

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 03/25/2015 Version: 2.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product form : Mixture

Product name : Ethanolamine (0.0001 - 0.9999%) in Propylene

Product code SG-2002-02064

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

Use of the substance/mixture : Test gas/Calibration gas.

Details of the supplier of the safety data sheet

Air Liquide 2700 Post Oak Boulevard Houston, TX 77056 - USA T 1-800-819-1704 www.us.airliquide.com

Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

SECTION 2: Hazards identification

Classification of the substance or mixture

Classification (GHS-US)

Flam. Gas 1 H220 Liquefied gas H280

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US)





Signal word (GHS-US) : Danger

: H220 - Extremely flammable gas Hazard statements (GHS-US)

> H280 - Contains gas under pressure; may explode if heated OSHA-H01 - May displace oxygen and cause rapid suffocation

CGA-HG01 - May cause frostbite

CGA-HG04 - May form explosive mixtures with air

P202 - Do not handle until all safety precautions have been read and understood Precautionary statements (GHS-US)

P210 - Keep away from heat, hot surfaces, open flames, sparks, - No smoking

P271 - Use only outdoors or in a well-ventilated area

P280 - Wear eve protection, face protection, protective gloves, protective clothing

P302 - IF ON SKIN: Thaw frosted parts with lukewarm water. Do not rub affected area, Get

immediate medical advice/attention

P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing

P308+P313 - If exposed or concerned: Get medical advice/attention

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely

P381 - Eliminate all ignition sources if safe to do so

P403 - Store in a well-ventilated place

P501 - Dispose of contents/container in accordance with local/regional/national/international

regulations

CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)

CGA-PG05 - Use a back flow preventive device in the piping CGA-PG06 - Close valve after each use and when empty

CGA-PG10 - Use only with equipment rated for cylinder pressure

CGA-PG14 - Approach suspected leak area with caution

CGA-PG21 - Open valve slowly

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2.3. Other hazards

No additional information available

Unknown acute toxicity (GHS-US) 2.4.

Not applicable

SECTION 3: Composition/information on ingredients

3.1. **Substance**

Not applicable

Mixture

| Name | Product identifier | % | Classification (GHS-US) |
|--------------|--------------------|----------------------|--|
| Propylene | (CAS No) 115-07-1 | 99.0001 - 99.9999 | Flam. Gas 1, H220 Liquefied gas, H280 |
| Ethanolamine | (CAS No) 141-43-5 | 0.0001 - 0.9999 | Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1B, H314 |

Full text of H-phrases: see section 16

SECTION 4: First aid measures

Description of first aid measures

First-aid measures after inhalation

: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel

unwell, seek medical advice.

First-aid measures after skin contact Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical

advice/attention.

First-aid measures after eye contact Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if

present and easy to do. Continue rinsing. Get immediate medical advice/attention.

: Ingestion is not considered a potential route of exposure. First-aid measures after ingestion

Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May displace oxygen and cause rapid suffocation.

Symptoms/injuries after skin contact May cause frostbite.

Symptoms/injuries after eye contact : Contact with the product may cause cold burns or frostbite. Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous

administration

Not known.

Chronic symptoms : Adverse effects not expected from this product.

Indication of any immediate medical attention and special treatment needed

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : Do not use water jet to extinguish.

Special hazards arising from the substance or mixture

Fire hazard : This product is flammable.

Explosion hazard Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of

burns and injuries. May form flammable/explosive vapor-air mixture.

Reactivity : None known.

Advice for firefighters

: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray Firefighting instructions or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire Protection during firefighting

fighters. Do not enter fire area without proper protective equipment, including respiratory

protection.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate ventilation.

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6.1.1. For non-emergency personnel

Protective equipment

: Wear protective equipment consistent with the site emergency plan.

Emergency procedures

: Escape the danger area by the closest safe route. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep

upwind.

6.1.2. For emergency responders

Protective equipment

: Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.

Emergency procedures

: Evacuate and limit access. Ventilate area. Remove ignition sources. Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering atmospheres of unknown contaminant concentration until proven to be safe.

6.2. Environmental precautions

Try to stop release if safe to do so.

6.3. Methods and material for containment and cleaning up

For containment

: Try to stop release if safe to do so.

Methods for cleaning up

: Dispose of this material and its container in accordance with local regulations.

6.4. Reference to other sections

See also Sections 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed

: Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Handle empty containers with care because residual vapors are flammable. In use, may form flammable vapor-air mixture.

Precautions for safe handling

: Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Use only non-sparking tools.

Hygiene measures

: Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures

: Comply with applicable regulations. Proper grounding procedures to avoid static electricity should be followed.

Storage conditions

Do not expose to temperatures exceeding 52°C (125°F). Keep container closed when not in use. Protect cylinder from physical damage. Store in well ventilated area.

