Introduction

This "Sample Safety Data Sheet" (SSDS) provides information for M15: Gasoline Methanol Blend - the blending of gasoline (petrol) with approximately 15 volume percent methanol (M15) along with co-solvents and corrosion inhibitors. The Methanol Institute is not a supplier of M15 and has prepared this sample document to provide information to suppliers commercializing M15 to support safe and environmentally sound practices for the handling of M15 and methanol throughout the global distribution chain. Since the majority of the M15 blended product is gasoline, all the hazards associated with gasoline are also attributed to the M15 blended product. It is possible that over time a mixture may be created that deviates from the composition and ratio as listed herein on the SSDS. In such case, the information presented is no longer valid and expert analysis should once again be performed to ascertain applicable hazards

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

M15: Gasoline Methanol Blend

Synonyms

Gasoline, Unleaded Gasoline, Petrol, Oxygenated Gasoline, Gasohol

Chemical Family

Gasoline

Product Use

Automotive fuel: motor vehicles

Restrictions on Use

This product must not be used in applications other than those recommended under Product Use without first seeking the advice of the supplier. In general, this product should not be used as motor fuel for off-road engines, aviation engines, marine engines or 2-cycle engines. This product is not to be used as a solvent or cleaning agent; for lighting or brightening fires; as a skin cleanser, or as fuel for space (or area) heaters. This product is designed only to suit automotive applications as unleaded motor fuel.

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with OECD Task Force on Harmonization of Classification and Labelling (Task Force on HCL) for health and environmental hazards, and by UNCETDG/ILO Working Group for Physical Hazards

Flammable Liquids - Category 2
Aspiration Hazard - Category 1
Acute Toxicity - Oral - Category 5
Acute Toxicity - Inhalation - Vapor - Category 3
Skin Corrosion/Irritation - Category 2
Serious Eye Damage/Eye Irritation - Category 2A
Germ Cell Mutagenicity - Category 1A
Carcinogenicity - Category 1A
Reproductive Toxicity - Category 1A
Specific Target Organ Toxicity - Single Exposure - Category 1 (body , Central Nervous System , optic nerve , retina, eyes , Nervous System , respiratory system , kidneys , liver)
Specific Target Organ Toxicity - Single Exposure - Category 3
Specific Target Organ Toxicity - Repeated Exposure - Category 1 (eyes , Central Nervous System , retina , kidneys, respiratory system , liver , Hematopoietic System , Peripheral Nervous System)
Specific Target Organ Toxicity - Repeated Exposure - Category 2 (lungs , ears , blood)

Hazardous to the Aquatic Environment - Acute - Category 3
Hazardous to the Aquatic Environment - Chronic - Category 2

GHS Label Elements

Symbol(s)

Signal Word

Danger

Hazard Statement(s)

Highly flammable liquid and vapor.
May be fatal if swallowed and enters airways.
May be harmful if swallowed.
Toxic if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May cause genetic defects.
May cause cancer.
May damage fertility or the unborn child.
Causes damage to organs.
May cause respiratory irritation. May cause drowsiness or dizziness.
Causes damage to organs through prolonged or repeated exposure.
May cause damage to organs through prolonged or repeated exposure.
Toxic to aquatic life with long lasting effects.

Precautionary Statement(s)

Prevention

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep container tightly closed.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Ground/Bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Take action to prevent static discharges.
Use non-sparking tools.
Use only outdoors or in a well-ventilated area.
Use Personal Protective equipment as required.
Wear protective gloves/protective clothing/eye protection/face protection.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.

Response

In case of fire: Use appropriate media to extinguish.
Collect spillage.
If exposed or concerned: Call a POISON CENTER or doctor/physician.
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.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
Do NOT induce vomiting.
Call a POISON CENTER or doctor.
Specific treatment (see label).

