

## 1. Identification of substance

|                        |                                                                                         |
|------------------------|-----------------------------------------------------------------------------------------|
| Product Name           | PROPANE (R290)                                                                          |
| Other Name             | PROPANE (R290)                                                                          |
| Chemical Name          | None                                                                                    |
| Recommended Use        | Brazing gas/refrigerant gas                                                             |
| Supplier               | Toolway Industries                                                                      |
| Address                | 1-280 Hunter's Valley Road<br>Woodbridge ON L4H 3V9 CANADA                              |
| Phone Number           | +(905) 326-5450                                                                         |
| Fax Number             | +(905) 326-5451                                                                         |
| Emergency Phone Number | 1-888-CANUTEC(226-8832)(North American use) and/or<br>1-613-996-6666(International use) |

## 2. Hazards identification

|                                                     |                                                                                                                                          |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| GHS classification                                  | Flammable gases 1A<br>Gases under pressure (Liquefied gas)                                                                               |
| GHS Pictograms                                      |                                                        |
| Signal words                                        | Danger                                                                                                                                   |
| Hazard statements                                   | H220:Extremely flammable gas<br>H280:Contains gas under pressure;may explode if heated                                                   |
| Precautionary Statement Prevention                  | P210:Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.                                      |
| Precautionary Statement Response                    | P377:Leaking gas fire: Do not extinguish, unless leak can be stopped safely.<br>P381:In case of leakage, eliminate all ignition sources. |
| Precautionary Statement Storage                     | P403:Store in a well-ventilated place.<br>P410+P403:Protect from sunlight. Store in a well-ventilated place.                             |
| Precautionary Statement Disposal                    | None.                                                                                                                                    |
| Other hazards which do not result in classification | Not available.                                                                                                                           |

## 3. Composition/information on ingredients

☒ **Substances**

☐ **Mixtures**

### Component Information

| Component | CAS number | EINECS number | Mass(%)        |
|-----------|------------|---------------|----------------|
| Propane   | 74-98-6    | 200-827-9     | 99%wt - 100%wt |

Note:1. Unless a component presents a severe hazard, it does not need to be considered in the SDS if the concentration is less than 1%.

#### 4. First-aid measures

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NOTE TO PHYSICIAN                                  | In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Avoid breathing vapors or fumes, avoid contact with skin, eyes and clothing, and provide adequate ventilation or exhaust in the work room. Please show this SDS to the doctor who arrives at the scene.                                                                                             |
| After inhalation                                   | Move to fresh air. Keep your breath open. If breathing is difficult, give oxygen. If the patient ingests or inhales this substance, do not perform mouth-to-mouth artificial respiration. If breathing stops. Perform CPR immediately. Get immediate medical attention.                                                                                                                           |
| After skin contact                                 | Immediately remove contaminated clothing. Rinse the skin with plenty of soap and water. If you feel unwell, seek medical attention.<br>ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention.                                                                                                                                                              |
| After eye contact                                  | Immediately flush eyes with plenty of water for at least 15 minutes. Assure adequate flushing of the eyes by separating the eyelids with fingers. Get medical attention immediately.                                                                                                                                                                                                              |
| After ingestion                                    | Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Loosen tight clothing such as a collar, tie, belt or waistband. Do not use mouth-to-mouth method if victim ingested the substance. Seek immediate medical attention.                                                                                          |
| Most important symptoms/effects, acute and delayed | Rapid evaporation of the liquid may cause frostbite.<br>High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death.<br>1 Limited evidence suggests that repeated or prolonged occupational exposure may produce cumulative health effects involving organs or biochemical systems.<br>2 Treat symptomatically.<br>3 Note that symptoms may be delayed. |