: None known.

Incompatible products
Incompatible materials

: Oxidizing materials. Air.

7.3. Specific end use(s)

See Section 1.2.

SECTION 8: Exposure controls/personal protection

Ethanolamine (0.0001 - 0.9999%) in Propylene

8.1. Control parameters

| ACGIH | Not applicable | |
|-------------------------|------------------------|---------|
| OSHA | Not applicable | |
| Ethanolamine (141-43-5) | | |
| ACGIH | ACGIH TWA (ppm) | 3 ppm |
| ACGIH | ACGIH STEL (ppm) | 6 ppm |
| OSHA | OSHA PEL (TWA) (mg/m³) | 6 mg/m³ |
| OSHA | OSHA PEL (TWA) (ppm) | 3 ppm |

| Propylene (115-07-1) | | |
|----------------------|-----------------------------|--|
| ACGIH | GIH ACGIH TWA (ppm) 500 ppm | |
| OSHA | Not applicable | |

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8.2. Exposure controls

Appropriate engineering controls : Ensure exposure is below occupational exposure limits. Provide adequate general and local

exhaust ventilation. Systems under pressure should be regularly checked for leakages. Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit

system e.g. for maintenance activities.

Hand protection : Wear working gloves when handling gas containers. 29 CFR 1910.138: Hand Protection.

Eye protection : Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection. Skin and body protection : Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing.

Respiratory protection : None necessary during normal and routine operations. See Sections 5 & 6.

Thermal hazard protection : None necessary during normal and routine operations.

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for

specific methods for waste gas treatment.

Other information : Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Gas

Appearance : Clear, colorless gas.

Molecular mass : No Data Available

Color Colorless Odor ammonia-like Odor threshold No Data Available рН No data available Relative evaporation rate (butyl acetate=1) No data available Melting point : No Data Available : No data available Freezing point No Data Available Boiling point Flash point No Data Available Auto-ignition temperature No data available Decomposition temperature : No data available Flammability (solid, gas) See Section 2.1 and 2.2

Vapor pressure No data available Relative vapor density at 20 °C No data available Relative density No data available Relative gas density Heavier than air Solubility : No data available Log Pow No data available Log Kow No data available Viscosity, kinematic No data available Viscosity, dynamic No data available

Explosive properties : Without adequate ventilation formation of explosive mixtures may be possible.

Oxidizing properties : None.

Explosive limits : No data available

9.2. Other information

Additional information : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below

ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Can form explosive mixture with air.

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10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Oxidizing materials. Air.

10.6. Hazardous decomposition products

Under normal conditions of storage and use hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

| Ethanolamine (141-43-5) | |
|-------------------------|----------------------------|
| LD50 oral rat | 1720 mg/kg |
| LD50 dermal rabbit | 1000 mg/kg |
| ATE US (oral) | 500.000 mg/kg body weight |
| ATE US (dermal) | 1100.000 mg/kg body weight |
| ATE US (gases) | 4500.000 ppmV/4h |
| ATE US (vapors) | 11.000 mg/l/4h |
| ATE US (dust, mist) | 1.500 mg/l/4h |

| Propylene (115-07-1) | |
|----------------------------|-----------------|
| LC50 inhalation rat (mg/l) | 658 mg/l/4h |
| LC50 inhalation rat (ppm) | 49957.23 ppm/4h |

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

| Propylene | (115-07-1) |
|------------|------------|
| op j . o o | \ |

 IARC group
 3 - Not classifiable

 Reproductive toxicity
 : Not classified

 Specific target organ toxicity (single exposure)
 : Not classified

Specific target organ toxicity (repeated

exposure)

: Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : May displace oxygen and cause rapid suffocation.

Symptoms/injuries after skin contact : May cause frostbite.

Symptoms/injuries after eye contact : Contact with the product may cause cold burns or frostbite. Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous : N

administration

: Not known.

Chronic symptoms : Adverse effects not expected from this product.

SECTION 12: Ecological information

12.1. Toxicity

| Ethanolamine (141-43-5) | |
|-------------------------|--|
| LC50 fish 1 | 227 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through]) |
| EC50 Daphnia 1 | 65 mg/l (Exposure time: 48 h - Species: Daphnia magna) |
| LC50 fish 2 | 3684 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static]) |

12.2. Persistence and degradability

| Propylene (115-07-1) | | |
|-------------------------------|--|------|
| Persistence and degradability | The substance is biodegradable. Unlikely to persist. | |
| 00/05/0045 | FN (F - F-1 HO) | F /0 |

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12.3. Bioaccumulative potential

| Ethanolamine (141-43-5) | | |
|---|------------------|--|
| Log Pow | -1.91 (at 25 °C) | |
| Propylene (115-07-1) | | |
| Log Pow | 1.77 | |
| Bioaccumulative potential Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9. | | |

12.4. **Mobility in soil**

| Propylene (115-07-1) | |
|----------------------|---|
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |

Other adverse effects

: No known effects from this product. Effect on ozone layer

Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

Waste treatment methods

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into any place where its

accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into areas where there is a risk of forming an explosive

Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more Waste disposal recommendations

quidance on suitable disposal methods.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN3161 Liquefied gas, flammable, n.o.s.