Storage

Store in a well-ventilated place. Keep container tightly closed.
Keep cool.
Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards

Poison. May be fatal if swallowed. If swallowed there is a risk of blindness.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
67-56-1	Methanol	15.0
86290-81-5	Gasoline	0-85.0
--	The above listed complex substance contains the following constituents	--
108-88-3	Toluene	0.5-24.0
1330-20-7	Xylene (mixed isomers)	0.5-14.0
1634-04-4	Methyl tert-butyl ether for octane as/or as Co-solvent	0-10
106-97-8	n-Butane	<10.0
95-63-6	1,2,4-Trimethylbenzene	<6.0
64-17-5	Ethyl alcohol as Co-solvent	0-5
71-43-2	Benzene	0.1-4.5
110-54-3	Hexane	0.4-4
100-41-4	Ethylbenzene	<3.0

This list includes contaminants that may or may not be present: Naphthalene CAS #: 91-20-3, Cyclohexane CAS #: 110-82-7 The M15 gasoline methanol blend, in addition to containing 15 volume percent methanol, may contain some smaller volumes of ethanol as a co-solvent or other aliphatic alcohols, and/or aliphatic ethers. Contact supplier to confirm any use of aliphatic alcohols or aliphatic ethers. M15 methanol gasoline blends should contain an adequate amount of effective fuel corrosion inhibitor that mitigates corrosion of metals. Complex mixture of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons (including benzene up to 3.0 % v/v maximum), with carbon numbers predominantly in the C4 to C12 range. Besides containing 15 volume percent methanol, it may contain other oxygenated hydrocarbons, including ethanol, other aliphatic alcohols or aliphatic ethers

(such as MTBE). May also contain several fuel additives at <0.1% v/v each that are used for adding corrosion resistance for metals, preventing gum formation and detergency for maintaining clean fuel systems.

Section 4 - FIRST AID MEASURES

Description of Necessary Measures

Never give anything by mouth to an unconscious person. Get medical attention/advice if you feel unwell (show the label where possible). Call a POISON CENTER or doctor/physician. Toxic. Flammable. Wear appropriate personal protective equipment. Remove sources of ignition.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Administer oxygen if breathing is difficult. Immediately call a POISON CENTER or doctor.

Skin

IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse.

Eyes

IF IN EYES: Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation develops and persists, get medical attention.

Ingestion

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Observe risk of aspiration if vomiting occurs. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

Most Important Symptoms/Effects

Acute

Poison. May be fatal if swallowed. If swallowed there is a risk of blindness. Toxic if inhaled. Harmful in contact with skin. Causes skin irritation. Causes serious eye irritation. Causes damage to organs. Ingestion causes nausea, weakness and central nervous system effects, headache, vomiting, dizziness, symptoms of drunkenness. May cause respiratory irritation. Coma and death due to respiratory failure may follow severe exposures: Medical treatment necessary. A latent period of several hours may occur between exposure and the onset of symptoms.

Delayed

May cause genetic defects. May cause cancer. May damage fertility or the unborn child. Causes damage to organs through prolonged or repeated exposure.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively. The severity of symptoms depends upon the length and concentration of the exposure. If ingested, get immediate medical attention.

Note to Physicians

Treat symptomatically. The severity of outcome following methanol ingestion may be more related to the time between ingestion and treatment, rather than the amount ingested. Therefore, there is a need for rapid treatment of any ingestion exposure. Call a POISON CENTER.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Water spray, alcohol resistant foam, fog. Small fires: dry chemical powder, carbon dioxide, sand, earth. Cool fire-exposed containers with water.

Unsuitable Extinguishing Media

Do not use high-pressure water streams. Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire. Firefighting foams without alcohol resistance should not be used with alcohol blended gasoline, since the alcohols prevent the formation of the film between the foam and the gasoline, and thereby break down the foam which renders it ineffective.

Special Hazards Arising from the Chemical

Highly flammable liquid and vapor. May form explosive mixture with air. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Containers may rupture or explode if exposed to heat. Dangerous gases may accumulate in confined spaces. Toxic. Since any water that comes in contact with the methanol gasoline blend may now contain methanol, it should be treated as being possibly flammable and toxic.

Hazardous Combustion Products

Releases toxic gases, vapors. Carbon monoxide, carbon dioxide, formaldehyde.

Advice for firefighters

Fire fighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. Use appropriate confined space entry precautions and monitor oxygen levels. Isolate hazard area. Cool containers with water spray until well after the fire is out. Vapors may travel to ignition source and flashback. Vapors are heavier than air, spread along floors and form explosive mixtures with air. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. ALWAYS stay away from tanks engulfed in fire.

Fire Fighting Measures

Safely dike and capture any run-off water since it may be flammable from soluble methanol. Safely collect spillage. Do not allow run-off from fire-fighting to enter drains or water courses. Keep unnecessary people away, isolate hazard area and deny entry.

Special Protective Equipment and Precautions for Firefighters

Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures for non-emergency personnel

Wear appropriate personal protective equipment. Move container from fire area if it can be done without risk. Do not breathe gas/fume/vapor/spray. Avoid contact with eyes and skin.

