Applicant	:	Shandong Yue'an New Materials Co., Ltd
Applicant's address	:	Isobutane at the intersection of Shanghai Road and Danyang Road in the Development Zone of Heze City, Shandong Province
chemical name		
Service Acceptance Date	:	November 28, 2023
Report writing date	:	November 28, 2023 to December 5, 2023
Regulatory requirements	:	According to customer requirements, this Material Safety Data Sheet is prepared in accordance with the 10th revised edition of the Global System of Classification and Labelling of Chemicals in 2023.

Part 1: Chemical names and manufacturer information

1.1 Chemical name		Isobutane
1.2 Chemical model	:	R600a
1.3 Main uses	:	Refrigerant
1.4 Manufacturer's name		Shandong Yue'an New Materials Co., Ltd
1.5 Manufacturer's address		Shanghai Road Danyang Intersection, Development Zone, Heze City, Shandong Province
1.6 Manufacturer's phone number	:	0530-5333890
1.7 Manufacturer's fax	:	0530-5966185
1.8 Manufacturer's email	:	/
1.9 Emergency Call	:	0530-5725928

Part 2: Hazard Information

2.1 Hazard category:

According to the eighth revised version of the Globally Harmonized System of Classification and Labelling of Chemicals (Parts 2-4), the hazard classification is classified as

flammable gas category 1

Pressure gas Compressed gas

2.2 Pictogram:

2.3 Warning message:

danger

2.4 Hazard Statement

H220 highly flammable gas
H280 contains high-pressure gas; May explode when exposed to heat

2.5 Prevention instructions:

P210 Keep away from heat sources/sparks/open flames/hot surfaces. No Smoking.

2.6 Prevention instructions:

Do not operate without receiving specialized guidance and understanding all safety measures. Stay away from heat sources, sparks, open flames, and hot surfaces. No Smoking.

Keep the container sealed.

Take measures to prevent static electricity, grounding and connecting containers and receiving equipment. When using explosion-proof electrical appliances, ventilation, lighting and other equipment, only tools that do not generate sparks should be used. Use personal protective equipment as required. avoid

Avoid contact with eyes and skin, inhalation of vapor or spray, and ingestion. Wash thoroughly after operation. Eating, drinking water, or smoking are not allowed at the operation site.

2.7 Other hazards

PBT and vPvB: None

Part 3: Composition Information

Composition

Material component name	Concentration (%)	CAS No.
Isobutane	100	75-28-5

Part 4: First aid measures

General recommendation: First aid measures are usually necessary, please present this SDS to the doctor who arrived at the scene.

4.1 Inhalation:

If feeling unwell, transfer the injured person to an area with good air circulation and seek medical attention immediately.

4.2 Skin contact:

Immediately remove contaminated clothing. Rinse the skin with plenty of water for at least 15 minutes. If you feel unwell, seek medical attention.

4.3 Eye contact:

If it enters the eyes, rinse with water carefully for at least 15 minutes. If your eyes are injured, seek medical attention immediately.

4.4 Ingestion:

If swallowed by mistake, seek medical attention immediately.

Part 5: Fire Protection Measures

5.1 Hazardous characteristics:

Flammable gas.

Can form explosive mixtures with air.
Containers exposed to fire may leak their contents through [redacted] thereby increasing the concentration of fire and/or vapor. Vapour may move to the ignition source and flash back.

5.2 Fire extinguishing agent type:

Dry powder, chemical foam, carbon dioxide, water mist

5.3 Fire safety measures:

When extinguishing a fire, a breathing mask (compliant with MSHA/NIosh requirements or equivalent) should be worn and full body protective clothing should be worn. Extinguish the fire at a safe distance with sufficient protection.
Firefighters must wear gas masks and full body firefighting suits, and extinguish fires upwind. Try to move the container from the fire to an open area as much as possible.
Spray water to keep the fire container cool until the fire is extinguished.
If containers in a fire suddenly make abnormal sounds or exhibit abnormal phenomena, they should be evacuated immediately. Isolate the accident scene and prohibit unrelated personnel from entering.

5.4 Harmful combustion products:

carbon monoxide

Part 6: Emergency Response for Leakage

6.1 Personal Protection:

Wear appropriate protective measures and refer to (Part 8) to prevent vapor accumulation reaching explosive concentrations.
Ensure adequate ventilation.
Remove all ignition sources.

Quickly evacuate personnel to a safe area, away from the leakage area and in an upwind direction.

东莞市万江区新和社区创业工业园盛丰路1号8楼
电话：400-877-6107 网址：www.nbtszg.com
传真：0769-22777508 邮箱：newbest@nbtscn.com

6.2 Environmental prevention measures:

Collect leaked materials to avoid polluting the environment.
Prevent leakage from entering water bodies, sewers, basements, or restricted spaces.

