEV; 15.5 mg/m ³ STEV	1 ppm STEL
	TWAs	0.5 ppm TWA	Not established	0.5 ppm TWAEV (applies to workplaces to which the designated substance regulation does not apply); 0.5 ppm TWAEV (designated substance regulation)	1 ppm TWAEV; 3 mg/m ³ TWAEV	0.1 ppm TWA
Hexane (110-54-3)	TWAs	50 ppm TWA	Not established	50 ppm TWAEV; 176 mg/m ³ TWAEV	50 ppm TWAEV; 176 mg/m ³ TWAEV	50 ppm TWA; 180 mg/m ³ TWA
2-Methylbutane (In Liquid form) (78-78-4)	TWAs	600 ppm TWA	Not established	Not established	Not established	Not established
Gasoline, natural (8006-61-9)	STELs	Not established	Not established	Not established	500 ppm STEV; 1480 mg/m ³ STEV	Not established
	TWAs	Not established	Not established	Not established	300 ppm TWAEV; 890 mg/m ³ TWAEV	Not established
Ethanol (64-17-5)	TWAs	Not established	780 ppm TWA; 1480 mg/m ³ TWA	1000 ppm TWAEV; 1900 mg/m ³ TWAEV	1000 ppm TWAEV; 1880 mg/m ³ TWAEV	1000 ppm TWA; 1900 mg/m ³ TWA
	STELs	1000 ppm STEL	Not established	Not established	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
			Result	OSHA		
Pentane (109-66-0)			TWAs	1000 ppm TWA; 2950 mg/m ³ TWA		
			Ceilings	25 ppm Ceiling		
			STELs	5 ppm STEL (see 29 CFR 1910.1028)		

Benzene (71-43-2)	TWAs	10 ppm TWA (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028); 1 ppm TWA
Hexane (110-54-3)	TWAs	500 ppm TWA; 1800 mg/m3 TWA
Ethanol (64-17-5)	TWAs	1000 ppm TWA; 1900 mg/m3 TWA

8.2 Exposure controls

Engineering Measures/Controls

- Local exhaust ventilation. Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values.

Personal Protective Equipment

Pictograms



Respiratory

- An appropriate NIOSH/MSHA-approved respirator or self-contained breathing apparatus should be worn when any exposure limit is exceeded.

Eye/Face

- Wear safety glasses with splash guards or goggles.

Hands

- Wear appropriate gloves.

Skin/Body

- Wear protective clothing.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

STEV = Short Term Exposure Value

MSHA = Mine Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

NIOSH = National Institute of Occupational Safety and Health

TWAEV = Time-Weighted Average Exposure Value

OSHA = Occupational Safety and Health Administration

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Clear, colorless, volatile liquid with characteristic alcohol odor.
Color	Clear, Colorless.	Odor	Alcohol odor.
Taste	No data available	Particulate Type	No data available
Particulate Size	No data available	Aerosol Type	No data available
Odor Threshold	No data available	Physical and Chemical Properties	No data available
General Properties			
Boiling Point	70 C(158 F)	Melting Point	No data available
Decomposition Temperature	No data available	Heat of Decomposition	No data available
pH	No data available	Specific Gravity/Relative Density	0.787 to 0.797 Water=1
Density	No data available	Bulk Density	No data available

Water Solubility	Soluble	Solvent Solubility	No data available
Viscosity	No data available	Explosive Properties	No data available
Oxidizing Properties:	No data available		
Volatility			
Vapor Pressure	212 mmHg (torr) @ 32 C(89.6 F)	Vapor Density	> 1 Air=1
Evaporation Rate	No data available	VOC (Wt.)	No data available
VOC (Vol.)	No data available	Volatiles (Wt.)	No data available
Volatiles (Vol.)	No data available		
Flammability			
Flash Point	12.7 C(54.86 F)	Flash Point Test Type	TCC (Tagliabue Closed Cup)
UEL	No data available	LEL	No data available
Autoignition	No data available	Self-Accelerating Decomposition Temperature (SADT)	No data available
Heat of Combustion (ΔH_c)	No data available	Burning Time	No data available
Flame Duration	No data available	Flame Height	No data available
Flame Extension	No data available	Ignition Distance	No data available
Flammability (solid, gas)	No data available		
Environmental			
Half-Life	No data available	Octanol/Water Partition coefficient	No data available
Coefficient of water/oil distribution	No data available	Bioaccumulation Factor	No data available
Bioconcentration Factor	No data available	Biochemical Oxygen Demand BOD/BOD5	No data available
Chemical Oxygen Demand	No data available	Persistence	No data available
Degradation	No data available		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Heat, sparks, open flame.

10.5 Incompatible materials

- Avoid contact with strong oxidizing agents and strong inorganic acids.

10.6 Hazardous decomposition products

- Carbon monoxide and carbon dioxide.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Component Name	CAS	Data
Ethanol (95% TO 98%)	64-17-5	Acute Toxicity: orl-rbt LD50:6300 mg/kg; ihl-rat LC50:5900 mg/m3/6H; Irritation: eye-rbt 500 mg SEV; skn-rbt 20 mg/24H MOD; Reproductive: orl-rat TDLo:22.5 gm/kg (11-20D preg); Tumorigen/Carcinogen: orl-mus TD :400 gm/kg/57W-I
Gasoline, natural (2% TO 5%)	8006-61-9	Acute Toxicity: ihl-rat TCLo:500 ppm/4W-I; Irritation: eye-hmn 140 ppm/8H MLD
Hexane (0% TO 1.1%)	110-54-3	Acute Toxicity: orl-rat LD50:25 gm/kg; ihl-rat LC50:48000 ppm/4H; Irritation: eye-rbt 10 mg MLD; Reproductive: ihl-rat TCLo:1000 ppm/6H (8-16D preg); Tumorigen/Carcinogen: ihl-rat TCLo:1000 ppm/4H/59W-I
2-Methylbutane (In Liquid form) (0% TO 0.75%)	78-78-4	Acute Toxicity: ihl-rat LC50:280000 mg/m3/4H
Pentane (0% TO 0.75%)	109-66-0	Acute Toxicity: orl-rat LD50:>2000 mg/kg; ihl-rat LC50:364 gm/m3/4H
Benzene (0% TO 0.13%)	71-43-2	Acute Toxicity: Ingestion/Oral-Rat LD50 : 930 mg/kg; ihl-rat LC50:10000 ppm/7H; skn-rat TDLo:960 uL/kg/4D-I; Irritation: eye-rbt 2 mg/24H SEV; skn-rbt 20 mg/24H MOD; Reproductive: ihl-rat TCLo:670 mg/m3/24H (15D pre/1-22D preg); Tumorigen/Carcinogen: ihl-hmn TC :150 ppm/15M/8Y-I
Butane (0% TO 0.13%)	106-97-8	Acute Toxicity: ihl-rat LC50:658 gm/m3/4H