Personal precautions, protective equipment and emergency procedures for emergency personnel

Wear appropriate personal protective equipment. Move container from fire area if it can be done without risk. Do not breathe gas/fume/vapor/spray. Avoid contact with eyes and skin.

Environmental Precautions

Avoid release to the environment. Prevent entry into waterways, sewers, basements, or confined areas. Contain the released material by diking the containment area with absorbent. Do not flush into sanitary sewer systems, drains or surface water. Reduce vapors with water spray, alcohol resistant foam. Eliminate all sources of ignition. Contact authorities in the event of pollution of soil and aquatic environment or discharge into drains. Dispose in accordance with all applicable federal, state/regional and local laws and regulations.

Methods and Materials for Containment and Cleaning Up

Wear suitable protective clothing and eye/face protection. Stop leak if this can be done without risk. Do not touch or walk through spilled material. Evacuate the area promptly and keep upwind of the spilled material. Ensure adequate ventilation. Avoid inhalation of mists or vapors. Avoid contact with eyes, skin and clothing. Remove all sources of ignition. Avoid friction, static electricity and sparks. Small spills: Absorb with sand or other non-combustible material. Use non-sparking tools and equipment. Collect spilled material in appropriate container for disposal. Clean contaminated surface thoroughly. Large spills: Contain the released material by diking the containment area with absorbent. A vapor suppressing foam may be used to reduce vapors. Collect spilled material in appropriate container for reuse or disposal.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. DO NOT SIPHON BY MOUTH. Use in a well ventilated area. Do not breathe vapor. Do not enter confined spaces unless adequately ventilated. Wear personal protective clothing and equipment, see Section 8. Eliminate all sources of ignition. No smoking. Use explosion-proof equipment. Ground/bond container and receiving equipment. Special slow load procedures for "switch loading" must

be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product). Use good industrial hygiene practices in handling this material. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and leaving work. Clean up contamination/spills as soon as they occur. Decontaminate personnel, spill area and all tools and equipment. Empty containers may contain residual amounts of this product; therefore, empty containers should be handled with care.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place. Keep container tightly closed.

Keep cool.

Store locked up.

Drum and small container storage: Keep container closed when not in use. Drums should be stacked to a maximum of 3 high. Use properly labelled and closeable containers. Packaged product must be kept tightly closed and stored in a diked (bunded) well-ventilated area, away from, ignition sources and other sources of heat. Keep containers away from heat, flame, sparks, static electricity, or other sources of ignition. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Store in a dry area. Store in fireproof room. Avoid contact with incompatible materials. Do not store in containers made of the following materials: Polyethylene. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition. Ground/Bond container and receiving equipment. Provide appropriate fire extinguishers and spill cleanup equipment in or near storage area. Empty containers may retain product residue including flammable/explosive vapors. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Incompatible Materials

Not likely to be compatible with service application: Strong oxidizing agents, strong acids, strong bases, PVC (Polyvinyl chloride), polyurethane. Nitrile and neoprene service may be satisfactory for hoses and gaskets, but not for seals. Adequate fuel corrosion inhibitors are added to the M15 methanol gasoline blend to mitigate corrosion with most metals. Lead or galvanized metals may not be compatible. If unsure of compatibility with M15 gasoline methanol blend, contact the supplier of the equipment or component.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Methanol	**67-56-1**
ACGIH:	200 ppm TWA
	250 ppm STEL
	Skin - potential significant contribution to overall exposure by the cutaneous route
Gasoline	**86290-81-5**
ACGIH:	300 ppm TWA
	500 ppm STEL
Toluene	**108-88-3**
ACGIH:	20 ppm TWA

Xylene (mixed isomers)	**1330-20-7**
ACGIH:	100 ppm TWA
	150 ppm STEL
Methyl tert-butyl ether for octane as/or as Co-solvent	**1634-04-4**
ACGIH:	50 ppm TWA
n-Butane	**106-97-8**
ACGIH:	1000 ppm STEL (explosion hazard)
Ethyl alcohol as Co-solvent	**64-17-5**
ACGIH:	1000 ppm STEL
Benzene	**71-43-2**
ACGIH:	0.5 ppm TWA
	2.5 ppm STEL
	Skin - potential significant contribution to overall exposure by the cutaneous route
Hexane	**110-54-3**
ACGIH:	50 ppm TWA
	Skin - potential significant contribution to overall exposure by the cutaneous route
Ethylbenzene	**100-41-4**
ACGIH:	20 ppm TWA