6.3 Cleaning method:

Eliminate all ignition sources.
Draw a warning zone based on the impact area of the gas, and evacuate unrelated personnel from crosswind and upwind to a safe area. It is recommended that emergency personnel wear positive pressure self-contained breathing apparatus and anti-static clothing.
Wear anti-static and cold clothing when liquefied gas leaks. All equipment used during homework should be grounded.
Do not come into contact or cross over leaked materials. Cut off the source of leakage as much as possible.

If possible, flip the container to allow it to escape gas instead of liquid.
Spray like water suppresses vapor or changes the flow direction of vapor cloud to avoid water flow contacting leakage. It is prohibited to use water to directly impact the leaked material or source of leakage.
Prevent gas diffusion through sewers, ventilation systems, and restricted spaces. Isolate the leakage area until the gas has dissipated.

Part 7: Operation, Disposal and Storage

7.1 Handling precautions:

Operators should receive specialized training and strictly adhere to operating procedures.
The operation and disposal should be carried out in places with local ventilation or comprehensive ventilation facilities. Avoid contact with eyes and skin, and avoid inhalation.

Individual protective measures refer to Section 8.
Stay away from sparks and heat sources, and smoking is strictly prohibited in the workplace. Use explosion-proof ventilation systems and equipment.
When filling, the flow rate should be controlled and there should be a grounding device to prevent static electricity accumulation.
Avoid contact with oxidants, halogens, and other prohibited substances (please refer to Part 10 for prohibited substances).
When handling, it is important to load and unload with care to prevent damage to the packaging and containers.

Wash hands after use and prohibit eating in the workplace.

Equip corresponding types and quantities of fire-fighting equipment and emergency response equipment for leaks.

7.2 Storage precautions:

Store in a cool and ventilated warehouse. The storage temperature should not exceed 30 ℃.

It should be stored separately from oxidants, halogens, etc., and should not be stored together (please refer to Part 10 for prohibited substances). Keep the container sealed. Stay away from sparks and heat sources. The warehouse must be equipped with lightning protection equipment. The exhaust system should be equipped with a grounding device for conducting and removing static electricity.

Adopting explosion-proof lighting and ventilation facilities. Prohibit the use of equipment and tools that are prone to generating sparks. The storage area should be equipped with emergency response equipment for leaks.

Part 8: Exposure Control and Personal Protective Measures

8.1 Occupational exposure limit:

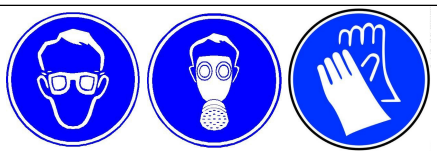
material	Country/Region	Occupational exposure limit (8h)		Occupational exposure limit (short-term)	
		ppm	mg/m ³	ppm	mg/m ³
Isobutane	German AGS	1000	1800	/	/

8.2 Engineering control:

Maintain material sealing and indoor ventilation during the production process. Use local exhaust and ventilation under reasonable and feasible conditions. If ventilation cannot keep the concentration of particles and solvent vapors in the environment below the occupational exposure limit, appropriate respirators should be worn.

Ensure that there are eye wash and shower facilities near the workplace.

8.3 Personal protection

General requirements:	
Respiratory protection:	If the vapor concentration exceeds the occupational exposure limit or if symptoms such as irritation occur, please use a full face multifunctional mask Gas mask (US) or AXBEK type (EN 14387) gas mask cylinder.
Eye protection:	Wear chemical goggles (compliant with EU EN 166 or US NIOSH standards).

Hand protection:	Wear antifreeze gloves.
Skin and body protection:	Wear anti-static clothing

8.4 Hygiene measures:

Smoking, eating, and washing hands after operating or using this product are prohibited in the work area.

Part 9: Physical and Chemical Properties

Appearance, Appearance, and Color	Colorless gas
smell	Odorless
PH value	neutral
Flammability	inflammable
Relative density (g/cm ³)	No data available
Relative vapor density (g/L)	two point zero one
Vapour pressure (KPa)	304(20℃)
Octanol/water partition coefficient	No data available
Viscosity (m ²/s)	Not applicable
Flash point (℃, closed cup)	-82.8
Boiling point (℃)	-12
Melting point/freezing point (℃)	-160
Evaporation rate (kg/s)	No data available
Lower explosive limit% (V/V)	one point four
Explosion limit% (V/V)	eight point five
Autoignition temperature (℃)	four hundred and fifty
Decomposition temperature (℃)	No data available
Solubility	Insoluble in water

东莞市万江区新和社区创业工业园盛丰路1号8楼

电话：400-877-6107 网址：www.nbtszg.com

传真：0769-22777508 邮箱：newbest@nbtscn.com

Part 10: Stability and Reactivity

10.1 Stability:

Stable under specified storage and operating conditions (refer to Section 7).