GHS Properties	Classification
Acute toxicity	UN GHS • Classification criteria not met
Skin corrosion/Irritation	UN GHS • Skin Irritation 2
Serious eye damage/Irritation	UN GHS • Eye Irritation 2A
Skin sensitization	UN GHS • Classification criteria not met
Respiratory sensitization	UN GHS • Classification criteria not met
Aspiration Hazard	UN GHS • Classification criteria not met
Carcinogenicity	UN GHS • Carcinogenicity 1A
Germ Cell Mutagenicity	UN GHS • Germ Cell Mutagenicity 1B
Toxicity for Reproduction	UN GHS • Classification criteria not met
STOT-SE	UN GHS • Classification criteria not met
STOT-RE	UN GHS • Classification criteria not met

Potential Health Effects

Inhalation

Acute (Immediate)

- High concentration can cause burning and irritation in nose and throat and headaches.

Chronic (Delayed)

- No data available.

Skin

Acute (Immediate)

- Causes skin irritation.

Chronic (Delayed)

- No data available.

Eye

Acute (Immediate)

- Causes serious eye irritation.

Chronic (Delayed)

- No data available.

Ingestion

Acute (Immediate)

- This material contains gasoline and is not fit for consumption. May affect the central nervous system. Symptoms may include dizziness, drowsiness, lethargy, coma and death.

Chronic (Delayed)

- No data available.

Other**Chronic (Delayed)**

- Chronic exposure to ethanol can cause damage to liver, kidney, and heart.

Mutagenic Effects

- Repeated and prolonged exposure may cause mutagenic effects.

Carcinogenic Effects

- Repeated and prolonged exposure may cause cancer.

Carcinogenic Effects				
	CAS	IARC	OSHA	NTP
Benzene	71-43-2	Group 1-Carcinogenic	Specifically Regulated Carcinogen	Known Human Carcinogen
Gasoline, natural	8006-61-9	Group 2B-Possible Carcinogen	Not established	Not established

Reproductive Effects

- This material is not fit for consumption. Ingestion of ethanol during pregnancy has been shown to cause birth defects and other reproductive harm.

Key to abbreviations

LD = Lethal Dose

Section 12 - Ecological Information**12.1 Toxicity**

Ethyl Alcohol, Anhydrous, Denatured					
Dosage	Species	Duration	Results	Exposure Conditions	Comments
= 1.5 mg/L	Crustacea: Daphnia Magna	48 Hour(s)	EC50	NDA	Data for Gasoline component

12.2 Persistence and degradability

- Material data lacking.

12.3 Bioaccumulative potential

- Material data lacking.

12.4 Mobility in Soil

- Material data lacking.

12.5 Results of PBT and vPvB assessment

- PBT and vPvB assessment has not been carried out.

12.6 Other adverse effects**Potential Environmental Effects**

- Based upon component information and the use of GHS criteria for classification of mixtures this material may cause harm to the aquatic environment. May cause long lasting harmful effects to aquatic life.

Section 13 - Disposal Considerations**13.1 Waste treatment methods****Product waste**

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN1987	Alcohols, n.o.s. (Ethanol and gasoline)	3	II	NDA
TDG	UN1987	ALCOHOLS, N.O.S.	3	II	Potential Marine Pollutant
IATA/ICAO	UN1987	Alcohol N.O.S	3	II	NDA

14.6 Special precautions for user

- None known.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

Section 15 - Regulatory Information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

SARA Hazard Classifications

- Acute, Chronic, Fire

State Right To Know				
Component	CAS	MA	NJ	PA
Ethanol	64-17-5	Yes	Yes	Yes
Gasoline, natural	8006-61-9	Yes	Yes	No
Hexane	110-54-3	Yes	Yes	Yes
2-Methy butane (In Liquid form)	78-78-4	Yes	Yes	Yes
Pentane	109-66-0	Yes	Yes	Yes
Benzene	71-43-2	Yes	Yes	Yes
Butane	106-97-8	Yes	Yes	Yes

Inventory				
Component	CAS	Canada DSL	Canada NDSL	TSCA
Ethanol	64-17-5	Yes	No	Yes
Gasoline, natural	8006-61-9	Yes	No	Yes
Hexane	110-54-3	Yes	No	Yes
2-Methy butane (In Liquid form)	78-78-4	Yes	No	Yes
Pentane	109-66-0	Yes	No	Yes
Benzene	71-43-2	Yes	No	Yes
Butane	106-97-8	Yes	No	Yes

Canada**Labor**

Canada - WHMIS - Classifications of Substances

● Gasoline, natural	8006-61-9	2% TO 5%	B2, D2A
● Pentane	109-66-0	0% TO 0.75%	B2
● 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	B2
● Benzene	71-43-2	0% TO 0.13%	B2, D2A, D2B
● Butane	106-97-8	0% TO 0.13%	A, B1
● Ethanol	64-17-5	95% TO 98%	B2, D2B
● Hexane	110-54-3	0% TO 1.1%	B2, D2A, D2B

Canada - WHMIS - Ingredient Disclosure List

● Gasoline, natural	8006-61-9	2% TO 5%	1 %
● Pentane	109-66-0	0% TO 0.75%	1 %
● 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
● Benzene	71-43-2	0% TO 0.13%	0.1 %
● Butane	106-97-8	0% TO 0.13%	1 %
● Ethanol	64-17-5	95% TO 98%	0.1 %
● Hexane	110-54-3	0% TO 1.1%	1 %

