SAFETY DATA SHEET

HCS-2012 APPENDIX D OF 29 CFR TO §1910.1200

Section 1 – CHENICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	REFRIGERANT
Model	R600a
CAS Number	75-28-5
Chemical Family	Aliphatic hydrocarbon
Chemical Formula	C4H10
Chemical Name	2-Methylpropane,Trimethylmethane, Isobutane

Manufacturer:	NANJING REFINERY CO., LTD
Address:	QIXIA DISTRICT NANJING, CHINA
Post Code:	21033
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Emergency Tel	+86-025-58986615
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2. HAZARDS IDENTIFICATION

The isobutane is considered an article as defined by 29 CFR 1910.1200 (OSHA Hazard Communication Standard).The information contained in this SDS is supplied at the customer's request for information only.

GHS Classification

The isobutene belongs to flammable gas, Category 1; Liquefied gas under pressure.

Hazard Statements:

It is DANGER! Extremely Flammable,.

Risk of exposure occurs only if a sealed can is mechanically or heating abused. It will be cause explode,Direct contact with the leaked chemicals can cause frostbite.

Precautionary Statements:

Wash thoroughly after handing.

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

Wear protective gloves/protective clothing, eye protection/face protection.

Health Hazards (Acute and Chronic)

This product is a pure asphyxiant and mild anesthetic.

Acute : The person contact with 1% concentration isobutane and do not cause symptoms;
The below 10% concentration isobutane only cause mild dizziness;
The high concetration isobutane, will be cause anesthesia , loss of consciousness;
The very high concentrations can cause choking.

Chronic: The person inhaled isobutane will be cause neurasthenia syndrome and sweat.the pulse is not stable,the standing hair muscle reflex,skin nick disease such as autonomic nerve dysfunction.
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Physical &Chemical Hazards (Acute and chronic)

And air can form an explosive mixture, in case of fire, high heat caused by combustion and explosion. Contact with the oxidant chemical reaction or cause combustion. In a fire, a heated container is at risk of explosion. Vapors heavier than air, along the ground and easy to accumulate in the low-lying areas, the event of fire sources will be on fire back.

Environmental Hazards (Acute and chronic)

Harmful to the Enviromental

Hazard not otherwise classified(HNOC)

NO INFORMATION AVAILABLE

Unknown acute toxicity

NO INFORMATION AVAILABLE

3. COMPOSITION / INFORMATION ON INGREDIENTS

Model : REFRIGERANT R600a			
Part Description	Material(Chemical Name/Part Name)	CAS No.	In % by Weight
Refrigerant (isobutane)	Trimethylmethane	75-28-5	99.0~99.9

4. FIRST-AID MEASURES

Ingestion: Do not induce vomiting or give food or drink. Seek medical attention immediately.

Inhalation: Provide fresh air and seek medical attention.

Eyes contact: Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

Skin contact: Remove contaminated clothing and thoroughly wash with soap and plenty of water. If irritation persists, seek medical attention.

5. FIRE-FIGHTING MEASURE

Flash Point: -117℉ (-83℃) Closed Cup

Auto-Ignition Temperature: -778℉ (420℃)

LOWER EXPLOSIVE LIMIT (%): 1.8
UPPER EXPLOSIVE LIMIT (%): 8.4

FIRE AND EXPLOSION HAZARDS.
Isobutene is heavier than air and may travel a considerable distance to an ignition source.
Isobutene 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.

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Unusual Fire and Explosion Hazards: Be cautious of Boiling Liquid Evaporating Vapor Explosion, 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.

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6. ACCIDENTAL RELEASE MEASURES

Steps to be Taken in case Material is Released or Spilled

If the refrigerant is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Make certain the mixture is neutral, and then collect residue and place in a drum or other suitable container.
The preferred response is to leave the area and allow the refrigerant to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal method

It is recommended to discharge the refrigerant to the end, handing in the abandoned refrigerant o related department unified, dispose of the refrigerant in accordance with approved local, state, and federal requirements. Consult state environmental protection agency and/or federal EPA.

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7. HANDLING AND STORAGE

Storage: Do not place the refrigerant in sealed, unventilated areas, and near heating equipment and nor expose to direct sunlight for long periods. Elevated temperatures can result in the refrigerant to explosion;
The warehouse must be equipped with lightning protection equipment.
The ventilation system shall be provided with a grounding device for conducting static elimination.
The use of explosion-proof lighting, ventilation.
Prohibit the use of equipment and tools that generate sparks.
Storage area should be equipped with leakage emergency treatment
equipment Store in normal place (temperature: -20-30C, humidity: 40-80%).

Handing: Operators should be specially trained to strictly abide by the operating rules;
Operation Disposal should be carried out in locations with local ventilation or full ventilation.
Avoid eye and skin contact and avoid inhalation for individual protection measures.
Keep away from fire, heat, smoking in the workplace.
Use explosion-proof ventilation systems and equipment.
Filling should be controlled flow rate, and a grounding device to prevent the accumulation of

static electricity.
Avoid contact with oxidizing agents, halogen, etc.
Handling to light loading and unloading to prevent damage to packaging and containers.
Wash hands after use, prohibited in the workplace into the diet.
Equipped with the corresponding variety and quantity of fire equipment and leakage emergency treatment equipment.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: Investigate engineering techniques to reduce exposures use with adequate ventilation and recommended personal protective equipment.