#### 5. Fire-fighting measures

|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable extinguishing agents                                                    | Select suitable fire extinguishing agents according to local conditions and surrounding sanitation. Dry chemical powder, carbon dioxide or water spray can be used.                                                                                                                                                                                                                                             |
| Special hazards caused by the material, its products of combustion or flue gases | 1 Flammable: easily ignited by heat, sparks or flames.<br>2 May form explosive mixtures with air.<br>3 Containers exposed to fire may leak their contents through the pressure relief valve, increasing the fire and vapour concentration.<br>4 Vapors may move to the ignition source and flash back.<br>5 Containers may explode when heated.<br>6 Containers exposed to fire may leak their contents through |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protective equipment for fire-fighters | <p>the pressure relief valve.</p> <p>7 Expansion or explosive decomposition may occur upon exposure to heat or flame.</p> <p>1 When fighting fires, wear a breathing mask (MSHA/NIOSH compliant or equivalent) and full protective clothing.</p> <p>2 Put out the fire at a safe distance and with adequate protection.</p> <p>3 Prevent fire water from contaminating surface and groundwater systems.</p> |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 6. Accidental release measures

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Person-related safety precautions     | <p>1 Avoid breathing vapor, contact with skin and eyes.</p> <p>2 Beware of vapor accumulation to explosive concentrations.</p> <p>3 Vapors can accumulate in low areas.</p> <p>4 It is recommended that emergency personnel wear positive pressure self-contained breathing apparatus, anti-static protective clothing, and chemical impermeable gloves.</p> <p>5 Ensure adequate ventilation. Remove all ignition sources.</p> <p>6 Quickly evacuate personnel to a safe area, away from the spill area and upwind.</p> <p>7 Use personal protective equipment. Avoid breathing vapours, fumes, gases or dust.</p> <p>Check oxygen content before entering area. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state. Keep unnecessary personnel away.</p> |
| Measures for environmental protection | <p>Prevent further leakage or spillage if safe to do so. Do not allow material to be released to the environment without proper governmental permits.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Measures for cleaning/collecting      | <p>Leak fire: Do not put out fire unless leak can be safely plugged. In case of leakage, remove all ignition sources.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Additional information                | <p>See Section 7 for information on safe handling</p> <p>See section 8 for information on personal protection equipment.</p> <p>See Section 13 for information on disposal.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

#### 7. Handling and storage

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Handling</b>               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Information for safe handling | <p>Airtight operation, full ventilation. Operators must be specially trained and strictly abide by the operating procedures. Keep away from flammable and combustible materials. In case of high concentration contact, wear self-contained filter gas mask (half mask), general work clothes and general work protective gloves. Prevent gas leakage into workplace air. Avoid contact with oxidants. Handle with care to prevent the cylinder and accessories from being damaged. Provide leakage emergency treatment equipment.</p> |

Information about protection against explosions and fires

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
 Do not spray on an open flame or other ignition source.  
 Do not pierce or burn, even after use.  
 Use of explosion-proof lighting, ventilation facilities.

## STORAGE

Requirements to be met by storerooms and containers

Store in a well-ventilated place. Sun protection.  
 1 Keep the container tightly closed.  
 2 Store in a dry, cool and ventilated place.  
 3 Keep away from heat, sparks, open flames and hot surfaces.  
 4 Store away from incompatible materials and food containers.

Information about storage in one common storage facility

Unless the cylinder is connected to the point of use with a pipe, the valve cap and valve outlet screw plug should be installed, and the cylinder should not be dragged, slipped, or rolled, and a hand truck should be used. A pressure reducing regulator should be used when connecting the cylinder to a low pressure line or system. It is absolutely not allowed to lift the cylinder cap. Install a one-way valve or trap on the discharge line to prevent harmful flow back to the cylinder. The cylinder should be stored vertically or securely fixed to prevent falling or impact. Full and empty bottles should be placed in separate areas and stored in a cool, ventilated and dry place. Do not store near combustibles, and avoid storing with salt or other corrosive substances.

Further information about storage conditions

No data.

## 8. Exposure controls/personal protection

Limit Values for Exposure

**Component**

| CAS number | ACGIH<br>TLV-TWA | ACGIH<br>TLV-STEL | NIOSH<br>PEL-TWA | NIOSH<br>PEL-STEL |
|------------|------------------|-------------------|------------------|-------------------|
| 74-98-6    | 2500 ppm         | N.E.              | 1000 ppm         | N.E.              |

Propane

Appropriate engineering controls

1 Maintain adequate ventilation, especially in enclosed areas.  
 2 Ensure eyewash and shower facilities are available near the workplace.  
 3 Use explosion-proof electrical appliances, ventilation, lighting and other equipment.  
 4 Set up emergency evacuation passages and necessary release areas.