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)
Methanol (67-56-1)
15 mg/l Medium: urine Time: end of shift Parameter: Methanol (background, nonspecific)
Toluene (108-88-3)
0.02 mg/l Medium: blood Time: prior to last shift of workweek Parameter: Toluene ; 0.03 mg/l Medium: urine Time: end of shift Parameter: Toluene ; 0.3 mg/g creatinine Medium: urine Time: end of shift Parameter: o-Cresol with hydrolysis (background)
Xylene (mixed isomers) (1330-20-7)
1.5 g/g creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids
Benzene (71-43-2)
25 µg/g creatinine Medium: urine Time: end of shift Parameter: S-Phenylmercapturic acid (background); 500 µg/g creatinine Medium: urine Time: end of shift Parameter: t,t-Muconic acid (background)
Hexane (110-54-3)
0.4 mg/l Medium: urine Time: end of shift at end of workweek Parameter: 2,5-Hexanedione without hydrolysis

Ethylbenzene (100-41-4)
0.15 g/g creatinine Medium: urine Time: end of shift Parameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific)

Engineering Controls
Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits. Use explosion-proof electrical/ventilating/lighting equipment. Handle substance within a closed system. Ground/Bond container and receiving equipment. Maintain eye wash fountain and quick-drench shower in work area.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection
Wear safety glasses with side shields or goggles, face shield.

Skin Protection
Wear appropriate chemical resistant clothing: butyl rubber.

Respiratory Protection
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Glove Recommendations
Wear appropriate chemical resistant gloves: butyl rubber.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	translucent	**Physical State**	liquid
Odor	hydrocarbons, aromatic, petroleum odor	**Color**	straw-colored , light yellow
Odor Threshold	Not available	**pH**	Not available
Melting Point	Not available	**Boiling Point**	Not available
Boiling Point Range	24-210 °C (75-410 °F)	**Freezing point**	Not available
Evaporation Rate	Not available	**Flammability (solid, gas)**	Not available
Autoignition Temperature	>280 °C	**Flash Point**	-43 °C
Lower Explosive Limit	1.4 % Gasoline. 6.0 % Methanol. Not Available M15.	**Decomposition temperature**	Not available
Upper Explosive Limit	7.6 % Gasoline. 36 % Methanol. Not Available M15.	**Vapor Pressure**	275 - 475 mmHg @ 20°C
Vapor Density (air=1)	Not available	**Specific Gravity (water=1)**	0.7 - 0.76
Water Solubility	Not available	**Partition coefficient: n-octanol/water**	Not available
Viscosity	Not available	**Kinematic viscosity**	Not available
Solubility (Other)	Not available	**Density**	Not available

Physical Form	liquid	**Volatility by Weight**	100 %
Molecular Weight	Not available		

Other Information

When the M15 gasoline methanol blend comes in contact with water, the methanol will readily dissolve into the water phase and may also dissolve some aromatics from the gasoline which will results in lowering the flash temperature of the water phase to make it flammable and hazardous.

Section 10 - STABILITY AND REACTIVITY

Reactivity

Containers may rupture or explode if exposed to heat.

Chemical Stability

Stable under normal conditions of use. In use may form flammable/explosive vapor-air mixture. Product is hygroscopic.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

Incompatible Materials

Lead. Aluminum, zinc, strong oxidizing agents, strong acids, strong bases, PVC (Polyvinyl chloride), nitrile

Hazardous decomposition products

Heat, carbon monoxide, carbon dioxide, flammable gases, formaldehyde. Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

Section 11 - TOXICOLOGICAL INFORMATION

Acute and Chronic Toxicity

May be fatal if swallowed. If swallowed there is a risk of blindness. Toxic if inhaled. Harmful in contact with skin.

