Material Safety Data Sheet
(REFRIGERANT R600a - ISOBUTANE)

Revision 2018/04

1. CHEMICAL PRODUCT AND COMPANY INDENTIFICATION

NAME: Zhejiang NOF Chemical Co.,Ltd.
ADDRESS: SHANGHAI ROAD,HEZE DEVELOPMENT ZONE,SHANDONG PROVINCE ,CHINA
TELEPHONE NUMBER: 0086 – 579- 82025658
MSDS INDENTIFICATION CODE/NUMBER: IA
EMERGENCY TELEPHONE NUMBER: 0086 – 579-82025658
CHEMTREC
PRODUCT NAME: ISOBUTANE
CAS NUMBER: 75-28-5
CHEMICAL FAMILY: Aliphatic hydrocarbon
CHEMICAL FORMULA: C4H10
SYNONYMS: 2-Methylpropane, Trimethylmethane

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDINT NAME	EXPOSURE LIMITS	CONCENTRATION PERSENT BY WEIGHT
ISOBUTANE	No	99.0-99.9
CAS NUMBER:75-28-5	OSHA PEL -TWA:Simple Asphyxiant	

3. HAZARDA INDENTIFICATION

This product does not contain oxygen and may cause asphyxia if released in a confined area.
Hydrocarbons can cause irritation and central nervous system depression at high concentrations.
Extremely Flammable

EYE EFFECTS:
None anticipated as product is a gas at room temperature.

SKIN EFFECTS:
None anticipated as product is a gas at room temperature.

INGESTION EFFECTS:
Ingestion is unlikely.

INHALATION EFFECTS:
Product is relatively nontoxic. Simple hydrocarbons can irritate the eyes, mucous membranes and respiratory system at high concentrations.
Inhalation of high concentrations may cause dizziness, disorientation, in coordination, narcosis, or nausea or narcotic.
This product may displace oxygen if released in a confined space. Maintain oxygen levels above 19.5% at sea level to prevent asphyxiation. Effects of oxygen deficiency resulting from simple asphyxiate may include: rapid breathing, diminished mental alertness,

impaired muscular coordination, faulty judgment, depression of all sensations, emotional instability, and fatigue. As asphyxiation progresses, nausea, vomiting, prostration, and loss of consciousness may result, eventually leading to convulsions, coma, and death.
Oxygen deficiency during pregnancy has produced development abnormalities in humans and experimental animals.

4. FIRST AID MEASURES

EYES

Never introduce oil or ointment into the eyes without medical advice! If pain is present, refer the victim to ophthalmologist for further treatment and follow-up.

SKIN

Remove contaminated clothing and flush affected area with cold water and soap. If irritation persists, seek medical attention.

INGESTION

Not normally required. Seek immediate medical attention.

INHALATION

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE OT PRODUCT. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted(artificial) respiration and supplemental oxygen. Further treatment should be symptomatic and supportive.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: -117℉ (-83℃) Closed Cup

AUTOIGNITION: -778℉ (420℃)

LOWER EXPLOSIVE LIMIT (%): 1.8

UPPER EXPLOSIVE LIMIT (%): 8.5

FIRE AND EXPLOSION HAZARDS.

Isobutane is heavier than air and may travel a considerable distance to an ignition source. Isobutane is a flammable gas! Keep away from open flame and other sources of ignition. Do not allow smoking in storage areas or when handing.

EXTINGUISHING MEDIA

Water, carbon dioxide, Dry chemical

FIRE FIGHTING INSTRUCTIONS

If possible, stop the flow of gas with a remote valve. Use water spray to cool exposed containers. If fire is extinguished and flow of gas is continues, increase ventilation to prevent a build up of a flammable / explosive atmosphere. Extinguish sources of ignition.
Be cautious of Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct a 500 GPM water stream onto containers above the liquid level with remote monitors. Limit the number of personnel in proximity to the fire.
Evacuate surrounding area to at least 3000 feet in all directions.

6. ACCIDENTAL RELEASE MEASURES

Evacuate all personnel from affected area. Use appropriate protective equipment. Increase ventilation to prevent build up of flammable/explosive atmosphere. Extinguish all sources of ignition! If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call Advanced Gas Tech. or CHEMTREC.

7. HANDING AND STORAGE

HANDING AND STORAGE PRECAUTIONS

Earth bond and ground all lines and equipment associated with the product system. Electrical equipment should be non-sparking and explosion proof. Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide, or roll cylinders. Use a pressure regulator when connecting to lower pressure (250psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exists. Do not allow the temperature where cylinders are stored to exceed 130℉ (54℃). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a 'first in – first out' inventory system to prevent full cylinders from being stored for excessive periods of time.

Post "No Smoking" signs in storage or use areas.

For additional recommendations consult Compressed Gas Association pamphlet P-1.

Never carry a compressed gas cylinder or container of a gas in cryogenic liquid form in as enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use local exhaust to prevent gas from accumulating. Use general ventilation to prevent build up of flammable concentrations. Use a hood with ventilation when handing small quantities. If product is handled routinely where the potential for leaks exists, all electrical equipment must be rated for use in potentially flammable atmospheres. Consult the National Electrical Code for detail.

EYE/FACE PROTECION

Safety goggles or glasses

SKIN PROTECTION

Protective gloved made of plastic of rubber.

RESPIRATORY PROTECTION

Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

OTHER/GENERAL PROTECTION

Safety shoes, safety shower, eyewash.

9. PHYSICAL AND CHEMICAL PROPERTIES

BASIC PHYSICAL PROPERTIES

Melting point (℃): -159.6
Boiling Point (℃): -11.8
Relative density (water = 1) : 0.56
Relative vapor density (air = 1) : 2.01
Saturated vapor pressure (kPa): 160.09 (0 ℃)
Heat of combustion (kJ / mol): 2856.6
Critical temperature (℃): 135
Critical pressure (MPa): 3.65,
Flash point (℃): -82.8
SOLUBILITY (H20): Very slight
Odor: colorless, odorless gas.

10. STABILITY AND REACTIVITY

STABILITY: Stable. Avoid high temperatures. Product will start to decompose at 815℉ (435℃)

INCOMPATIBLE MATERIALS

Oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Dioxide and Carbon monoxide if sufficient oxygen is present.

11. TOXICOLOGICAL INFORMATION

Oxygen deficiency during pregnancy has produced development abnormalities in humans and experimental animals.

No chronic effects data given in the Registry of toxic Effects of Chemical Substances(RTECS) or Sax Dangerous Priorities of industrial Materials, 7th ed.

12. ECOLOGICAL INFORMATION

NO DATA GIVEN

13. DISPOSAL CONSIDERATIONS

Do not attempt to disposes of waste or unused quantities. Return in the shipping container PROPERLY LABLED, WITH ANY VALVE OUTLET PLUGS OR GAPS SECURED AND VALVE PROTECTION CAP IN PLACE TO Advanced Gas Technologies for proper handing.

14. TRANSPORT INFORMATION

PROPER SHIPPING NAME: Isobutane
HAZARD CLASS: 2.1
DOT INDENTIFICATION NUMBER: UN1969
DOT SHIPPING LABEL: Flammable Gas

15. PEGULATORY INFORMATION

SARA TITLE NOTIFICATIONS AND INFORMATION
SARA TITLE - HAZARD CLASSES: Acute Health Hazard
Fire Hazard
Sudden release of Pressure Hazard

16. OTHER INFORMATION

NFPA HAZARD RATING – HEALTH 1 Slight Hazard
FIRE 4 Severe Hazard
REACTIVITY 0 No Hazard

MSDS INDENTIFICATION CODE/NUMBER: IA

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