General protective and hygienic measures

Do not get this material in contact with skin. Do not get this material on clothing. Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Antistatic protective clothing, general operating protective gloves; self-contained filter mask, protective glasses.

|                     |                                                                                                                                                                                   |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Breathing equipment | If vapour concentrations exceed occupational exposure limits or symptoms such as irritation occur, use a full-face respirator (US) or type AXBEK (EN 14387) respirator cartridge. |
| Protection of hands | Wear chemical protective gloves (eg butyl rubber gloves). It is recommended to choose protective gloves that have been tested to EN 374, US F739 or AS/NZS 2161.1 standards.      |
| Eye/Face protection | Wear chemical goggles (compliant with EU EN 166 or US NIOSH).                                                                                                                     |
| Body protection     | Wear flame retardant antistatic protective clothing and antistatic protective boots.                                                                                              |

Note: 1. N.E. means not established.

## 9. Physical and chemical properties

|                                                          |                                                         |
|----------------------------------------------------------|---------------------------------------------------------|
| Physical state                                           | Liquid (liquefied gas , liquid at room temperature)     |
| Colour                                                   | Colourless                                              |
| Odour                                                    | Pure is odorless                                        |
| Melting point/freezing point                             | -189.7 °C                                               |
| Boiling point or initial boiling point and boiling range | -42 °C                                                  |
| Flammability                                             | Extremely flammable                                     |
| Lower and upper explosion limit/flammability limit       | 2.1-9.5 %(V)                                            |
| Flash point                                              | -104 °C (Closed cup)                                    |
| Auto-ignition temperature                                | 450 °C                                                  |
| Decomposition temperature                                | Not applicable                                          |
| pH                                                       | Not applicable                                          |
| Kinematic viscosity                                      | Not applicable                                          |
| Solubility                                               | Slightly soluble in water, soluble in ethanol and ether |
| Partition coefficient: n-octanol/water(log value)        | Not applicable                                          |
| Vapour pressure                                          | 840 kPa (20 °C)                                         |
| Density and/or relative density                          | 0.43 (20 °C)                                            |
| Relative vapour density (air=1)                          | 1.6                                                     |
| Particle characteristics                                 | Not applicable                                          |

## 10. Stability and reactivity

|                    |                                                    |
|--------------------|----------------------------------------------------|
| Reactivity         | No data available.                                 |
| Chemical stability | Stable under proper conditions of use and storage. |

|                                                                 |                                                                                                                                     |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Possibility of hazardous reactions                              | The addition products that react with nitrogen dioxide, nitrogen oxides and ammonia to form nitrogen oxides are prone to explosion. |
| Conditions to avoid (e.g. static discharge, shock or vibration) | Heat and flame and spark. The extreme temperatures and direct sunlight. Static discharge.                                           |
| Incompatible materials                                          | Avoid contact with nitrogen dioxide, nitrogen oxides, ammonia, oxidants, halogenated hydrocarbons and halogens, etc.                |
| Hazardous decomposition products                                | Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).                                                                  |

### 11. Toxicological information

|                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Routes of Entry: Dermal contact, eye contact, inhalation, ingestion. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Acute Toxicity                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Propane (CAS 74-98-6)                                                | LD50 (Oral, rat): N/A<br>LC50 (Inhalation, rat): 49900 mg/m <sup>3</sup> (4 h)<br>LD50 (Dermal, rabbit): N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Skin corrosion/Irritation                                            | No skin irritation, no animal testing, based on the properties of the substance, experts believe that it will not cause skin irritation.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Serious eye damage/irritation                                        | No eye irritation, no animal testing. Based on the properties of the substance, experts do not consider it to cause eye irritation.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Respiratory or skin sensitization                                    | Not tested on animals, based on the properties of the substance, experts believe that it will not cause sensitization. There are no reports of respiratory sensitization in humans.                                                                                                                                                                                                                                                                                                                                                                                                  |
| Germ cell mutagenicity                                               | Not classified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Carcinogenicity                                                      | No classification data on carcinogenic properties of this chemical is available from IARC, OSHA, ACGIH, EPA or NTP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Reproductive toxicity                                                | Not classified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| STOT-single exposure                                                 | Not classified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| STOT-repeated exposure                                               | Not classified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Aspiration hazard                                                    | Not classified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Chronic Effects                                                      | Not classified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Further Information                                                  | Propane has simple asphyxia and anesthetic effects. Short term exposure to propane at a concentration of 1% does not cause abnormal symptoms; Exposure to propane at concentrations below 10% can only cause mild dizziness; When exposed to high concentrations of propane, anesthesia and loss of consciousness may occur; Exposure to extremely high concentrations of propane can cause suffocation. When acute poisoning occurs, symptoms such as dizziness, headache, excitement or drowsiness, nausea, vomiting, and bradycardia may occur; Severe cases can result in sudden |

