



Safety Data Sheet

Material Name: Non-Flammable mixture containing Flammable Components

SDS ID: 00244864

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

Non-Flammable mixture containing Flammable Components

Product Description

Classification determined in accordance with Compressed Gas Association standards

Product Use

Industrial and Specialty Gas Applications

Restrictions on Use

None known

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Gases Under Pressure - Compressed gas

Acute Toxicity - Inhalation - Gas - Category 4

Germ Cell Mutagenicity - Category 1B

Carcinogenicity - Category 1A

Reproductive Toxicity - Category 1A

Specific Target Organ Toxicity - Repeated Exposure - Category 1 (Central Nervous System)

Simple Asphyxiant

GHS Label Elements

Symbol(s)



Signal Word

Danger

Hazard Statement(s)

Contains gas under pressure; may explode if heated.

Harmful if inhaled.

May cause genetic defects.

May cause cancer.

May damage fertility or the unborn child.

Causes damage to organs through prolonged or repeated exposure.

May displace oxygen and cause rapid suffocation.

Precautionary Statement(s)

Prevention



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Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Use only outdoors or in a well-ventilated area.

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.

Response

IF exposed or concerned: Get medical advice/attention.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER or doctor if you feel unwell.

Storage

Store locked up.

Protect from sunlight. Store in a well-ventilated place.

Disposal

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

Statement(s) of Unknown Acute Toxicity

Inhalation: 62.4% of the mixture consists of ingredient(s) of unknown acute toxicity.

Other Hazards

Rapid release of compressed gas may cause frostbite. Concentration(s) of flammable component(s) will result in a non-flammable gas classification.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
7440-37-1	Argon	0-100
124-38-9	Carbon dioxide	0-100
7440-59-7	Helium	0-100
7439-90-9	Krypton	0-100
7440-01-9	Neon	0-100
7727-37-9	Nitrogen	0-100
7440-63-3	Xenon	0-100
7782-44-7	Oxygen	0-23.5
630-08-0	Carbon monoxide	0-11.1
74-82-8	Methane	0-7.7
74-84-0	Ethane	0-6.4
74-98-6	Propane	0-3.4



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74-85-1	Ethylene	0-3.1
1333-74-0	Hydrogen	0-2.9
75-28-5	Isobutane	0-2.9
7782-39-0	Deuterium	0-2.9
106-97-8	Butane	0-2.9
115-07-1	Propene	0-2.9
106-98-9	1-Butene	0-2.8
115-11-7	Isobutylene	0-2.8
624-64-6	2-Butene, (E)-	0-2.8
590-18-1	cis-2-Butene	0-2.8
106-99-0	1,3-Butadiene	0-2.3
74-86-2	Acetylene	0-1.6

Section 4 - FIRST AID MEASURES

Inhalation

Remove person to fresh air and keep comfortable for breathing. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115°F; 41-46°C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion

If swallowed, get medical attention.

Most Important Symptoms/Effects**Acute**

frostbite, suffocation, harmful if inhaled

Delayed

mutagenic effects, cancer, reproductive effects, central nervous system damage

Indication of any immediate medical attention and special treatment needed

For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media



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Suitable Extinguishing Media

regular dry chemical, carbon dioxide

Unsuitable Extinguishing Media

Do not direct water at source of leak or safety devices; icing may occur.

Special Hazards Arising from the Chemical

Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products

Oxides of carbon, oxides of nitrogen

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Stay away from the ends of tanks.

Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire.

For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Use extinguishing agents appropriate for surrounding fire. Apply water from a protected location or from a safe distance. Reduce vapors with water spray.

Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Consider downwind evacuation if material is leaking.

Special Protective Equipment and Precautions for Firefighters

Wear personal protective clothing and equipment such as self-contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Stop leak if possible without personal risk. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Do not touch or walk through spilled material. If possible, turn leaking containers so that gas escapes rather than liquid. Do not direct water at spill or source of leak. Allow substance to evaporate.

Ventilate closed spaces before entering.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Keep away from heat, sparks, open flame, and hot surfaces - No smoking. Do not breathe gas. Use only outdoors or in a well-ventilated area. Wear protective gloves/clothing and eye/face protection. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

Conditions for Safe Storage, Including any Incompatibilities

Store locked up.

Protect from sunlight. Store in a well-ventilated place.

