

# SAFETY DATA SHEET

## 1. Identification

Product identifier	TETRAMETHYLAMMONIUM HYDROXIDE, SOLUTION, 25% in METHANOL
Other means of identification	
Product code	2523
Recommended use	professional, scientific and technical activities: other professional, scientific and technical activities
<b>Recommended restrictions</b>	None known.
Manufacturer/Importer/Supp	lier/Distributor information
Manufacturer	

Company name Address	GFS Chemicals, Inc. 800 Kaderly Drive Columbus, OH 43228 United States	
Telephone	Phone Toll Free Fax	740-881-5501 800-858-9682 740-881-5989
Website E-mail	www.gfschemicals.com service@gfschemicals.com	
Emergency phone number	Emergency Assistance	Chemtrec 800-424-9300

## 2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 2
Health hazards	Acute toxicity, oral	Category 2
	Acute toxicity, dermal	Category 1
	Acute toxicity, inhalation	Category 3
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Reproductive toxicity	Category 1
	Specific target organ toxicity, single exposure	Category 1
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Specific target organ toxicity, repeated exposure	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 3
OSHA defined hazards	Not classified.	

Label elements



Signal word Hazard statement

Danger

Highly flammable liquid and vapor. Fatal if swallowed. Fatal in contact with skin. Toxic if inhaled. Causes severe skin burns and eye damage. Causes serious eye damage. Causes damage to organs. Causes damage to organs through prolonged or repeated exposure. May cause drowsiness or dizziness. May damage fertility or the unborn child. Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing mist/vapor. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear eye protection/face protection.
Response	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. 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. Immediately call a POISON CENTER or doctor/physician. Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Keep cool. Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Hazard(s) not otherwise classified (HNOC)	Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.
Supplemental information	75% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 75% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

# 3. Composition/information on ingredients

#### Mixtures

Chemical name	Common name and synonyms	CAS number	%
METHYL ALCOHOL	WOOD ALCOHOL METHANOL	67-56-1	75
TETRAMETHYLAMMONIUM HYDROXIDE	Methanaminium, N,N,N-trimethyl-, hydroxide	75-59-2	25
Impurities			
Chemical name	Common name and synonyms	CAS number	%
WATER		7732-18-5	7
*Designates that a specific chemica	I identity and/or percentage of composition ha	s been withheld as a trade sec	ret.

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

#### 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. Call a poison center or doctor/physician if you feel unwell. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing 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. Call a physician or poison control center immediately.
Ingestion	If swallowed: Immediately call a poison center or doctor/physician. Call a physician or poison control center immediately. Rinse mouth. If swallowed, induce vomiting immediately as directed by medical personnel. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects.

Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Take off immediately all contaminated clothing. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse. Discard any shoes or clothing items that cannot be decontaminated.
5. Fire-fighting measures	5
Suitable extinguishing media	Alcohol resistant foam. Water fog. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. 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	In case of fire and/or explosion do not breathe fumes. 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	Highly flammable liquid and vapor.
6. Accidental release mea	asures
Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Avoid breathing mist/vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area).
containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. This product is miscible in water. Prevent product from entering drains. 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.
Environmental precautions	Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Inform appropriate managerial or supervisory personnel of all environmental releases. Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

## 7. Handling and storage

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Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Avoid breathing mist/vapor. Wear appropriate personal protective equipment. Avoid prolonged exposure. Wash hands thoroughly after handling. Should be handled in closed systems, if possible. Observe good industrial hygiene practices. Avoid release to the environment. Wash contaminated clothing before reuse.
	For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity" or National Fire Protection Association (NFPA) 70, "National Electrical Code".
Conditions for safe storage, including any incompatibilities	Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS). Store away from incompatible materials (see Section 10 of the SDS).
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#### 8. Exposure controls/personal protection