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Methanol (67-56-1)

Oral LD50 Rat 5600 mg/kg
Dermal LD50 Rabbit 15800 mg/kg
Inhalation LC50 Rat 64000 ppm 4 h

Gasoline (86290-81-5)

Oral LD50 Rat 92 g/kg
Dermal LD50 Rabbit >5 mL/kg
Inhalation LC50 Rat >5.2 mg/L 4 h

Toluene (108-88-3)

Oral LD50 Rat 2600 mg/kg
Dermal LD50 Rabbit 12000 mg/kg
Inhalation LC50 Rat 12.5 mg/L 4 h

Xylene (mixed isomers) (1330-20-7)

Oral LD50 Rat 3500 mg/kg
Dermal LD50 Rabbit >4350 mg/kg
Inhalation LC50 Rat 29.08 mg/L 4 h

Methyl tert-butyl ether for octane as/or as Co-solvent (1634-04-4)

Oral LD50 Rat 2963 mg/kg
Dermal LD50 Rabbit 10000 mg/kg

Inhalation LC50 Rat 23576 ppm 4 h

n-Butane (106-97-8)

Inhalation LC50 Rat 658 g/m3 4 h

1,2,4-Trimethylbenzene (95-63-6)

Oral LD50 Rat 3280 mg/kg

Dermal LD50 Rabbit >3160 mg/kg (no deaths occurred)

Inhalation LC50 Rat 18 g/m3 4 h

Ethyl alcohol as Co-solvent (64-17-5)

Oral LD50 Rat 7060 mg/kg

Inhalation LC50 Rat 124.7 mg/L 4 h

Benzene (71-43-2)

Oral LD50 Rat 810 mg/kg

Dermal LD50 Rabbit >8200 mg/kg

Inhalation LC50 Rat 44.66 mg/L 4 h

Hexane (110-54-3)

Oral LD50 Rat 25 g/kg

Dermal LD50 Rabbit 3000 mg/kg

Inhalation LC50 Rat 48000 ppm 4 h

Ethylbenzene (100-41-4)

Oral LD50 Rat 3500 mg/kg

Dermal LD50 Rabbit 15400 mg/kg

Inhalation LC50 Rat 17.4 mg/L 4 h

Product Toxicity Data

Acute Toxicity Estimate

Dermal	> 5000 mg/kg
Inhalation - Vapor	4.5679 mg/L
Oral	4421.5865 mg/kg

Information on Likely Routes of Exposure

Inhalation

Toxic if inhaled. May cause respiratory irritation. May cause drowsiness or dizziness. WARNING: Irritating and/or toxic combustion products include carbon dioxide, carbon monoxide and other hydrocarbon fragments: May cause unconsciousness, suffocation, death.

Skin Contact

Harmful in contact with skin.

Eye Contact

Causes serious eye irritation. Contact with the vapor may cause irritation of the eyes.

Ingestion

Poison. May be fatal if swallowed. If swallowed there is a risk of blindness.

Irritation/Corrosivity Data

Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation.

Dermal Sensitization

No data available.

Respiratory Sensitization

No data available.

Immediate Effects

Poison. May be fatal if swallowed. If swallowed there is a risk of blindness. Causes skin irritation. Causes serious eye irritation. Causes damage to organs. Toxic if inhaled. Harmful in contact with skin. May cause respiratory irritation. May cause drowsiness or dizziness.

Delayed Effects

May cause genetic defects. May cause cancer. May damage fertility or the unborn child. Causes damage to organs through prolonged or repeated exposure.

Component Carcinogenicity

Gasoline	**86290-81-5**
ACGIH:	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC:	Monograph 45 [1989] (overall evaluation upgraded from 3 to 2B with supporting evidence from other relevant data) (Group 2B (possibly carcinogenic to humans))
OSHA:	Present
NIOSH:	potential occupational carcinogen
Toluene	**108-88-3**
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
IARC:	Monograph 71 [1999] ; Monograph 47 [1989] (Group 3 (not classifiable))
Xylene (mixed isomers)	**1330-20-7**
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
IARC:	Monograph 71 [1999] ; Monograph 47 [1989] (Group 3 (not classifiable))
Methyl tert-butyl ether for octane as/or as Co-solvent	**1634-04-4**
ACGIH:	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC:	Monograph 73 [1999] (Group 3 (not classifiable))
DFG:	Category 3B (could be carcinogenic for man)
Ethyl alcohol as Co-solvent	**64-17-5**
ACGIH:	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC:	Monograph 100E [2012] (in alcoholic beverages); Monograph 96 [2010] (in alcoholic beverages) (Group 1 (carcinogenic to humans))
DFG:	Category 5 (low carcinogenic potency)
OSHA:	Present
Benzene	**71-43-2**
ACGIH:	A1 - Confirmed Human Carcinogen
IARC:	Monograph 100F [2012] ; Supplement 7 [1987] ; Monograph 29 [1982] (Group 1 (carcinogenic to humans))