Environment**Canada - CEPA - Priority Substances List**

● Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
● Pentane	109-66-0	0% TO 0.75%	Not Listed
● 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
● Benzene	71-43-2	0% TO 0.13%	Priority Substance List 1 (substance considered toxic)
● Butane	106-97-8	0% TO 0.13%	Not Listed
● Ethanol	64-17-5	95% TO 98%	Not Listed
● Hexane	110-54-3	0% TO 1.1%	Not Listed

United States**Labor****U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**

● Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
● Pentane	109-66-0	0% TO 0.75%	Not Listed
● 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
● Benzene	71-43-2	0% TO 0.13%	Not Listed
● Butane	106-97-8	0% TO 0.13%	Not Listed
● Ethanol	64-17-5	95% TO 98%	Not Listed
● Hexane	110-54-3	0% TO 1.1%	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

● Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
● Pentane	109-66-0	0% TO 0.75%	Not Listed
● 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
● Benzene	71-43-2	0% TO 0.13%	5 ppm STEL (Cancer hazard, Flammable, See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA
● Butane	106-97-8	0% TO 0.13%	Not Listed
● Ethanol	64-17-5	95% TO 98%	Not Listed
● Hexane	110-54-3	0% TO 1.1%	Not Listed

Environment**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

● Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
---------------------	-----------	----------	------------

• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	(including Benzene from gasoline)
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	5000 lb final RQ; 2270 kg final RQ

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	Not Listed
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	Not Listed
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	Not Listed
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	0.1 % de minimis concentration
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	1.0 % de minimis concentration

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	Not Listed
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	Not Listed

United States - California**Environment****U.S. - California - Proposition 65 - Carcinogens List**

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	carcinogen, initial date 2/27/87
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	developmental toxicity, initial date 12/26/97
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	developmental toxicity, initial date 10/1/87 (when in alcoholic beverages)
• Hexane	110-54-3	0% TO 1.1%	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	24 µg/day MADL (oral); 49 µg/day MADL (inhalation)
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	6.4 µg/day NSRL (oral); 13 µg/day NSRL (inhalation)
• Butane	106-97-8	0% TO 0.13%	Not Listed
• Ethanol	64-17-5	95% TO 98%	Not Listed
• Hexane	110-54-3	0% TO 1.1%	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Gasoline, natural	8006-61-9	2% TO 5%	Not Listed
• Pentane	109-66-0	0% TO 0.75%	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	0% TO 0.75%	Not Listed
• Benzene	71-43-2	0% TO 0.13%	Not Listed
• Butane	106-97-8	0% TO 0.13%	Not Listed

- Ethanol 64-17-5 95% TO 98% Not Listed
- Hexane 110-54-3 0% TO 1.1% Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

- Gasoline, natural 8006-61-9 2% TO 5% Not Listed
- Pentane 109-66-0 0% TO 0.75% Not Listed
- 2-Methylbutane (In Liquid form) 78-78-4 0% TO 0.75% Not Listed
- Benzene 71-43-2 0% TO 0.13% male reproductive toxicity, initial date 12/26/97
- Butane 106-97-8 0% TO 0.13% Not Listed
- Ethanol 64-17-5 95% TO 98% Not Listed
- Hexane 110-54-3 0% TO 1.1% Not Listed

United States - Pennsylvania**Labor****U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

- Gasoline, natural 8006-61-9 2% TO 5% Not Listed
- Pentane 109-66-0 0% TO 0.75% Not Listed
- 2-Methylbutane (In Liquid form) 78-78-4 0% TO 0.75% Not Listed
- Benzene 71-43-2 0% TO 0.13%
- Butane 106-97-8 0% TO 0.13% Not Listed
- Ethanol 64-17-5 95% TO 98% Not Listed
- Hexane 110-54-3 0% TO 1.1% Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

- Gasoline, natural 8006-61-9 2% TO 5% Not Listed
- Pentane 109-66-0 0% TO 0.75% Not Listed
- 2-Methylbutane (In Liquid form) 78-78-4 0% TO 0.75% Not Listed
- Benzene 71-43-2 0% TO 0.13%
- Butane 106-97-8 0% TO 0.13% Not Listed
- Ethanol 64-17-5 95% TO 98% Not Listed
- Hexane 110-54-3 0% TO 1.1% Not Listed

United States - Rhode Island**Labor****U.S. - Rhode Island - Hazardous Substance List**

- Gasoline, natural 8006-61-9 2% TO 5% Toxic; Flammable
- Pentane 109-66-0 0% TO 0.75% Toxic; Flammable
- 2-Methylbutane (In Liquid form) 78-78-4 0% TO 0.75% Not Listed
- Benzene 71-43-2 0% TO 0.13% Toxic (skin); Flammable (skin); Carcinogen (skin)
- Butane 106-97-8 0% TO 0.13% Toxic; Flammable
- Ethanol 64-17-5 95% TO 98% Toxic; Flammable
- Hexane 110-54-3 0% TO 1.1% Toxic; Flammable

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date • 12/March/2012

Preparation Date • 12/March/2012

Disclaimer/Statement of Liability

- The information contained herein is believed to be accurate. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

Key to abbreviations

NDA = No Data Available

SOLBERG® VERSAGARD™ AS-100

MULTIPURPOSE 3x3 FLUORINE-FREE FOAM CONCENTRATE



FAST FACTS

- Next-Generation 3x3 Fluorine-Free ATC concentrate
- Highest performance in EN-1568:2018 testing (1A/1A)
- ICAO Level B
- LASTFIRE (Good/Good/Good)
- IMO MSC.1/Circ. 1312 certification
- Biodegradable and non-persistent
- Fresh, salt & brackish water compatible
- Fast knockdown & extinguishing performance
- Excellent burnback performance
- No increase in viscosity upon contact with water
- Compatible with multiple equipment systems