Incompatible Materials

oxidizing materials, metals, reducing agents, combustible materials, metal carbide, metal salts, halogens, metal oxides, acids, halocarbons, bases, peroxides, amines

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Argon	7440-37-1
ACGIH:	(See Appendix F: Minimal Oxygen Content)



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Carbon dioxide	124-38-9
ACGIH:	5000 ppm TWA
	30000 ppm STEL
NIOSH:	5000 ppm TWA ; 9000 mg/m3 TWA
	30000 ppm STEL ; 54000 mg/m3 STEL
	40000 ppm IDLH
Europe:	5000 ppm TWA ; 9000 mg/m3 TWA
OSHA (US):	5000 ppm TWA ; 9000 mg/m3 TWA
Mexico:	5000 ppm TWA VLE-PPT ; 9000 mg/m3 TWA VLE-PPT
	15000 ppm STEL [PPT-CT] ; 27000 mg/m3 STEL [PPT-CT]
Helium	7440-59-7
ACGIH:	(See Appendix F: Minimal Oxygen Content)
Neon	7440-01-9
ACGIH:	(See Appendix F: Minimal Oxygen Content)
Nitrogen	7727-37-9
ACGIH:	(See Appendix F: Minimal Oxygen Content)
Carbon monoxide	630-08-0
ACGIH:	25 ppm TWA
NIOSH:	35 ppm TWA ; 40 mg/m3 TWA
	200 ppm Ceiling ; 229 mg/m3 Ceiling
	1200 ppm IDLH
OSHA (US):	50 ppm TWA ; 55 mg/m3 TWA
Mexico:	50 ppm TWA VLE-PPT ; 55 mg/m3 TWA VLE-PPT
	400 ppm STEL [PPT-CT] ; 400 mg/m3 STEL [PPT-CT]
Methane	74-82-8



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ACGIH:	(See Appendix F: Minimal Oxygen Content, explosion hazard)
Ethane	74-84-0
ACGIH:	(See Appendix F: Minimal Oxygen Content, explosion hazard)
Propane	74-98-6
ACGIH:	(See Appendix F: Minimal Oxygen Content, explosion hazard)
NIOSH:	1000 ppm TWA ; 1800 mg/m ³ TWA
	2100 ppm IDLH (10% LEL)
OSHA (US):	1000 ppm TWA ; 1800 mg/m ³ TWA
Ethylene	74-85-1
ACGIH:	200 ppm TWA
Hydrogen	1333-74-0
ACGIH:	(See Appendix F: Minimal Oxygen Content, explosion hazard)
Isobutane	75-28-5
ACGIH:	1000 ppm STEL (explosion hazard)
NIOSH:	800 ppm TWA ; 1900 mg/m ³ TWA
Butane	106-97-8
ACGIH:	1000 ppm STEL (explosion hazard)
NIOSH:	800 ppm TWA ; 1900 mg/m ³ TWA
	1600 ppm IDLH (>10% LEL)
Mexico:	800 ppm TWA VLE-PPT ; 1900 mg/m ³ TWA VLE-PPT
Propene	115-07-1
ACGIH:	500 ppm TWA
1-Butene	106-98-9
ACGIH:	250 ppm TWA
Isobutylene	115-11-7



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ACGIH:	250 ppm TWA
2-Butene, (E)-	624-64-6
ACGIH:	250 ppm TWA
cis-2-Butene	590-18-1
ACGIH:	250 ppm TWA
1,3-Butadiene	106-99-0
ACGIH:	2 ppm TWA
NIOSH:	2000 ppm IDLH (10% LEL)
Europe:	2.2 mg/m ³ TWA ; 1 ppm TWA
OSHA (US):	1 ppm TWA
	5 ppm STEL (See 29 CFR 1910.1051) 15 min ; 0.5 ppm Action Level ; 1 ppm TWA
	5 ppm STEL (see 29 CFR 1910.1051)
Acetylene	74-86-2
ACGIH:	(See Appendix F: Minimal Oxygen Content, explosion hazard)
NIOSH:	2500 ppm Ceiling ; 2662 mg/m ³ Ceiling

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)**Carbon monoxide (630-08-0)**

3.5 % of hemoglobin Medium: blood Time: end of shift Parameter: Carboxyhemoglobin (background, nonspecific) ;

20 ppm Medium: end-exhaled air Time: end of shift Parameter: Carbon monoxide (background, nonspecific)

1,3-Butadiene (106-99-0)

2.5 mg/l Medium: urine Time: end of shift Parameter: 1,2-Dihydroxy-4-(N-acetylcysteinyl)-butane (background, semi-quantitative) ; 2.5 pmol/g hemoglobin Medium: blood Time: not critical Parameter: Mixture of N-1 and N-2-(hydroxybutenyl)valine hemoglobin adducts (semi-quantitative)

Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment**Eye/face protection**

For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles.

Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

For the gas: Protective clothing is not required, but recommended. For the liquid: Wear appropriate protective, cold insulating clothing.



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Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations

For the gas: Protective gloves are not required, but recommended. For the liquid: Wear insulated gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	colorless gas	Physical State	gas
Odor	Not available	Color	colorless
Odor Threshold	Not available	pH	Not available
Melting Point	Not available	Boiling Point	Not available
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	Not available	Flammability (solid, gas)	Non-flammable gas
Autoignition Temperature	Not available	Flash Point	Not available
Lower Explosive Limit	Not available	Decomposition temperature	Not available
Upper Explosive Limit	Not available	Vapor Pressure	Not available
Vapor Density (air=1)	Not available	Specific Gravity (water=1)	Not available
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	Compressed gas	Molecular Weight	Not available

Section 10 - STABILITY AND REACTIVITY**Reactivity**

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Protect from physical damage and heat. Containers may rupture or explode if exposed to heat.

Incompatible Materials



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oxidizing materials, metals, reducing agents, combustible materials, metal carbide, metal salts, halogens, metal oxides, acids, halocarbons, bases, peroxides, amines

Hazardous decomposition products

Oxides of carbon, oxides of nitrogen

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation

Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, convulsions, loss of coordination, coma, muscle cramps, chest pain, irregular heartbeat, sleep disturbances, cough

Skin Contact

frostbite

Eye Contact

frostbite

Ingestion

Ingestion of gas is unlikely.

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

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

Carbon monoxide (630-08-0)

Inhalation LC50 Rat 3760 ppm 4 h

Ethane (74-84-0)

Inhalation LC50 Rat 658 mg/L 4 h

Propane (74-98-6)

Inhalation LC50 Rat >800000 ppm 15 min

Hydrogen (1333-74-0)

Inhalation LC50 Rat >15000 ppm 1 h

Isobutane (75-28-5)

Inhalation LC50 Rat 658 mg/L 4 h

Butane (106-97-8)

Inhalation LC50 Rat 658 g/m3 4 h

Propene (115-07-1)

Inhalation LC50 Rat >65000 ppm 4 h (pretreated by gavage with polychlorinated biphenyl)

Isobutylene (115-11-7)

Inhalation LC50 Rat 620 mg/L 4 h

1,3-Butadiene (106-99-0)

Oral LD50 Rat 5480 mg/kg

Inhalation LC50 Rat 285 g/m3 4 h

Product Toxicity Data

Acute Toxicity Estimate

Inhalation - Gas	11261.5502 ppm
Oral	> 2000 mg/kg

Immediate Effects

frostbite, suffocation, central nervous system depression

Delayed Effects

mutagenic effects, cancer, reproductive effects, central nervous system damage



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Material Name: Non-Flammable mixture containing Flammable Components**SDS ID: 00244864****Irritation/Corrosivity Data**

No data available.

Respiratory Sensitization

No data available.

Dermal Sensitization

No data available.

Component Carcinogenicity

Ethylene	74-85-1
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
IARC:	Monograph 60 [1994] ; Supplement 7 [1987] (Group 3 (not classifiable))
DFG:	Category 3B (could be carcinogenic for man)
Propene	115-07-1
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
IARC:	Monograph 60 [1994] ; Supplement 7 [1987] (Group 3 (not classifiable))
Isobutylene	115-11-7
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
1,3-Butadiene	106-99-0
ACGIH:	A2 - Suspected Human Carcinogen
IARC:	Monograph 100F [2012] ; Monograph 97 [2008] ; Monograph 71 [1999] (Group 1 (carcinogenic to humans))
NTP:	Known Human Carcinogen
DFG:	Category 1 (causes cancer in man)
OSHA:	Present
OSHA:	see 29 CFR 1910.1051
NIOSH:	potential occupational carcinogen

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



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No target organs identified.

Specific Target Organ Toxicity - Repeated Exposure

central nervous system

Aspiration hazard

Not applicable

Medical Conditions Aggravated by Exposure

No data available.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

Persistence and Degradability

No data available for the mixture.

Bioaccumulative Potential

No data available for the mixture.

Mobility

No data available for the mixture.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations.