10.2 Substances to avoid:

There is a risk of fire and explosion when reacting with strong oxidizing agents. Strong oxidants, strong acids, strong bases, halogens, etc.

10.3 Conditions to avoid:

Heat source, high temperature, open flame.

10.4 Dangerous decomposition products

Under normal storage and usage conditions, no hazardous decomposition products will be generated.

Part 11: Toxicological Information

11.1 Acute toxicity:

When mice inhale 50000mg/m3, there is no toxic reaction.

11.2 Skin corrosion/irritation:

According to existing data, it does not meet the classification criteria.

11.3 Serious eye injury/irritation:

According to existing data, it does not meet the classification criteria.

11.4 Respiratory or skin allergic effects:

According to existing data, it does not meet the classification criteria.

11.5 Germ cell mutagenicity:

According to existing data, it does not meet the classification criteria.

11.6 Carcinogenicity:

According to existing data, it does not meet the classification criteria.

11.7 Reproductive toxicity:

东莞市万江区新和社区创业工业园盛丰路1号8楼

电话：400-877-6107 网址：www.nbtszg.com

传真：0769-22777508 邮箱：newbest@nbtscn.com

According to existing data, it does not meet the classification criteria.

11.8 Organ toxicity - single exposure:

According to existing data, it does not meet the classification criteria.

11.9 Organ toxicity - repeated exposure:

According to existing data, it does not meet the classification criteria.

11.10 Inhalable hazardous substances:

According to existing data, it does not meet the classification criteria.

Part 12: Ecological Information

12.1 Toxicity:

No relevant information available

12.2 Persistence and degradability:

In the air, when the concentration of light radical free radicals is 5.00x105/cm3, the degradation half-life is 6.9 days (theoretical).

12.3 Bioaccumulation potential:

No relevant information available

12.4 Liquidity in soil

No relevant information available

12.4 Other hazards:

No relevant information available

Part 13: Disposal

13.1 Waste disposal methods:

Try to recycle as much as possible. If recycling is not possible, use an exhaust fan to discharge the residual exhaust gas or gas from the leakage of the steel cylinder into an empty area. In case of fire, appropriate gas nozzles should be installed to burn it off.

This product cannot be directly discharged into the atmosphere, let alone into densely populated areas.

13.2 Unclean packaging treatment

Return the empty container to the manufacturer.
After the packaging is emptied, there may still be residual hazards, and it should be kept away from heat and fire sources. If possible, it should be returned to the supplier for recycling.

13.3 Disposal precautions

Before disposal, relevant national and local regulations should be consulted. Please refer to Part 8 for safety precautions for personnel handling.

Part 14: Transportation Information

Packaging identification	
UN number	1969
Correct shipping name	Isobutane
Main hazard categories	T2.1
Secondary hazard categories	nothing
Packaging Group	Not applicable
Marine pollutants	no

Transportation precautions: The railway transportation time limit for this product is to use a pressure resistant liquefied gas enterprise's own tank truck for transportation. Approval from relevant departments is required before shipment. When using steel cylinders for transportation, it is necessary to wear the safety helmet on the cylinder. Steel cylinders are generally placed flat, with the bottle mouth facing in the same direction and not crossed; The height shall not exceed the protective fence of the vehicle and shall be securely secured with triangular wooden pads to prevent rolling. Transport vehicles should be equipped with corresponding types and quantities of fire-fighting equipment during transportation. The exhaust pipe of the vehicle carrying this item must be equipped with a flame retardant device, and the use of mechanical equipment and tools that are prone to generating sparks for loading and unloading is prohibited. It is strictly prohibited to mix and transport with strong oxidants, strong acids, strong bases, halogens, etc. Transport in the morning and evening during summer to prevent direct sunlight exposure. When stopping midway, stay away from sparks and heat sources. During road transportation, it is necessary to follow the prescribed route and not stay in residential areas or densely populated areas. Sliding is prohibited during railway transportation.

Part 15: Regulatory Information

15.1 Safety, health, and environmental regulations/laws for corresponding pure substances or mixtures

Catalogue of Hazardous Chemicals (2015 Edition)
Catalog number: 2707

CAS No.: 75-28-5

Name: Isobutane

15.2 Chemical substance safety evaluation

Chemical safety assessment has not yet been conducted

Part 16: Other Information

The information in this chemical safety technical manual is obtained from sources we believe to be reliable. However, we make no express or implied warranties regarding the data provided. The handling, storage, use, or disposal of this product is beyond our control and may exceed our knowledge. Under no circumstances shall we bear any losses, damages, or related expenses caused by improper handling, storage, use, or disposal of this chemical. This chemical safety technical manual is fabricated based on this product and can only be applied to this product.

**********Report completed**********

东莞市万江区新和社区创业工业园盛丰路1号8楼

电话: 400-877-6707 网址: www.nbtszg.com

传真: 0769-22307508 邮箱: newbest@nbtscom.com