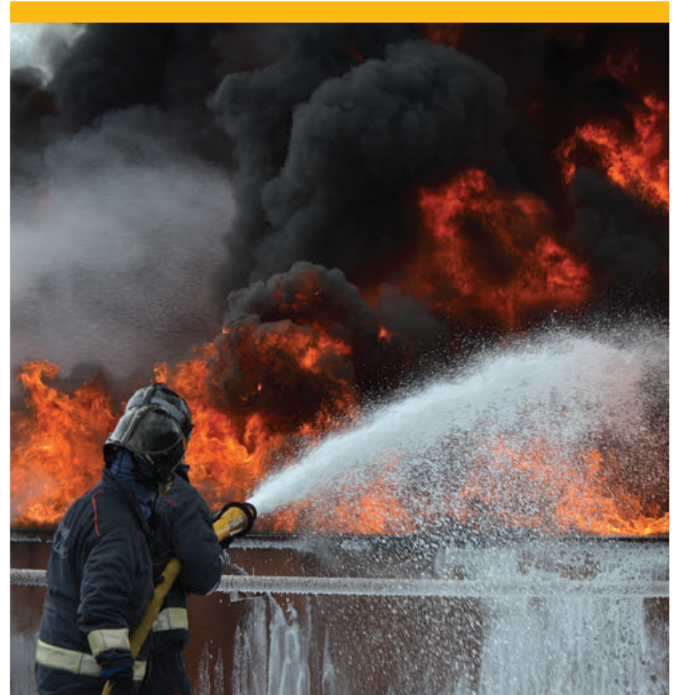
DESCRIPTION

SOLBERG® VERSAGARD™ AS-100 multipurpose 3x3 fluorine-free foam concentrate is a state-of-the-art 3x3 ATC fluorine-free pseudoplastic foam technology, with no intentionally added PFAS chemicals, designed for extinguishing and securing both Class B (hydrocarbon fuel and polar solvent fuel) and deep-seated Class A fires. This fluorine-free foam concentrate is a combination of hydrocarbon surfactants and additives delivers excellent foaming, vapour sealing, extinguishment and burnback properties for attacking and securing both shallow and fuel in-depth fires, using fresh, sea or brackish water. Some fluorine-free foams are viscous and often show viscosity variation in contact with water. SOLBERG VERSAGARD AS-100 is made with a new technology that allows excellent performance and stability with similar viscosity to traditional AR-AFFF foams. This significantly improves storage, handling and long-term stability.

APPLICATIONS

SOLBERG VERSAGARD AS-100 has been designed to generate stable foams with high fluidity and slow drainage. Unlike AFFF/AR-AFFF foams, it does not form an aqueous film on hydrocarbons, however this novel technology makes the product perform similar to fluorinated products in various applications. It may be used with low expansion foam equipment (nozzles and monitors) and medium & high-expansion foam discharge devices to fight fires involving Class B hydrocarbon fuel fires. It is fully compatible and easily proportioned with standard firefighting equipment including in-line inductors, self-inducting nozzles, fire truck pumps, bladder tanks, pump skids balanced pressure systems, and more.

In addition to its excellent foamability and bubble stability, SOLBERG VERSAGARD AS-100 has excellent wetting ability making it an effective tool for the extinguishment of Class A fuel fires.



CERTIFICATIONS

SOLBERG VERSAGARD AS-100:

- Achieved the maximum rating and certified in European Standard EN-1568:2018 part 3 & 4 on all fuels with fresh and sea water – 1A/1A - 1A/1A
- Passes and certified to European Standard EN-1568:2018 part 1 & 2 – for use with medium and high expansion foam discharge devices
- International Maritime Organization certification MSC.1/Circ. 1312
- LASTFIRE tested as GOOD/GOOD/GOOD with 3 nozzles (semi, asp, system)
- Tested and certified to ICAO Level B – high performance on aviation fuels with both fresh and sea water

USAGE RATE

The proportioning rate is 3% for both hydrocarbons and polar solvents. It is used at 1% on Class A fuel fires.

TYPICAL PROPERTIES	
Specific Gravity, g/cm ³	1.000 - 1.040
pH @ 20°C	7.0 - 8.0
Viscosity, mPa.s/cPs at 375s-1* @ 20°C	105
Viscosity, mPa.s/cPs (LV-4 Spindle @30 rpm), † 20°C	2900-3500
Freezing Point, °C	-4°C
Lowest Temperature for Use, °C	0°C

* Brookfield cone/plate
† Brookfield LVT

FOAM PROPERTIES	
Dilution Rate	3%
Surface tens. at 20°C, mN/m (Demineralised water)	21
Interfacial tens. with cyclohexane at 20°C, mN/m	5
Low Expansion Foam (UNI-86)	
Foam Expansion Index	>7

INSPECTION

SOLBERG VERSAGARD AS-100 or a premix solution should be tested annually per National Fire protection Association (NFPA 11) and EN-13565-2 standards. A sample of the foam concentrate should be sent to the manufacturer or qualified third party lab to confirm physical properties and foam quality meet the specifications of the foam as originally supplied as per the requirements of NFPA 11 and EN-13565-2.

PACKAGING

The product is supplied in 20 or 25 L PE prismatic containers, 200 L PE cylindrical drums and, 1,000 L IBC containers.

STORAGE/MATERIAL COMPATIBILITY

SOLBERG VERSAGARD AS-100 should be stored between 0°C and +50°C, preferably in the original containers. It is compatible with multiple materials of construction found in firefighting equipment. For questions about material of construction compatibility consult Perimeter Solutions technical services.

CAUTIONS

Foams should not be used in contact with electrical equipment or with chemical products that can react with water. It is recommended to avoid contact of the foam concentrate with skin. In case of eye splashes, wash with plenty of water. In case of ingestion do not induce vomiting, drink water and seek medical advice.

Contains no intentionally added PFAS.



Solutions That Save.

FOR MORE INFORMATION

Contact any of our worldwide Perimeter Solutions Fire Safety offices or visit:

www.Perimeter-Solutions.com

UNITED STATES

1520 Brookfield Avenue
Green Bay, WI 54313
Tel: +1 (920) 593-9445
salesfoamusa@perimeter-solutions.com

EMEA

Polígono Industrial de Baiña, Parcela 23
33682 Baiña-Mieres (Asturias) – Spain
Tel: +34 985 24 29 45
salesfoamemea@perimeter-solutions.com

ASIA PACIFIC

3 Charles Street
St Marys NSW 0276 – Australia
Tel: +61 2 9673 5300
salesfoamapac@perimeter-solutions.com

perimeter-solutions.com


NOTICE PERIMETER SOLUTIONS MAKES NO REPRESENTATIONS OR WARRANTIES AS TO THE COMPLETENESS OR ACCURACY OF THE INFORMATION INCLUDED HEREIN. THE INFORMATION CONTAINED HEREIN IS NOT INTENDED TO PROVIDE REGULATORY, LEGAL OR EXPERT ADVICE RELATING TO THE PRODUCTS, ITS APPLICATION OR USES. NOTHING CONTAINED HEREIN IS TO BE CONSTRUED AS A RECOMMENDATION TO USE ANY PRODUCT, PROCESS, EQUIPMENT OR FORMULATION IN CONFLICT WITH ANY INDUSTRIAL PROPERTY OR INTELLECTUAL PROPERTY RIGHTS, AND PERIMETER SOLUTIONS MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, THAT THE USE THEREOF WILL NOT INFRINGE ON ANY INDUSTRIAL PROPERTY OR INTELLECTUAL PROPERTY RIGHTS. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO THE INFORMATION CONTAINED HEREIN.