#### **Occupational exposure limits**

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

Components	1	Гуре	Va	alue
METHYL ALCOHOL (CAS 67-56-1)	F	PEL	26	60 mg/m3
			20	00 ppm
US. ACGIH Threshold L	imit Values			
Components	1	Гуре	Va	alue
METHYL ALCOHOL (CAS 67-56-1)	S	STEL	25	60 ppm
	Т	WA	20	00 ppm
US. NIOSH: Pocket Gui	de to Chemical Haz	zards		
Components	1	Гуре	Va	alue
METHYL ALCOHOL (CAS 67-56-1)	S	ITEL	32	25 mg/m3
			25	50 ppm
	Т	-WA	26	60 mg/m3
			20	0 ppm
ogical limit values				
ACGIH Biological Expos	sure Indices			
Components	Value	Determinant	Specimen	Sampling Time
METHYL ALCOHOL (CAS 67-56-1)	15 mg/l	Methanol	Urine	*
	lance and the course			

\* - For sampling details, please see the source document.

Exposure guidelines				
US - California OELs: Skin	designation			
METHYL ALCOHOL (CAS 67-56-1) Can be absorbed through the skin.				
US - Minnesota Haz Subs:	Skin designation applies	-		
METHYL ALCOHOL (CAS	67-56-1)	Skin designation applies.		
US - Tennessee OELs: Skir	designation			
METHYL ALCOHOL (CAS	67-56-1)	Can be absorbed through the skin.		
US ACGIH Threshold Limit	Values: Skin designation			
METHYL ALCOHOL (CAS		Can be absorbed through the skin.		
US NIOSH Pocket Guide to	Chemical Hazards: Skin des	ignation		
METHYL ALCOHOL (CAS	67-56-1)	Can be absorbed through the skin.		
Appropriate engineering controls	Explosion-proof general and local exhaust ventilation. 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. Eye wash facilities and emergency shower must be available when handling this product. Provide eyewash station and safety shower.			
Individual protection measure	s, such as personal protectiv	<i>r</i> e equipment		
Eye/face protection	Wear safety glasses with side	shields (or goggles).		
Skin protection Hand protection	Wear appropriate chemical res	sistant gloves. Suitable gloves can be recommended by the glove		
Other		intent dething the of an imperview arean is recommended		
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.			
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Chemical respirator with organic vapor cartridge.			
Thermal hazards	Wear appropriate thermal pro	tective clothing, when necessary.		
General hygiene considerations	and drink. Always observe goo	nce requirements. When using do not smoke. Keep away from food od personal hygiene measures, such as washing after handling the inking, and/or smoking. Routinely wash work clothing and protective nants.		

# 9. Physical and chemical properties

Appearance	Clear.
Physical state	Liquid.
Form	Liquid.
Color	Colorless to light yellow.
Odor	Alcoholic.
Odor threshold	Not available.
рН	Not available.
Melting point/freezing point	-144.04 °F (-97.8 °C) estimated
Initial boiling point and boiling range	148.46 °F (64.7 °C) estimated
Flash point	53.6 °F (12.0 °C) estimated
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or ex	xplosive limits
Flammability limit - lower (%)	7.3 % estimated
Flammability limit - upper (%)	36 % estimated
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	126.98 hPa estimated

Relative density	Not available.
Solubility(ies)	
Solubility (water)	Miscible
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	464 °F (240 °C) estimated
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	0.87 g/cm3
Explosive properties	Not explosive.
Flammability class	Flammable IB estimated
Flash point class	Flammable IB
Molecular formula	(CH3)4NOH
Molecular weight	91.15 g/mol
<b>Oxidizing properties</b>	Not oxidizing.
Percent volatile	75 % estimated
Specific gravity	0.87
VOC	75 % estimated

## 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	Hazardous polymerization does not occur.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Carbon oxides. May include oxides of nitrogen.