UN-No.(DOT) : UN3161

Proper Shipping Name (DOT) : Liquefied gas, flammable, n.o.s.

Hazard labels (DOT) : 2.1 - Flammable gas



: G - Identifies PSN requiring a technical name **DOT Symbols**

DOT Special Provisions (49 CFR 172.102) T50 - When portable tank instruction T50 is referenced in Column (7) of the 172.101 Table, the

applicable liquefied compressed gases are authorized to be transported in portable tanks in

accordance with the requirements of 173.313 of this subchapter.

DOT Packaging Exceptions (49 CFR 173.xxx) DOT Packaging Non Bulk (49 CFR 173.xxx) : 304 DOT Packaging Bulk (49 CFR 173.xxx) : 314;315 DOT Quantity Limitations Passenger aircraft/rail : Forbidden

DOT Quantity Limitations Cargo aircraft only (49 : 150 kg

CFR 175.75)

(49 CFR 173.27)

DOT Vessel Stowage Location : D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one

passenger per each 3 m of overall vessel length, but the material is prohibited on passenger

vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

Additional information

Other information : No supplementary information available.

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ADR

Transport document description : UN 3161 (Ethanolamine), 2, (B/D)

Class (ADR) : 2 - Gases

Hazard identification number (Kemler No.) : 23 Classification code (ADR) : 2F

Orange plates :

23 3161

Tunnel restriction code (ADR) : B/D LQ : 0 Excepted quantities (ADR) : E0

Transport by sea

UN-No. (IMDG) : 3161

Proper Shipping Name (IMDG) : LIQUEFIED GAS, FLAMMABLE, N.O.S.

Class (IMDG) : 2 - Gases

Air transport

UN-No.(IATA) : 3161

Proper Shipping Name (IATA) : LIQUEFIED GAS, FLAMMABLE, N.O.S.

Class (IATA) : 2

SECTION 15: Regulatory information

15.1. US Federal regulations

Ethanolamine (141-43-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Propylene (115-07-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on United States SARA Section 313

SARA Section 313 - Emission Reporting 1.0 %

15.2. International regulations

CANADA

| Ethanolamine (141-43-5) | | |
|---|---|--|
| Listed on the Canadian DSL (Domes | Listed on the Canadian DSL (Domestic Sustances List) | |
| WHMIS Classification Class B Division 3 - Combustible Liquid Class E - Corrosive Material | | |
| Propylene (115-07-1) | | |
| Listed on the Canadian DSL (Domestic Sustances List) | | |
| WHMIS Classification | Class A - Compressed Gas Class B Division 1 - Flammable Gas | |

EU-Regulations

Ethanolamine (141-43-5)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Propylene (115-07-1)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

15.2.2. National regulations

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Ethanolamine (141-43-5)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Japanese Poisonous and Deleterious Substances Control Law

Japanese Pollutant Release and Transfer Register Law (PRTR Law)

Listed on the Canadian IDL (Ingredient Disclosure List)

Propylene (115-07-1)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

15.3. US State regulations

Ethanolamine (141-43-5)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) List

Propylene (115-07-1)

- U.S. Massachusetts Right To Know List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. Pennsylvania RTK (Right to Know) Environmental Hazard List
- U.S. Pennsylvania RTK (Right to Know) List

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with OSHA final rule on GHS implementation

promulgated March 26, 2012.

Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29

CFR, 1910.1200. Other government regulations must be reviewed for applicability to this

product.

Full text of H-phrases:

| xt of H-piliases. | |
|---------------------------|--|
| Acute Tox. 4 (Dermal) | Acute toxicity (dermal) Category 4 |
| Acute Tox. 4 (Inhalation) | Acute toxicity (inhalation) Category 4 |
| Acute Tox. 4 (Oral) | Acute toxicity (oral) Category 4 |
| Flam. Gas 1 | Flammable gases Category 1 |
| Liquefied gas | Gases under pressure Liquefied gas |
| Skin Corr. 1B | Skin corrosion/irritation Category 1B |
| H220 | Extremely flammable gas |
| H280 | Contains gas under pressure; may explode if heated |
| H302 | Harmful if swallowed |
| H312 | Harmful in contact with skin |
| H314 | Causes severe skin burns and eye damage |
| H332 | Harmful if inhaled |
| | |

SDS US (GHS HazCom 2012)

This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide America Corporation's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

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