SOLBERG® VERSAGARD™ AS-100

SECTION 1: IDENTIFICATION

- 1.1 GHS Product identifier:** SOLBERG® VERSAGARD™ AS-100
- Other means of identification:**
Non-applicable
- 1.2 Recommended use of the chemical and restrictions on use:**
Relevant uses: Fire-extinguishing. For professional user only.
Uses advised against: All uses not specified in this section or in section 7.3
- 1.3 Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party:**
- PERIMETER SOLUTIONS
Pol.Industrial de Baiña, Parc.23
33682 Baiña-Mieres - Asturias - Spain
Phone.: +34 985 242945. 24HR: +44 01202864796
sds@perimeter-solutions.com
- PERIMETER SOLUTIONS
1520 Brookfield Ave
Green Bay, WI 54313-USA
Tel: +1 920 593 9445
- PERIMETER SOLUTIONS
3060 Airport Rd.
Kamloops B.C. V2B 7X2-Canada
Tel: +1-250-554-3530
- PERIMETER SOLUTIONS
3 Charles Street
St Marys NSW 0276-Australia
Tel: +61 2 9673 5300
- 1.4 Emergency phone number:** ChemTrec 800-424-9300

SECTION 2: HAZARD(S) IDENTIFICATION

- 2.1 Classification of the substance or mixture:**
- 29 CFR 1910.1200:**
Classification of this product has been carried out in accordance with paragraph (d) of § 1910.1200.
Eye Dam. 1: Serious eye damage, Category 1, H318
Skin Irrit. 2: Skin irritation, Category 2, H315
- 2.2 Label elements:**
- 29 CFR 1910.1200:**
Danger
- 
- Hazard statements:**
Eye Dam. 1: H318 - Causes serious eye damage.
Skin Irrit. 2: H315 - Causes skin irritation.
- Precautionary statements:**
P264: Wash thoroughly after use.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313: If skin irritation occurs: Get medical advice/attention.
- Substances that contribute to the classification**
(carboxymethyl)dimethyl-3-[(1-oxododecyl)amino]propylammonium hydroxide; Sodium octyl sulphate

- CONTINUED ON NEXT PAGE -

SOLBERG® VERSAGARD™ AS-100
SECTION 2: HAZARD(S) IDENTIFICATION (continued)
2.3 Hazards not otherwise classified (HNOC):

Non-applicable

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS
3.1 Substances:

Non-applicable

3.2 Mixtures:
Chemical description: Aqueous solution of tensoactives

Components:

Remaining components are non-hazardous and/or present at amounts below reportable limits. The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200. Therefore, in accordance with Appendix D to § 1910.1200, the product contains:

Identification	Chemical name/Classification	Concentration
CAS: 111-76-2	2-butoxyethanol Acute Tox. 4: H302+H312+H332; Eye Irrit. 2: H319; Flam. Liq. 4: H227; Skin Irrit. 2: H315 - Warning	5 - <20 %
CAS: 4292-10-8	(carboxymethyl)dimethyl-3-[(1-oxododecyl)amino]propylammonium hydroxide Eye Dam. 1: H318 - Danger	2 - <6 %
CAS: 142-31-4	Sodium octyl sulphate Eye Dam. 1: H318; Skin Irrit. 2: H315 - Danger	0,5 - <3 %

To obtain more information on the hazards of the substances consult sections 11, 12 and 16.

SECTION 4: FIRST-AID MEASURES
4.1 Description of necessary measures:

The symptoms resulting from intoxication can appear after exposure, therefore, in case of doubt, seek medical attention for direct exposure to the chemical product or persistent discomfort, showing the SDS of this product.

By inhalation:

This product is not classified as hazardous through inhalation, however, it is recommended in case of intoxication symptoms to remove the person affected from the area of exposure, provide clean air and keep at rest. Request medical attention if symptoms persist.

By skin contact:

Remove contaminated clothing and footwear, rinse skin or shower the person affected if appropriate with plenty of cold water and neutral soap. In serious cases see a doctor. If the product causes burns or freezing, clothing should not be removed as this could worsen the injury caused if it is stuck to the skin. If blisters form on the skin, these should never be burst as this will increase the risk of infection.

By eye contact:

Rinse eyes thoroughly with lukewarm water for at least 15 minutes. Do not allow the person affected to rub or close their eyes. If the injured person uses contact lenses, these should be removed unless they are stuck to the eyes, as this could cause further damage. In all cases, after cleaning, a doctor should be consulted as quickly as possible with the SDS of the product.

By ingestion/aspiration:

Do not induce vomiting, but if it does happen keep the head down to avoid aspiration. Keep the person affected at rest. Rinse out the mouth and throat, as they may have been affected during ingestion.

4.2 Most important symptoms/effects, acute and delayed:

Acute and delayed effects are indicated in sections 2 and 11.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Non-applicable

SECTION 5: FIRE-FIGHTING MEASURES
5.1 Suitable (and unsuitable) extinguishing media:
Suitable extinguishing media:

- CONTINUED ON NEXT PAGE -

SOLBERG® VERSAGARD™ AS-100**SECTION 5: FIRE-FIGHTING MEASURES (continued)**

Product is non-flammable under normal conditions of storage, manipulation and use, but the product contains flammable substances. In the case of inflammation as a result of improper manipulation, storage or use preferably use polyvalent powder extinguishers (ABC powder), in accordance with the Regulation on fire protection systems.

Unsuitable extinguishing media:

IT IS RECOMMENDED NOT to use full jet water as an extinguishing agent.