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: COMPRESSED GAS, N.O.S. , (Contains: highest concentration component , second highest concentration component)

Hazard Class: 2.2

UN/NA #: UN1956

Required Label(s): 2.2

IMDG Information:

Shipping Name: COMPRESSED GAS, N.O.S. , (Contains: highest concentration component , second highest concentration component)

Hazard Class: 2.2

UN#: UN1956

Required Label(s): 2.2

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

Ethylene	74-85-1
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SARA 313:	1 % de minimis concentration
Propene	115-07-1
SARA 313:	1 % de minimis concentration
1,3-Butadiene	106-99-0
SARA 313:	0.1 % de minimis concentration
CERCLA:	10 lb final RQ ; 4.54 kg final RQ

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories

Gas Under Pressure; Carcinogenicity; Acute toxicity; Reproductive Toxicity; Specific Target Organ Toxicity; Germ Cell Mutagenicity; Simple Asphyxiant

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Argon	7440-37-1	No	Yes	Yes	Yes	Yes
Carbon dioxide	124-38-9	Yes	Yes	Yes	Yes	Yes
Helium	7440-59-7	No	Yes	Yes	Yes	Yes
Neon	7440-01-9	No	Yes	Yes	Yes	Yes
Nitrogen	7727-37-9	No	Yes	Yes	Yes	Yes
Oxygen	7782-44-7	No	Yes	No	Yes	Yes
Carbon monoxide	630-08-0	Yes	Yes	Yes	Yes	Yes
Methane	74-82-8	No	Yes	Yes	Yes	Yes
Ethane	74-84-0	No	Yes	Yes	Yes	Yes
Propane	74-98-6	No	Yes	Yes	Yes	Yes
Ethylene	74-85-1	No	Yes	Yes	Yes	Yes
Hydrogen	1333-74-0	Yes	Yes	Yes	Yes	Yes
Isobutane	75-28-5	No	Yes	No	Yes	Yes
Deuterium	7782-39-0	No	Yes	No	Yes	Yes
Butane	106-97-8	Yes	Yes	Yes	Yes	Yes
Propene	115-07-1	Yes	Yes	Yes	Yes	Yes



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1-Butene	106-98-9	No	Yes	No	Yes	Yes
Isobutylene	115-11-7	No	Yes	No	Yes	Yes
2-Butene, (E)-	624-64-6	No	Yes	No	Yes	Yes
cis-2-Butene	590-18-1	No	Yes	No	Yes	Yes
1,3-Butadiene	106-99-0	Yes	Yes	Yes	Yes	Yes
Acetylene	74-86-2	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects

Carbon monoxide	630-08-0
Repro/Dev. Tox	developmental toxicity , 7/1/1989
1,3-Butadiene	106-99-0
Carc:	carcinogen , 4/1/1988
Repro/Dev. Tox	developmental toxicity , 4/16/2004
	male reproductive toxicity , 4/16/04
	female reproductive toxicity , initial date 4/16/04

Canada Regulations**Canadian WHMIS Ingredient Disclosure List (IDL)**

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

Carbon dioxide	124-38-9
	1 %
Carbon monoxide	630-08-0
	0.1 %
Butane	106-97-8
	1 %
1,3-Butadiene	106-99-0

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	0.1 %
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**Component Analysis - Inventory
Argon (7440-37-1)**

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	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Carbon dioxide (124-38-9)

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

Helium (7440-59-7)

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	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Krypton (7439-90-9)

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	No	No	Yes	No	No	Yes	No	Yes	Yes	No

Neon (7440-01-9)

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	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No

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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	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Xenon (7440-63-3)

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	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No

Oxygen (7782-44-7)

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	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Carbon monoxide (630-08-0)

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

Methane (74-82-8)

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

Ethane (74-84-0)

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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

Propane (74-98-6)

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

Ethylene (74-85-1)

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

Hydrogen (1333-74-0)

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	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Isobutane (75-28-5)

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

Deuterium (7782-39-0)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI -	KR KECI -	KR - REACH	CN	NZ	MX	TW	VN (Draft)
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**Safety Data Sheet****Material Name: Non-Flammable mixture containing Flammable Components****SDS ID: 00244864**

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

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

Propene (115-07-1)

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-Butene (106-98-9)

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

Isobutylene (115-11-7)

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	No	Yes	Yes	Yes	Yes	Yes

2-Butene, (E)- (624-64-6)

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)



Safety Data Sheet

Material Name: Non-Flammable mixture containing Flammable Components**SDS ID: 00244864**

Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
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cis-2-Butene (590-18-1)

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

1,3-Butadiene (106-99-0)

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

Acetylene (74-86-2)

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	No	Yes	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION**NFPA Ratings**

Health: 1 Fire: 0 Reactivity: 0

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

Summary of Changes

New SDS: 03/13/2017

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 -



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Safety Data Sheet

Material Name: Non-Flammable mixture containing Flammable Components

SDS ID: 00244864

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; 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

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