NTP:	Known Human Carcinogen
DFG:	Category 1 (causes cancer in man)
OSHA:	Present
OSHA:	see 29 CFR 1910.1028
NIOSH:	potential occupational carcinogen
Ethylbenzene	**100-41-4**
ACGIH:	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC:	Monograph 77 [2000] (Group 2B (possibly carcinogenic to humans))
DFG:	Category 4 (no significant contribution to human cancer)
OSHA:	Present

Germ Cell Mutagenicity
May cause genetic defects.
Tumorigenic Data
No data available
Reproductive Toxicity
May damage fertility or the unborn child.
Specific Target Organ Toxicity - Single Exposure
body, Central Nervous System, optic nerve, retina, eyes, respiratory system, kidneys, liver
Specific Target Organ Toxicity - Repeated Exposure
eyes, Central Nervous System, retina, kidneys, respiratory system, Nervous System, liver, Hematopoietic System, Peripheral Nervous System
Aspiration hazard
May be fatal if swallowed and enters airways.
Medical Conditions Aggravated by Exposure
No data available.

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity
Toxic to aquatic life. Harmful to aquatic life with long lasting effects. Avoid release to the environment.
Component Analysis - Aquatic Toxicity

Methanol	**67-56-1**
Fish:	LC50 96 h Pimephales promelas 28200 mg/L [flow-through]; LC50 96 h Pimephales promelas >100 mg/L [static]; LC50 96 h Oncorhynchus mykiss 19500 - 20700 mg/L [flow-through]; LC50 96 h Oncorhynchus mykiss 18 - 20 mL/L [static]; LC50 96 h Lepomis macrochirus 13500 - 17600 mg/L [flow-through]
Algae:	EC50 72 hr Selenastrum capricornutum 22000 mg/l
Invertebrate:	EC50 48 hr Daphnia >10000 mg/l

Gasoline	**86290-81-5**
Algae:	EC50 72 h Pseudokirchneriella subcapitata 56 mg/L IUCLID
Toluene	**108-88-3**
Fish:	LC50 96 h Pimephales promelas 15.22 - 19.05 mg/L [flow-through] (1 day old); LC50 96 h Pimephales promelas 12.6 mg/L [static]; LC50 96 h Oncorhynchus mykiss 5.89 - 7.81 mg/L [flow-through]; LC50 96 h Oncorhynchus mykiss 14.1 - 17.16 mg/L [static]; LC50 96 h Oncorhynchus mykiss 5.8 mg/L [semi-static]; LC50 96 h Lepomis macrochirus 11 - 15 mg/L [static]; LC50 96 h Oryzias latipes 54 mg/L [static]; LC50 96 h Poecilia reticulata 28.2 mg/L [semi-static]; LC50 96 h Poecilia reticulata 50.87 - 70.34 mg/L [static]
Algae:	EC50 96 h Pseudokirchneriella subcapitata >433 mg/L IUCLID ; EC50 72 h Pseudokirchneriella subcapitata 12.5 mg/L [static] EPA
Invertebrate:	EC50 48 h Daphnia magna 5.46 - 9.83 mg/L [Static] EPA ; EC50 48 h Daphnia magna 11.5 mg/L IUCLID
Xylene (mixed isomers)	**1330-20-7**
Fish:	LC50 96 h Pimephales promelas 13.4 mg/L [flow-through]; LC50 96 h Oncorhynchus mykiss 2.661 - 4.093 mg/L [static]; LC50 96 h Oncorhynchus mykiss 13.5 - 17.3 mg/L; LC50 96 h Lepomis macrochirus 13.1 - 16.5 mg/L [flow-through]; LC50 96 h Lepomis macrochirus 19 mg/L; LC50 96 h Lepomis macrochirus 7.711 - 9.591 mg/L [static]; LC50 96 h Pimephales promelas 23.53 - 29.97 mg/L [static]; LC50 96 h Cyprinus carpio 780 mg/L [semi-static]; LC50 96 h Cyprinus carpio >780 mg/L; LC50 96 h Poecilia reticulata 30.26 - 40.75 mg/L [static]
Invertebrate:	EC50 48 h water flea 3.82 mg/L; LC50 48 h Gammarus lacustris 0.6 mg/L
Methyl tert-butyl ether for octane as/or as Co-solvent	**1634-04-4**
Fish:	LC50 96 h Pimephales promelas 672 mg/L [flow-through]; LC50 96 h Pimephales promelas 929 mg/L [static]; LC50 96 h Brachydanio rerio >100 mg/L [semi-static]; LC50 96 h Oncorhynchus mykiss 887 mg/L [flow-through]
Algae:	EC50 72 h Desmodesmus subspicatus >800 mg/L IUCLID ; EC50 96 h Pseudokirchneriella subcapitata 184 mg/L IUCLID
Invertebrate:	EC50 48 h Daphnia magna 542 mg/L IUCLID
1,2,4-Trimethylbenzene	**95-63-6**
Fish:	LC50 96 h Pimephales promelas 7.19 - 8.28 mg/L [flow-through]
Invertebrate:	EC50 48 h Daphnia magna 6.14 mg/L IUCLID