5.2 Specific hazards arising from the chemical:

As a result of combustion or thermal decomposition reactive sub-products are created that can become highly toxic and, consequently, can present a serious health risk.

5.3 Special protective equipment and precautions for fire-fighters:

Depending on the magnitude of the fire it may be necessary to use full protective clothing and individual respiratory equipment. Minimum emergency facilities and equipment should be available (fire blankets, portable first aid kit,...)

Additional provisions:

As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Only properly trained personnel should be involved in firefighting. Evacuate nonessential personnel from the fire area. Destroy any source of ignition. In case of fire, refrigerate the storage containers and tanks for products susceptible to inflammation. Avoid spillage of the products used to extinguish the fire into an aqueous medium.

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures:**

Isolate leaks provided that there is no additional risk for the people performing this task. Personal protection equipment must be used against potential contact with the split product (See section 8). Evacuate the area and keep out those who do not have protection.

6.2 Environmental precautions:

This product is not classified as hazardous to the environment. Keep product away from drains, surface and underground water.

6.3 Methods and materials for containment and cleaning up:

It is recommended:

Absorb the spillage using sand or inert absorbent and move it to a safe place. Do not absorb in sawdust or other combustible absorbents. For any concern related to disposal consult section 13.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE**7.1 Precautions for safe handling:**

A.- Precautions for safe manipulation

Comply with the current standards 29 CFR 1910 Occupational Safety and Health Standards. Keep containers hermetically sealed. Control spills and residues, destroying them with safe methods (section 6). Avoid leakages from the container. Maintain order and cleanliness where dangerous products are used.

B.- Technical recommendations for the prevention of fires and explosions

Product is non-flammable under normal conditions of storage, manipulation and use. It is recommended to transfer at slow speeds to avoid the generation of electrostatic charges that can affect flammable products. Consult section 10 for information on conditions and materials that should be avoided.

C.- Technical recommendations to prevent ergonomic and toxicological risks

Do not eat or drink during the process, washing hands afterwards with suitable cleaning products.

D.- Technical recommendations to prevent environmental risks

It is recommended to have absorbent material available at close proximity to the product (See subsection 6.3)

7.2 Conditions for safe storage, including any incompatibilities:

A.- Technical measures for storage

Minimum Temp.: 32 °F

Maximum Temp.: 122 °F

B.- General conditions for storage

- CONTINUED ON NEXT PAGE -

Safety data sheet
according to 29 CFR 1910.1200

SOLBERG® VERSAGARD™ AS-100

SECTION 7: HANDLING AND STORAGE (continued)

Avoid sources of heat, radiation, static electricity and contact with food. For additional information see subsection 10.5

7.3 Specific end use(s):

Except for the instructions already specified it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters:

Substances whose occupational exposure limits have to be monitored in the workplace:

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000):

Identification	Occupational exposure limits		
	2-butoxyethanol CAS: 111-76-2	8-hour TWA PEL Ceiling Values - TWA PEL	50 ppm

US. ACGIH Threshold Limit Values:

Identification	Occupational exposure limits		
	2-butoxyethanol CAS: 111-76-2	TLV-TWA TLV-STEL	20 ppm

CALIFORNIA- TABLE AC-1 PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS:

Identification	Occupational exposure limits		
	2-butoxyethanol CAS: 111-76-2	PEL STEL	20 ppm

8.2 Appropriate engineering controls:


A.- Individual protection measures, such as personal protective equipment

As a preventative measure it is recommended to use basic Personal Protection Equipment. For more information on Personal Protection Equipment (storage, use, cleaning, maintenance, class of protection,...) consult the information leaflet provided by the manufacturer. For more information see subsection 7.1. All information contained herein is a recommendation, the information on clothing performance must be combined with professional judgment, and a clear understanding of the clothing application, to provide the best protection to the worker. All chemical protective clothing use must be based on a hazard assessment to determine the risks for exposure to chemicals and other hazards. Conduct hazard assessments in accordance with 29 CFR 1910.132.

B.- Respiratory protection


The use of protection equipment will be necessary if a mist forms or if the occupational exposure limits are exceeded.

C.- Specific protection for the hands

Pictogram	PPE	Remarks
 Mandatory hand protection	Protective gloves against minor risks	Replace gloves in case of any sign of damage. For prolonged periods of exposure to the product for professional / industrial users, we recommend using chemical protection gloves. Use gloves in accordance with manufacturer's use limitations and OSHA standard 1910.138 (29CFR)

As the product is a mixture of several substances, the resistance of the glove material can not be calculated in advance with total reliability and has therefore to be checked prior to the application.

D.- Ocular and facial protection

Pictogram	PPE	Remarks
 Mandatory face protection	Panoramic glasses against splash/projections.	Clean daily and disinfect periodically according to the manufacturer's instructions. Use if there is a risk of splashing. Use this PPE in accordance with manufacturer's use limitations and OSHA standard 1910.133 (29CFR)

E.- Bodily protection

- CONTINUED ON NEXT PAGE -



Safety data sheet
according to 29 CFR 1910.1200

SOLBERG® VERSAGARD™ AS-100

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)

Pictogram	PPE	Remarks
	Work clothing	Replace before any evidence of deterioration.
	Anti-slip work shoes	Replace before any evidence of deterioration.

F.- Additional emergency measures

Emergency measure	Standards	Emergency measure	Standards
 Emergency shower	ANSI Z358-1 ISO 3864-1:2011, ISO 3864-4:2011	 Eyewash stations	DIN 12 899 ISO 3864-1:2011, ISO 3864-4:2011

Environmental exposure controls:

In accordance with the community legislation for the protection of the environment it is recommended to avoid environmental spillage of both the product and its container. For additional information see subsection 7.1.D

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

For complete information see the product datasheet.