collapse, urinary incontinence, loss of consciousness, and even respiratory arrest. May cause skin frostbite. Long term exposure to low concentration propane can lead to symptoms such as headache, dizziness, poor sleep, fatigue, emotional instability, and autonomic nervous system dysfunction.

## 12. Ecological information

### Ecotoxicity

#### Aquatic Toxicity

#### Test & Species

96 Hr LC50 Fish: N/A

48 Hr EC50 Daphnia: N/A

72 Hr EC50 Algae: N/A

#### Persistence and degradability

Not available

#### Bioaccumulative potential

Not available

#### Mobility in soil

Not available

#### Additional Information

May be harmful to the environment.

## 13. Disposal considerations

### WASTE DISPOSAL INSTRUCTIONS

Contact a qualified professional waste disposal service to dispose of this material.

Dispose of in accordance with local environmental regulations or local authority requirements.

## 14. Transport information

### The Recommendation of Transport of Dangerous Goods(TDG)

#### UN Number

UN 1978

#### Proper Shipping Name

PROPANE

#### Class/Division

Division 2.1 Flammable Gases

#### Package Group

—

#### Subsidiary risk

—

#### labelling pictogram



#### Maritime transport IMDG/

Being same with TDG/No

#### Marine pollutant (Yes/No)

#### Air transport ICAO-TI and

Being same with TDG

#### IATA-DGR

## 15. Regulatory information

### European/International Regulations

#### OSHA:

Hazardous by definition of Hazard Communication Standard (29CFR 1910.1200).

|                                                                                     |                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EINECS Status:</b>                                                               | This chemical is included in EINECS inventory.                                                                                                                                 |
| <b>EPA TSCA Status:</b>                                                             | This chemical is included in TSCA inventory.                                                                                                                                   |
| <b>Canadian DSL(Domestic Substances List):</b>                                      | This chemical is included in DSL.                                                                                                                                              |
| <b>HMIS(Hazardous Material Identification System Ratings):</b>                      | Health: 0<br>Flammability: 4<br>Physical hazard: 1<br>Personal protection: G<br>(4. Severe Hazard; 3. Serious Hazard; 2. Moderate Hazard; 1. Slight Hazard; 0. Minimal Hazard) |
| <b>WHMIS (Canadian Workplace Hazardous Material Identification System Ratings):</b> | A、 B1.                                                                                                                                                                         |
| <b>GB 12268-2012 List of dangerous goods</b>                                        | This chemical is a dangerous goods on the GB 12268-2012 list of dangerous goods.                                                                                               |

#### 16. other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

This Material Safety Data Sheet was based on the "Globally Harmonized System of Classification and Labelling of Chemicals", "Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations", "INTERNATIONAL MARITIME DANGEROUS GOODS CODE", "International Air Transport Association Dangerous Goods Regulations", the National Standards and other related dangerous chemicals management laws, regulations and standards, which are periodically updated and changed. To make dangerous goods / hazardous chemicals comply with the relevant requirements of the latest management, regularly update is recommended.

This Material Safety Data Sheet has been compiled in both English and Chinese. For any discrepancies, the Chinese version shall prevail.

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Abbreviations and acronyms | ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road<br>RID: Regulations Concerning the International Transport of Dangerous Goods by Rail<br>IMDG: International Maritime Code for Dangerous Goods<br>IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)<br>ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO) |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
EC50: effective concentration, 50 percent

**Edit Date**

26.06.2023

**Update and Revise**

Original edition

**Edit Standard**

*Globally Harmonized System of Classification and Labelling of Chemicals* Part 1.5

**Revised Institution**

Technology Center of Hangzhou Customs District