Eye/Face protection: Use good industrial practice to avoid eye contact. Processing of this product releases vapors or fumes which may cause eye irritation. Where eye contact may be likely wear chemical goggles and have eye flushing equipment available

Skin protection: Minimize skin contamination by following good industrial hygiene practices. Wearing protective gloves is recommended. Wash hands and contaminated skin thoroughly after handling.

Respiratory protection: Avoid breathing dust and processing vapors. When adequate ventilation is not available, wear a NIOSH/MSHA respirator approved for protection against inorganic dusts.

Special clothing: Robber gloves.

Other Protective Equipment : Safety shoes worn with rubber or neoprene boots or steel-toed rubber or neoprene boots worn over socks. Place pants legs over boots to keep acid out of boots.

9. PHYSICAL and CHEMICAL PROPERTIES

BASIC PHYSICAL PROPERTIES

BOILING POINT: 10.9F -11.7C **MELTING POINT :** 255.3F -159.6C

VAPOR PRESSURE: (@70F) 45 Pisa **VAPOR DENSITY (25℃)g/cm³:** 2.06

SOLUBILITY (H20): Very slight **Odor:** A colorless, odorless gas.

10. STABILITY AND REACTIVITY

Stability: Stable.

Conditions to Avoid: Heating, Product will start to decompose at 815℉ (435C)

Hazardous Decomposition Products: Carbon Dioxide and Carbon monoxide if sufficient oxygen is present

Incompatible Materials: Oxidizers

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11. TOXICOLOGICAL INFORMATION

Isobutane compounds: No data is available;
Sulfuric Acid: LD50 oral rat: 50000 mg/kg;
LD50 inhalation: 8.53-12.16 mg/m3/2 hour/day,cont a month

Nerve activity first inhibition, late excitement, hemoglobin mild reduction in temperature regulation mild change. Pulmonary hemorrhage, mild liver and kidney protein degeneration

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12. ECOLOGICAL INFORMATION

Environmental : When promptly used or disposed the isobutane does not present environmental hazard. When disposed, keep away from water, rain and snow.

Ecotoxicity: Very toxic to aquatic life with long lasting effects. However, no ecological impacts expected under normal use conditions

Persistence and Degradability: N/A

Bioaccumulative potential: N/A

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13. DISPOSAL CONSIDERATIONS

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Waste Chemicals: 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

Contaminated packaging:Return the emptied container to the manufacturer.

Disposal considerations:Disposal should be preceded in accordance with approved local, state, and federal requirements. Consult state environmental protection agency and/or federal EPA.

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14. TRANSPORT/SHIPPING INFORMATION

The isobutane as defined by the United States Hazardous Materials Regulations in Title 49 Code of Federal Regulations Part 173.159a and by the Transport Canada Dangerous Goods Regulations Part 12.9(11)(a)(ii)(B).

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions (2012-2013 edition).
- The International Air Transport Association (IATA) Dangerous Goods Regulations (54th Edition, 2013)
- The International Maritime Dangerous Goods (IMDG) Code (2010 edition)
- The UN Recommendation on the Transport of Dangerous Goods,Reference the ICAO/IATA Packing Instruction # 1978.
- Our products are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to all the applicable international and national governmental regulations, not limited to the above mentioned.

Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and leakage emergency treatment equipment.Before shipment to the relevant departments to be approved. Carriers must be worn when transporting bottles.Cylinders are generally flat, and the bottle should be in the same direction, not cross; height shall not exceed the vehicle's fence panels, and with a triangular wood pad stuck to prevent rolling.Need to set unloading pump or compressor, and some tankers own unloading pump.Transport used in the tank (tank) car should be grounded chain, the slot can be set up to reduce the vibration of the diaphragm to produce static electricity.Do not mix with oxidants, edible chemicals, etc.Transport should be anti-exposure, rain, high temperature.Half-way stay should stay away from fire, heat, high temperature zone.The vehicle's exhaust pipe must be equipped with a flame-retardant device, which prohibits the use of mechanical equipment and tools that can generate sparks.Road transport according to the provisions of the route, do not stay in the residential areas and densely populated areas.

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15. REGULATORY INFORMATION

Law Information

Dangerous Goods Regulation
Recommendations on the Transport of Dangerous Goods Model
Regulations International Maritime Dangerous Goods
Classification and Code of Dangerous Goods
OSHA Hazard Communication Standard
Status Toxic Substances Control Act (TSCA)
Status California Propositon 65 Warning
Canadian Environmental Protection Act
Canadian Whmis (Workplace Hazardous Materials Information System) Classification

In accordance with all Federal, State and Local Laws.

16. OTHER INFORMATION

Revision Note

Issue Date	01-Dec-2016
Revision Note	Not applicable

Disclaimer: This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either express or implied) or guarantee is made to the accuracy It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

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For more information, please contact our sales representative.
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