Appearance:

Physical state at 68 °F: Liquid
 Appearance: Viscous
 Color: White
 Odor: Characteristic
 Odour threshold: Non-applicable *

Volatility:

Boiling point at atmospheric pressure: Non-applicable *
 Vapour pressure at 68 °F: Non-applicable *
 Vapour pressure at 122 °F: Non-applicable *
 Evaporation rate at 68 °F: Non-applicable *

Product description:

Density at 68 °F: 1000 - 1040 kg/m³
 Relative density at 68 °F: Non-applicable *
 Dynamic viscosity at 68 °F: 105 cP
 Kinematic viscosity at 68 °F: Non-applicable *
 Kinematic viscosity at 104 °F: >20.5 cSt
 Concentration: Non-applicable *
 pH: 7 - 8
 Vapour density at 68 °F: Non-applicable *
 Partition coefficient n-octanol/water 68 °F: Non-applicable *
 Solubility in water at 68 °F:
 Solubility properties: Highly water-soluble
 Decomposition temperature: Non-applicable *
 Melting point/freezing point: Non-applicable *

*Not relevant due to the nature of the product, not providing information property of its hazards.

- CONTINUED ON NEXT PAGE -

SOLBERG® VERSAGARD™ AS-100
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (continued)

Explosive properties:	Non-applicable *
Oxidising properties:	Non-applicable *
Flammability:	
Flash Point:	Non Flammable (>199.4 °F)
Heat of combustion:	Non-applicable *
Flammability (solid, gas):	Non-applicable *
Autoignition temperature:	Non-applicable *
Lower flammability limit:	Non-applicable *
Upper flammability limit:	Non-applicable *
Explosive:	
Lower explosive limit:	Non-applicable *
Upper explosive limit:	Non-applicable *
9.2 Other information:	
Surface tension at 68 °F:	Non-applicable *
Refraction index:	Non-applicable *

*Not relevant due to the nature of the product, not providing information property of its hazards.

SECTION 10: STABILITY AND REACTIVITY
10.1 Reactivity:

No hazardous reactions are expected because the product is stable under recommended storage conditions. See section 7.

10.2 Chemical stability:

Chemically stable under the conditions of storage, handling and use.

10.3 Possibility of hazardous reactions:

Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected.

10.4 Conditions to avoid:

Applicable for handling and storage at room temperature:

Shock and friction	Contact with air	Increase in temperature	Sunlight	Humidity
Not applicable	Not applicable	Precaution	Avoid direct impact	Not applicable

10.5 Incompatible materials:

Acids	Water	Oxidising materials	Combustible materials	Others
Avoid strong acids	Not applicable	Not applicable	Not applicable	Avoid alkalis or strong bases

10.6 Hazardous decomposition products:

See subsection 10.3, 10.4 and 10.5 to find out the specific decomposition products. Depending on the decomposition conditions, complex mixtures of chemical substances can be released: carbon dioxide (CO₂), carbon monoxide and other organic compounds.

SECTION 11: TOXICOLOGICAL INFORMATION
11.1 Information on toxicological effects:

The experimental information related to the toxicological properties of the product itself is not available

Contains glycols. With possibility of effects that are hazardous to the health, it is recommended not to breathe the vapours for long periods of time.

Dangerous health implications:

In case of exposure that is repetitive, prolonged or at concentrations higher than recommended by the occupational exposure limits, it may result in adverse effects on health depending on the means of exposure:

A- Ingestion (acute effect):

- CONTINUED ON NEXT PAGE -

Safety data sheet
 according to 29 CFR 1910.1200

SOLBERG® VERSAGARD™ AS-100

SECTION 11: TOXICOLOGICAL INFORMATION (continued)

- Acute toxicity : Based on available data, the classification criteria are not met, however, it contains substances classified as dangerous for consumption. For more information see section 3.
- Corrosivity/Irritability: The consumption of a considerable dose can cause irritation in the throat, abdominal pain, nausea and vomiting.
- B- Inhalation (acute effect):
 - Acute toxicity : Based on available data, the classification criteria are not met, however, it contains substances classified as dangerous for inhalation. For more information see section 3.
 - Corrosivity/Irritability: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
- C- Contact with the skin and the eyes (acute effect):
 - Contact with the skin: Produces skin inflammation.
 - Contact with the eyes: Produces serious eye damage after contact.
- D- CMR effects (carcinogenicity, mutagenicity and toxicity to reproduction):
 - Carcinogenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for the effects mentioned. For more information see section 3.
IARC: 2-butoxyethanol (3)
 - Mutagenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
 - Reproductive toxicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
- E- Sensitizing effects:
 - Respiratory: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous with sensitising effects. For more information see section 3.
 - Cutaneous: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
- F- Specific target organ toxicity (STOT) - single exposure:

Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
- G- Specific target organ toxicity (STOT)-repeated exposure:
 - Specific target organ toxicity (STOT)-repeated exposure: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
 - Skin: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
- H- Aspiration hazard:

Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.

Other information:

Non-applicable

Specific toxicology information on the substances:

Identification	Acute toxicity		Genus
	LD50 oral	LD50 dermal	
2-butoxyethanol CAS: 111-76-2	1414 mg/kg	1060 mg/kg	Rat
	11 mg/L (4 h)		Rabbit
			Rat
(carboxymethyl)dimethyl-3-[(1-oxododecyl)amino]propylammonium hydroxide CAS: 4292-10-8	5100 mg/kg	Non-applicable	Rat

SECTION 12: ECOLOGICAL INFORMATION

The experimental information related to the eco-toxicological properties of the product itself is not available

12.1 Ecotoxicity (aquatic and terrestrial, where available):

- CONTINUED ON NEXT PAGE -

Safety data sheet
according to 29 CFR 1910.1200

SOLBERG® VERSAGARD™ AS-100

SECTION 12: ECOLOGICAL INFORMATION (continued)

Identification	Acute toxicity		Species	Genus
2-butoxyethanol CAS: 111-76-2	LC50	1490 mg/L (96 h)	Lepomis macrochirus	Fish
	EC50	1815 mg/L (48 h)	Daphnia magna	Crustacean
	EC50	911 mg/L (72 h)	Pseudokirchneriella subcapitata	Algae
(carboxymethyl)dimethyl-3-[(1-oxododecyl)amino] propylammonium hydroxide CAS: 4292-10-8	LC50	1.9 mg/L (96 h)	Cyprinus carpio	Fish
	EC50	1.9 mg/L (48 h)	Daphnia magna	Crustacean
	EC50	Non-applicable		