Ethyl alcohol as Co-solvent	**64-17-5**
Fish:	LC50 96 h Oncorhynchus mykiss 12 - 16 mL/L [static]; LC50 96 h Pimephales promelas >100 mg/L [static]; LC50 96 h Pimephales promelas 13400 - 15100 mg/L [flow-through]
Invertebrate:	LC50 48 h Daphnia magna 9268 - 14221 mg/L IUCLID ; EC50 48 h Daphnia magna 2 mg/L [Static] EPA
Benzene	**71-43-2**
Fish:	LC50 96 h Pimephales promelas 10.7 - 14.7 mg/L [flow-through]; LC50 96 h Oncorhynchus mykiss 5.3 mg/L [flow-through]; LC50 96 h Lepomis macrochirus 22.49 mg/L [static]; LC50 96 h Poecilia reticulata 28.6 mg/L [static]; LC50 96 h Pimephales promelas 22330 - 41160 µg/L [static]; LC50 96 h Lepomis macrochirus 70000 - 142000 µg/L [static]
Algae:	EC50 72 h Pseudokirchneriella subcapitata 29 mg/L EPA
Invertebrate:	EC50 48 h Daphnia magna 8.76 - 15.6 mg/L [Static] EPA ; EC50 48 h Daphnia magna 10 mg/L IUCLID
Hexane	**110-54-3**
Fish:	LC50 96 h Pimephales promelas 2.1 - 2.98 mg/L [flow-through]
Ethylbenzene	**100-41-4**
Fish:	LC50 96 h Oncorhynchus mykiss 11 - 18 mg/L [static]; LC50 96 h Oncorhynchus mykiss 4.2 mg/L [semi-static]; LC50 96 h Pimephales promelas 7.55 - 11 mg/L [flow-through]; LC50 96 h Lepomis macrochirus 32 mg/L [static]; LC50 96 h Pimephales promelas 9.1 - 15.6 mg/L [static]; LC50 96 h Poecilia reticulata 9.6 mg/L [static]
Algae:	EC50 72 h Pseudokirchneriella subcapitata 4.6 mg/L IUCLID ; EC50 96 h Pseudokirchneriella subcapitata >438 mg/L IUCLID ; EC50 72 h Pseudokirchneriella subcapitata 2.6 - 11.3 mg/L [static] EPA ; EC50 96 h Pseudokirchneriella subcapitata 1.7 - 7.6 mg/L [static] EPA
Invertebrate:	EC50 48 h Daphnia magna 1.8 - 2.4 mg/L IUCLID

Persistence and Degradability
No information available.
Bioaccumulative Potential
No indication of bioaccumulation potential.
Mobility
mobile
Bioconcentration
BCF: < 10

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose of contents/container in accordance with local/regional/national/international regulations. Incineration is the preferred disposal method.
Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components

Section 14 - TRANSPORT INFORMATION

US DOT Information:
Shipping Name: FLAMMABLE LIQUIDS, N.O.S. , (Contains: Gasoline , Methanol)
Hazard Class: 3
UN/NA #: UN1993
Packing Group: II
Required Label(s): 3
Marine pollutant

IATA Information:
Shipping Name: FLAMMABLE LIQUID, N.O.S. , (Contains: Gasoline , Methanol)
Hazard Class: 3
UN#: UN1993
Packing Group: II
Required Label(s): 3
Marine pollutant

IMDG Information:
Shipping Name: FLAMMABLE LIQUID, N.O.S. , (Contains: Gasoline , Methanol)
Hazard Class: 3
UN#: UN1993
Packing Group: II
Required Label(s): 3
Marine pollutant

TDG Information:
Shipping Name: FLAMMABLE LIQUID, N.O.S. , (Contains: Gasoline , Methanol)
Hazard Class: 3
UN#: UN1993
Packing Group: II
Required Label(s): 3
Marine pollutant