## 11. Toxicological information

#### Information on likely routes of exposure

Inhalation	Toxic if inhaled. May cause damage to organs by inhalation. May cause drowsiness and dizziness Headache. Nausea, vomiting.
Skin contact	Fatal in contact with skin. Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Fatal if swallowed. Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Causes serious eye damage. Permanent eye damage including blindness could result. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

#### Information on toxicological effects

# Acute toxicity

Fatal in contact with skin. Fatal if swallowed. Toxic if inhaled.

•		
Components	Species	Test Results
METHYL ALCOHOL (CAS 67-56-1	.)	
<u>Acute</u>		
Dermal		
LD50	Rabbit	15800 mg/kg
Inhalation		
LC50	Rat	87.5 mg/l, 6 Hours
Oral		
LD50	Rat	5628 mg/kg
Skin corrosion/irritation	Causes severe skin burns and eye damage.	
Serious eye damage/eye irritation	Causes serious eye damage.	

Been in the second state of the state		
Respiratory or skin sensitization	on de la constante de la const	
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Not classifiable as to carcinogenicity to humans.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Not listed.		
OSHA Specifically Regulate	ed Substances (29 CFR 1910.1001-1052)	
Not regulated.		
US. National Toxicology Pr	ogram (NTP) Report on Carcinogens	
Not listed.		
Reproductive toxicity	May damage fertility or the unborn child.	
Specific target organ toxicity - single exposure	Causes damage to organs. May cause drowsiness and dizziness.	
Specific target organ toxicity - repeated exposure	Causes damage to organs through prolonged or repeated exposure.	
Aspiration hazard	Not an aspiration hazard.	
Chronic effects	Causes damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful.	

# **12. Ecological information**

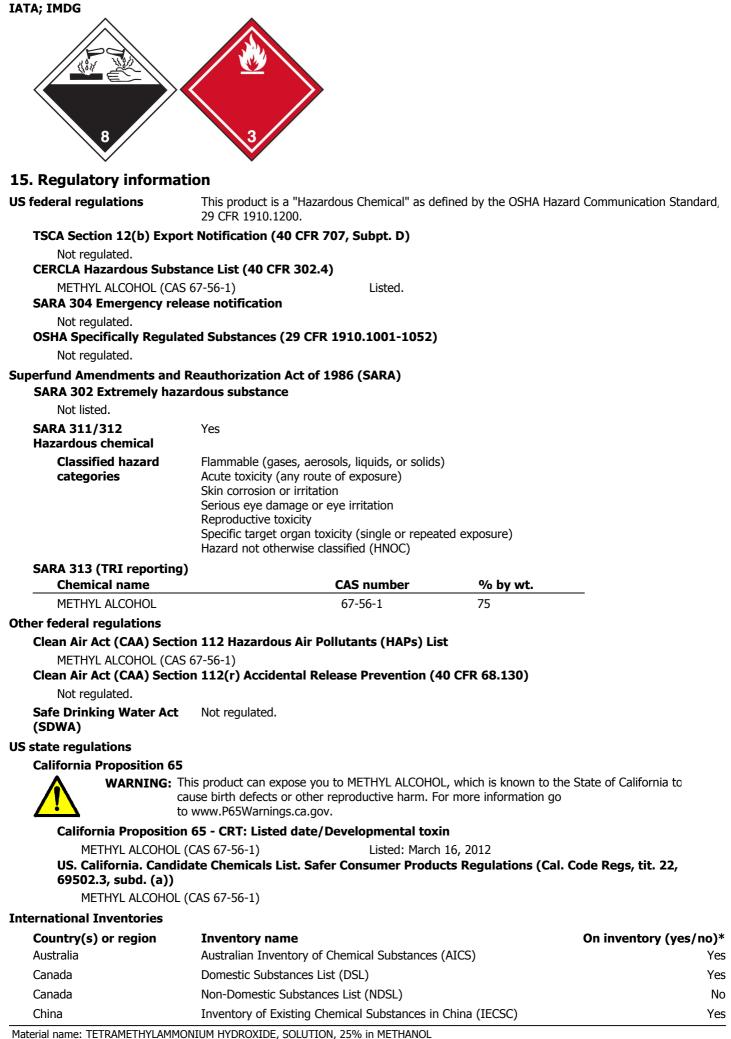
12. Ecological informat	ion			
Ecotoxicity	Toxic to a	quatic life. Harmful to aquatic life with lo	ng lasting effects.	
Product		Species	Test Results	
TETRAMETHYLAMMONIUM	HYDROXIDE, S	SOLUTION, 25% in METHANOL		
Aquatic				
Crustacea	EC50	Daphnia	22911.1113 mg/l, 48 hours estimated	
Fish	LC50	Fish	30111.1113 mg/l, 96 hours estimated	
Components		Species	Test Results	
METHYL ALCOHOL (CAS 67-	·56-1)			
Aquatic				
Crustacea	EC50	Water flea (Daphnia magna)	> 10000 mg/l, 48 hours	
Fish	LC50	Bluegill (Lepomis macrochirus)	13500 - 17600 mg/l, 96 hours	
Persistence and degradabilit	<b>y</b> No data is	available on the degradability of any ing	redients in the mixture.	
<b>Bioaccumulative potential</b>				
Partition coefficient n-oc METHYL ALCOHOL	tanol / wate	e <b>r (log Kow)</b> -0.77		
Mobility in soil	No data av	No data available.		
Other adverse effects	The produ potential.	The product contains volatile organic compounds which have a photochemical ozone creation potential.		
13. Disposal considerat	ions			
Disposal instructions	material un containers ponds, wa considered	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.		
Local disposal regulations	Dispose in	accordance with all applicable regulation	<b>1</b> 5.	
Hazardous waste code	D002: Was The waste	D001: Waste Flammable material with a flash point <140 F D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.		
Waste from residues / unused products		This material and its container must be d	npty containers or liners may retain some product isposed of in a safe manner (see: Disposal	
Contaminated packaging			ue, follow label warnings even after container is approved waste handling site for recycling or	