12.2 Persistence and degradability:

Identification	Degradability		Biodegradability	
2-butoxyethanol CAS: 111-76-2	BOD5	0.71 g O2/g	Concentration	100 mg/L
	COD	2.2 g O2/g	Period	14 days
	BOD5/COD	0.32	% Biodegradable	96 %
(carboxymethyl)dimethyl-3-[(1-oxododecyl)amino] propylammonium hydroxide CAS: 4292-10-8	BOD5	Non-applicable	Concentration	100 mg/L
	COD	Non-applicable	Period	28 days
	BOD5/COD	Non-applicable	% Biodegradable	95 %

12.3 Bioaccumulative potential:

Identification	Bioaccumulation potential	
2-butoxyethanol CAS: 111-76-2	BCF	3
	Pow Log	0.83
	Potential	Low

12.4 Mobility in soil:

Identification	Absorption/desorption		Volatility	
2-butoxyethanol CAS: 111-76-2	Koc	8	Henry	1.621E-1 Pa·m³/mol
	Conclusion	Very High	Dry soil	No
	Surface tension	2.729E-2 N/m (77 °F)	Moist soil	Yes
(carboxymethyl)dimethyl-3-[(1-oxododecyl)amino] propylammonium hydroxide CAS: 4292-10-8	Koc	3063	Henry	Non-applicable
	Conclusion	Low	Dry soil	Non-applicable
	Surface tension	Non-applicable	Moist soil	Non-applicable

12.5 Results of PBT and vPvB assessment:

Non-applicable

12.6 Other adverse effects:

Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Waste management (disposal and evaluation):

Consult the authorized waste service manager on the assessment and disposal operations. In case the container has been in direct contact with the product, it will be processed the same way as the actual product. Otherwise, it will be processed as non-dangerous residue. We do not recommended disposal down the drain. See epigraph 6.2.

Regulations related to waste management:

Legislation related to waste management:

40 CFR Part 261- IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

SECTION 14: TRANSPORT INFORMATION

This product is not regulated for transport.

- CONTINUED ON NEXT PAGE -

Safety data sheet
according to 29 CFR 1910.1200

SOLBERG® VERSAGARD™ AS-100

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

SARA Title III - Toxic Chemical Release Inventory Reporting (Section 313): 2-butoxyethanol
California Proposition 65 (the Safe Drinking Water and Toxic Enforcement Act of 1986): Non-applicable
The Toxic Substances Control Act (TSCA) : 2-butoxyethanol ; (carboxymethyl)dimethyl-3-[(1-oxododecyl)amino]propylammonium hydroxide ; Sodium octyl sulphate
Massachusetts RTK - Substance List: 2-butoxyethanol
New Jersey Worker and Community Right-to-Know Act: 2-butoxyethanol
New York RTK - Substance list: 2-butoxyethanol
Pennsylvania Worker and Community Right-to-Know Law: 2-butoxyethanol
CANADA-Domestic Substances List (DSL): 2-butoxyethanol ; (carboxymethyl)dimethyl-3-[(1-oxododecyl)amino]propylammonium hydroxide ; Sodium octyl sulphate
CANADA-Non-Domestic Substances List (NDSL): Non-applicable
NTP (National Toxicology Program): Non-applicable
Minnesota - Hazardous substances ERTK: 2-butoxyethanol
Rhode Island - Hazardous substances RTK: 2-butoxyethanol
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1096): Non-applicable
Hazardous Air Pollutants (Clean Air Act): Non-applicable
Hazardous substances release notification under CERCLA sections 102-103 (40 CFR Part 302): Non-applicable

Specific provisions in terms of protecting people or the environment:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of the local circumstances in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:

Take into consideration other applicable federal, state, and local laws and local regulations.

Other information:

Considering the information on the raw materials, the product is classified in water hazard class 1 - slightly hazardous to water (WGK 1) according to AWSV.

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Appendix d to §1910.1200 - Safety data sheets

Texts of the legislative phrases mentioned in section 2:

H318: Causes serious eye damage.

H315: Causes skin irritation.

Texts of the legislative phrases mentioned in section 3:

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3

29 CFR 1910.1200:

Acute Tox. 4: H302+H312+H332 - Harmful if swallowed, in contact with skin or if inhaled.

Eye Dam. 1: H318 - Causes serious eye damage.

Eye Irrit. 2: H319 - Causes serious eye irritation.

Fam. Liq. 4: H227 - Combustible liquid.

Skin Irrit. 2: H315 - Causes skin irritation.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

Occupational Safety & Health Administration (OSHA).

Abbreviations and acronyms:

- CONTINUED ON NEXT PAGE -

Safety data sheet
according to 29 CFR 1910.1200

SOLBERG® VERSAGARD™ AS-100

SECTION 16: OTHER INFORMATION (continued)

IMDG: International maritime dangerous goods code
IATA: International Air Transport Association
ICAO: International Civil Aviation Organisation
COD: Chemical Oxygen Demand
BOD5: 5-day biochemical oxygen demand
BCF: Bioconcentration factor
LD50: Lethal Dose 50
CL50: Lethal Concentration 50
EC50: Effective concentration 50
Log-POW: Octanol-water partition coefficient
Koc: Partition coefficient of organic carbon

Manufacturer Disclaimer: The information contained in this safety data sheet ("SDS") is based on sources, technical knowledge and current legislation. Furthermore, is based on data believed to be accurate; thus, the company does not assume any liability for its accuracy. The information provided herein cannot be considered a guarantee of the properties of this product and the same is simply a description of the security requirements. The use, occupational methodology and/or conditions for users of this product are not within our awareness or control. It is ultimately the responsibility of the user(s) to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information of this SDS only refers to this product, which should not be used for purposes other than those specified. Finally, the manner in which this product is used and whether there is any infringement of patents is the sole responsibility of the user(s).

END OF SAFETY DATA SHEET

Photo Log

PHOTOGRAPH LOG

BNSF Railway Company
Oklaunion, TX – Ethanol Release 1-8-2022



Photograph: 1

Description:

Photograph taken from the creek located north west of the derailment area. Water was not present in the creek.

Date: 1/9/2022



Photograph: 2

Description:

Photograph from the southeast side of the impacted area facing northwest.

Date: 1/11/2022

PHOTOGRAPH LOG

BNSF Railway Company
Oklaunion, TX – Ethanol Release 1-8-2022



Photograph: 3

Description

Photograph from the southeast side of the impacted area facing northwest. The area shown is on the north side of the track and the ballast stockpile is near the center of the derailment location.

Date: 1/11/2022