Material Safety Data Sheet

MAP//PRO ELK-RQ01

Section 1. Chemical product and company identification

Product Name : **MAP//PRO**

Supplier : HANGZHOU ELK REFRIGERANT HIGH-TECH **LTD**

Address :Langkou industrial Park, TaiHuYuan Town,LINAN,HANGZHOU ,CHINA

Emergency Telephone Number 0086-0571-67391338

Telephone Number for Information 0086-0571-67391368

Date Prepared JULY 1, 2009

Product use : Synthetic/Analytical chemistry.

Synonym MAP//PRO, Mixture of Propylene Propane and Isobutane

Section 2. Hazards identification

Physical state : Gas.

Emergency overview : Warning!
FLAMMABLE GAS.
CONTENTS UNDER PRESSURE. .
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.

Routes of entry : Inhalation

Potential acute health effects

Eyes : Liquid or cold gas may cause frostbites.

Skin : Liquid or cold gas may cause frostbites.

Inhalation : Acts as a simple asphyxiant.

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

Potential chronic health effects : Not applicable

Medical conditions aggravated by overexposure : A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that over exposure is unlikely to aggravate existing medical conditions.

See toxicological Information (section 11)

Section 3. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Propylene	115-07-1	40 - 50	ACGIH TLV (United States, 1/2005).

Isobutane	75-28-5	10 - 15	ACGIH TLV (United States, 1/2004). Notes: ACGIH 2004 Adoption TWA: 1000 ppm 8 hour(s). Form: All forms NIOSH REL (United States, 6/2001). TWA: 1900 mg/m ^{3} 0 hour(s). Form: All forms TWA: 800 ppm 10 hour(s). Form: All forms
Propane	74-98-6	30 - 40	ACGIH TLV (United States, 1/2004). Notes: ACGIH 2004 Adoption TWA: 1000 ppm 8 hour(s). Form: All forms NIOSH REL (United States, 6/2001). TWA: 1800 mg/m ^{3} 10 hour(s). Form: All forms TWA: 1000 ppm 10 hour(s). Form: All forms OSHA PEL (United States, 6/1993). TWA: 1800 mg/m ^{3} 8 hour(s). Form: All forms TWA: 1000 ppm 8 hour(s). Form: All forms

Section 4. 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.

Eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. DO NOT remove contact lenses, if worn, Obtain medical attention without delay, preferably from an ophthalmologist.

Skin contact : Immediately warm frostbite area with warm water (not to exceed 40.5 C, 105F). Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

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

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

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.

Section 5. Fire fighting measures

Flammability of the product Flammable.

Auto-ignition temperature : The lowest known value is 286.85°C (548.3°F) (Butane).

Flash point : The lowest known value is Closed cup: -108.15°C (-162.7°F). (Propylene)

Flammable limits Lower: 2.5% Upper: 12.5%

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 Do not extinguish due to possible hazard of explosive reignition. Use water to cool containers and structures and to protect personnel attempting to shut-off

flow. Attempt shut-off only if hazard is not too great. Extinguish surrounding and/or residual fires with appropriate fire fighting foam, carbon dioxide or dry chemical media.

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.

Section 6. 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.

Section 7. Handling and storage

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 : 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).

Section 8. 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

Eyes : 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. Monogoggles.

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. Neoprene and Nitrile (NBR).

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.

Section 9. Physical and chemical properties

Molecular weight : 44 g/mol

Molecular formula : Not applicable.

Boiling/condensation point : (760 mmHg): -41- -35 C

Melting/freezing point : Weighted average:
-152.55°C (-242.6°F)

Critical temperature : The lowest known value is 91.9°C (197.4°F) (Propylene).

Vapor density : The highest known value is 2 (Air = 1) (Isobutane). Weighted average:1.47 (Air = 1)

Specific Volume (ft^3 /lb) : Not applicable.

Gas Density (lb/ft^3) Weighted average: 0.11

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Extremely reactive or incompatible with oxidizing agents.
Not reactive with metals.

Hazardous polymerization : May Occur.
Conditions to Avoid: Elevated tempertures and pressures. Polymerization catalysts, such as metal alkyls, can cause uncontrolled polymerization.

INHIBITORS/STABILIZERS Butanes (iso and/or normal) are added to the MAP-PRO mixture to prevent potential concentration of the propylene from reaching concentration levels that would render the mixture unstable in case of

weathering off (evaporation of light components).

Section 11. Toxicological information

Chronic effects on humans : Classified A4 (Not classifiable for human or animal.) by : CARCINOGENIC EFFECTS ACGIH [MAP//PRO].

Specific effects

Carcinogenic effects : See ACGIH Carcinogen classification.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Products of degradation : These products are carbon oxides (CO, CO 2) and water.

Environmental fate : Not available.

Environmental hazards : Not available.

Toxicity to the environment Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Propylene/Propane / Isobutane mixtures,stabilized

HAZARD CLASS NUMBER and DESCRIPTION: 2.1(Flammable Gas)

UN IDENTIFICATION NMBER: UN 1077

PACKING GROUP Not applicable

MARINE POLLU

Section 15. Regulatory information

United States

U.S. Federal regulations : TSCA 8(b) inventory: Propylene; Isobutane; Propane

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: Propylene; Isobutane;; Propane

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Propylene: Fire hazard, Sudden Release of Pressure; Isobutane: Fire hazard, Sudden Release of Pressure; Propane: Fire hazard, Sudden Release of Pressure

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean air act (CAA) 112 accidental release prevention: Propylene; Isobutane; Propane

Clean air act (CAA) 112 regulated flammable substances: Propylene; Isobutane; Propane

Clean air act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

	Product name	CAS number	Concentration
Form R-Reporting requirements :	Propylene	115-07-1	40 - 50
Supplier notification :	Propylene	115-07-1	40 - 50

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Pennsylvania RTK: Propylene: (environmental hazard, generic environmental hazard); Isobutane: (generic environmental hazard); Propane: (generic environmental hazard)

Massachusetts RTK: Propylene; Isobutane; Propane

New Jersey: Propylene; Isobutane; Propane

Canada

WHMIS (Canada) : Class B1: Flammable Gases

Class A: Compressed Gas

CEPA DSL: Propylene; Isobutane; Propane

CPR Compliance: This product has been classified with a hazard criteria of the CPR, and the MSDS contains all the information required for CPR.

Section 16. Other information

CHINA

Label Requirements : FLAMMABLE GAS.
CONTENTS UNDER PRESSURE.

Canada

Label Requirements : Class B1: Flammable Gases
Class A: Compressed Gas

zardous Material Information System (U.S.A.) :

Health	1
Fire hazard	4
Reactivity	1
Personal protection	C

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present

unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.