

ZHEJIANG YONGHE REFRIGERANT CO., LTD.

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Material Safety Data Sheet (PROPANE R290)

MSDS for the Blend and Individual Components

Information in this format is provided as a service to our customers and is intended only for their use. Others may use it at their own discretion and risk. This information is based upon technical information. Zhejiang Yonghe New Type Refrigerant Co.,Ltd. believes to be reliable. It is subject to revision as additional knowledge and experience are gained.

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Product Identification: PROPANE

R290 is a product of Zhejiang Yonghe Refrigerant Co.,Ltd., Zhejiang China

Company Identification

MANUFACTURER/DISTRIBUTOR:

Zhejiang Yonghe Refrigerant Co.,Ltd., Zhejiang Province,324004,China

PHONE NUMBERS

Product Information: 86-570-3066912

Transport Emergency: 86-570-3063648

Medical Emergency: 86-570-3063891

COMPOSITION/INFORMATION ON INGREDIENTS

| INGREDIENT NAME | CAS NUMBER | WEIGHT % |
|------------------------|-------------------|-----------------|
| Propane 100 | | 74-98-6 |

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: WARNING! Flammable gas. Contents under pressure. Causes damage to the following organs: Nervous System. Vapor may cause flash fire. Keep away from heat, sparks and flame. Do not puncture or incinerate container. Keep container closed. Use only with adequate ventilation. Contact with rapidly expanding gases can cause frostbite.

POTENTIAL ACUTE HEALTH EFFECTS:

SKIN: No known significant effects or critical hazards.

EYES: No known significant effects or critical hazards.

INHALATION: Acts as simple asphyxiant.

INGESTION: Ingestion is not a normal route of exposure for gases.

POTENTIAL CHRONIC HEALTH EFFECTS:

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

See Toxicological Information (section 11)

FIRST AID MEASURES

No action shall be taken involving any personal risk or without suitable training. If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

SKIN: In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

EYES: Immediately flush eyes with plenty of warm water for at least 15 minutes. Get medical attention.

INHALATION: Immediately remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Get medical attention immediately.

INGESTION: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

FROSTBITE: Try to warm up the frozen tissues and seek medical attention.

FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Flammability of product: FLAMMABLE

Autoignition temperature: 841.7°F (449.85°C)

Upper flame limit (volume % in air): 9.5%

Lower flame limit (volume % in air): 2.1%

Products of combustion: These products are carbon oxides (CO,CO₂).

Fire hazards in presence of various substances: Extremely flammable in presence

of open flames, sparks and static discharge of oxidizing materials.

Fire fighting media and instructions: CO₂, dry chemicals, water spray, or fog. If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area.

Extremely flammable. Gas may accumulate in confined areas, travel considerable distance to source of ignition and flash back causing fire or explosion.

Special protective equipment for fire-fighters: Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

ENVIRONMENTAL PRECAUTIONS: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

HANDLING AND STORAGE

NORMAL HANDLING:

Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire, minimize ignition sources. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not puncture or incinerate container. High pressure gas. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

STORAGE RECOMMENDATIONS:

Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52°C (125°F).

EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. The engineering controls also need to keep gas, vapor or dust concentrations below any explosive limits. Use explosion-proof ventilation equipment

PERSONAL PROTECTION:

SKIN: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

EYE: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

HANDS: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill: A self-contained breathing apparatus should be used to avoid inhalation of the product.

Consult local authorities for acceptable exposure limits.

PHYSICAL AND CHEMICAL PROPERTIES

MOLECULAR WEIGHT: 44.11 g/mole

MOLECULAR FORMULA: C₃H₈

BOILING/CONDENSATION POINT : -43.2°F (-41.79°C)

MELTING/FREEZING POINT: -302.6°F (-185.89°C)

CRITICAL TEMPERATURE: 205.9°F (96.6°C)

VAPOR PRESSURE : 109 psig

VAPOR DENSITY: 1.6 (Air=1)

SPECIFIC VOLUME (ft³/lb): 8.62069

GAS DENSITY(lb/ft³): 0.116

PHYSICAL CHEMICAL COMMENTS: Not available

STABILITY AND REACTIVITY

STABILITY and REACTIVITY: The product is stable.

INCOMPATIBILITIES with various substances: Extremely reactive or incompatible with oxidizing agents.

TOXICOLOGICAL INFORMATION

TOXICITY DATA:

IDLH: 2100 ppm

Chronic effects on humans: Causes damage to the following organs: the nervous system.

Other toxic effects on humans: No specific information is available in our database regarding the other toxic effects of this material for humans.

SPECIFIC EFFECTS:

Carcinogenic effects: No known significant effects or critical hazards.

Mutagenic effects: No known significant effects or critical hazards.

Reproductive toxicity: No known significant effects or critical hazards.

TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: Propane, see also Petroleum Gases, Liquefied

SHIPPING LABEL(s): FLAMMABLE GAS

PACKING GROUP: Not applicable (gas)

HAZARD CLASS: 2.1

UN NUMBER: UN 1978

OTHER INFORMATION

This information is based upon technical information Zhejiang Yonghe Refrigerant Co.,Ltd. believe to be reliable. It is subject to revision as additional knowledge and experience are gained. The data in this Material Safety Data Sheet only to the specific material designated herein and does not relate to use in combination with any other material or in any process.