# 14. Transport information

## DOT

DOT	
UN number	UN2920
UN proper shipping name	Corrosive liquids, flammable, n.o.s. (METHYL ALCOHOL RQ = 6667 LBS,
	TETRAMETHYLAMMONIUM HYDROXIDE)
Transport hazard class(es)	•
Class	8
Subsidiary risk	3
Label(s)	8, 3
Packing group	II
Special precautions for	Read safety instructions, SDS and emergency procedures before handling.
user	Read Surely instructions, SDS and energency procedures before nanding.
Special provisions	B2, IB2, T11, TP2, TP27
Packaging exceptions	None
Packaging non bulk	202
Packaging bulk	243
IATA	
UN number	UN2920
UN proper shipping name	Corrosive liquid, flammable, n.o.s. (METHYL ALCOHOL, TETRAMETHYLAMMONIUM HYDROXIDE)
Transport hazard class(es)	
Class	8
Subsidiary risk	3
Packing group	II
Environmental hazards	No.
ERG Code	8F
Special precautions for	Read safety instructions, SDS and emergency procedures before handling.
user	
Other information	
Passenger and cargo	Allowed with restrictions.
aircraft	
Cargo aircraft only	Allowed with restrictions.
IMDG	
UN number	UN2920
UN proper shipping name	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (METHYL ALCOHOL, TETRAMETHYLAMMONIUM
	HYDROXIDE)
Transport hazard class(es)	
Class	8
Subsidiary risk	3
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-E, S-C
Special precautions for	Read safety instructions, SDS and emergency procedures before handling.
user	
Transport in bulk according to	Not established.
Annex II of MARPOL 73/78 and the IBC Code	
DOT	





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Country(s) or region	Inventory name	On inventory (yes/no)*
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)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
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, including date of preparation or last revision

Issue date	June-29-2015
Revision date	July-30-2018
Version #	02
Disclaimer	GFS Chemicals, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.
Revision information	This document has undergone significant changes and should be reviewed in its entirety.