UN Information:
Shipping Name: FLAMMABLE LIQUID, N.O.S. , (Contains: Gasoline , Methanol)
Hazard Class: 3
UN#: UN1993
Packing Group: II
Required Label(s): 3
Marine pollutant

ICAO Information:
Shipping Name: FLAMMABLE LIQUID, N.O.S. , (Contains: Gasoline , Methanol)
Hazard Class: 3

UN#: UN1993
Packing Group: II
Required Label(s): 3
Marine pollutant
International Bulk Chemical Code
This material contains one or more of the following chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Methanol	**67-56-1**
IBC Code:	Category Y
Toluene	**108-88-3**
IBC Code:	Category Y
Xylene (mixed isomers)	**1330-20-7**
IBC Code:	Category Y
Methyl tert-butyl ether for octane as/or as Co-solvent	**1634-04-4**
IBC Code:	Category Z
Benzene	**71-43-2**
IBC Code:	Category Y ; Category Y (>=10% or more mixture ;for mixtures containing no other components with safety hazards and where the pollution category is Y or less); Category Y (mixtures ;>=10% Benzene ;for mixtures containing no other components with safety hazards and where the pollution category is Y or less)
Ethylbenzene	**100-41-4**
IBC Code:	Category Y

Section 15 - REGULATORY INFORMATION

International Regulations
Stockholm Convention
No components of this material are listed.
Montreal Protocol
No components of this material are listed.
UN/FAO/Rotterdam Convention - Chemicals Subject to Prior Informed Consent (PIC)
No components of this material are listed.
Component Analysis - Inventory
Methanol (67-56-1)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI -	KR KECI -	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)

							Annex 1	Annex 2						
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

Gasoline (86290-81-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	DSL	EIN	Yes	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No

Toluene (108-88-3)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

Xylene (mixed isomers) (1330-20-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

Methyl tert-butyl ether for octane as/or as Co-solvent (1634-04-4)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

n-Butane (106-97-8)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

1,2,4-Trimethylbenzene (95-63-6)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Ethyl alcohol as Co-solvent (64-17-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Benzene (71-43-2)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

Hexane (110-54-3)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)

Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Ethylbenzene (100-41-4)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Further information

Improving water management at retail gasoline filling stations: Any separate water phase that may form and accumulated at the bottom of the underground gasoline storage tank will contain some of the methanol and aromatics which are extracted from the gasoline. As a result, the water phase will have a low flash temperature which may change its handling classification to a hazardous material. Therefore, before switching to M15 methanol gasoline blends, the filling station should consider making some modifications and changes to the operating practices as follows: - Install pressure-vacuum vent valves caps on the atmospheric vent lines to mitigate moisture absorption from diurnal tank breathing. - Raise the surface cover (and the nearby surrounding pad) by a few centimeters to mitigate the possibility of rain water entering the underground gasoline storage tanks during the gasoline tank refilling process. - The water detection paste used on the measurement stick for monitoring gasoline product inventory should be switched to a paste developed for use with alcohol gasoline blends.

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 2 Fire: 3 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Further information

This SSDS contains information critical to the safe handling and proper use of the products. The information in this document should be brought to the attention of the person in your organization responsible for advising on safety matters.

Summary of Changes

Updated: 27 November 2017

Preparation Date

New SDS: 7 September 2016

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC – European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO

- International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; quantitative; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL – Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

Disclaimer:

As part of its commitment to methanol product stewardship, the Methanol Institute has prepared this Document. Our intention is to improve the awareness of safe and environmentally sound practices for the handling of methanol throughout the global distribution chain. The information, procedures, recommendations, and data presented in this Document are informational only, and the Document is designed to provide general guidance only. The Methanol Institute and the report authors assume no liability whatsoever with respect to the accuracy and completeness of the information, procedures, recommendations, and data presented in this Document and disclaim all liability arising out of the use of such information, procedures, recommendations, and data. All users of this Document must still use their own independent judgment and discretion in ensuring that they handle methanol safely and communicate appropriately. In doing so, they must develop the specific systems that best fit their management structure, product lines, location, and other factors that are unique to the user. We encourage you to research the local codes and regulations that may be applicable to the handling of flammable and hazardous materials such as methanol. This Document is not a substitute for applicable laws and regulations, nor does it alter the obligation of the user to comply fully with federal, state, provincial and local laws.