Chemical Safety Technical Data Sheet

Product name: 2-benzylamine	Compiled in accordance with GB/T 16483, GB/T 17519, and GB/T 15258
Revision date: 24 November 2025	Initial date of preparation: 20 March 2021
Version: 1.3	

PART 1 IDENTIFICATION OF CHEMICALS AND ENTERPRISES

1.1 Chemicals Labeling

Chinese name: 2-benzylamine

English name: Dibenzylamine

CAS number: 103-49-1

Molecular formula: C14H15N

Molecular weight: 198.28

Chemical Abstracts Service registration number: 103-49-1

1.2 Corporate logo:

Company Name: Shandong Yuexing Chemical Co., Ltd.

Company Address: No.1 Yuexing Road, Chengwu County Chemical Industry Park, Heze City, Shandong Province

Postal code: 274200

Fax: 0530-7386518

Tel: 0530-8851518

Email address: sales@yuexingchem.com

For more information, please contact the Product Safety Department.

1.3 Emergency Consultation Hotline

Emergency contact: 15550157555

1.4 Recommended and Restricted Uses of Chemicals

The product is an intermediate of the drug Jiangshuling, and also used in other organic synthesis.

PART 2 SUMMARY OF HAZARDS

2.1 Overview of emergency situations:

Ingestion is harmful. It causes severe skin burns and eye injuries.

2.2 Risk Classification:

Corrosive substances (category 1B)

Acute toxicity-oral (category 4)

Acute toxicity-skin (category 5)

Long-term harm to aquatic environment (category 2)

2.3 Signal words:

danger

2.4 Pictograms:

2.5 Risk Description:

H302 Swallowing is harmful

H313 Contact with skin may be harmful

H314 causes severe skin burns and eye injuries

H411 is toxic to aquatic organisms and may cause long-term adverse effects

2.5 Prevention instructions:

preventive measure ：

Clean the skin thoroughly after P264 operation

Do not eat, drink, or smoke while using P270

P273 Avoid release into the environment

Wear protective gloves, protective clothing, goggles or face masks.

Response to an incident:

P301+P312 If you feel unwell after swallowing: Call the poison control center or seek medical attention immediately

P301+P330+P331 If swallowing: rinse mouth, do not induce vomiting

P303+P361+P353 If skin (or hair) contact: Remove all contaminated clothing immediately and wash skin with water or shower

P304+P340 If inhaled: Move the victim to a fresh air area and keep the victim in a comfortable position to rest.

P305+P351+P338+P310 If in contact with eyes: Rinse gently with water for several minutes. If wearing contact lenses and can easily remove them, remove the lenses and continue rinsing. Call the poison control center or a doctor immediately.

P363 Dirty clothes must be washed before reuse

P391 Collect the spill.

safe storage ：

The P405 storage area must be locked

Store P403+P233 in a cool, well-ventilated warehouse and keep containers tightly sealed.

P406 should be stored separately from oxidants, acidic substances, acidic chlorides and anhydrides.

Disposal:

P501 takes the contents/containers to an approved waste treatment plant.

2.6 Other Risks:

This product may decompose into toxic amine gases when heated, and may cause hazards when reacting with strong oxidizers or acids.

Part 3: Composition/Composition Information

component	Concentration or concentration range (mass fraction,%)	CAS No.
Dibenzylamine	100%	103-49-1

Part 4: First Aid Measures

4.1 Inhalation

Move the person to fresh air and keep the airway clear. If breathing is difficult, give oxygen. If breathing stops, perform artificial respiration and call the poison control center or seek medical attention immediately.

4.2 Skin contact

Immediately remove all contaminated clothing and wash the skin with running water for at least 15 minutes. If you experience symptoms such as burning, redness, or pain, seek medical attention immediately. Avoid rubbing the affected area.

4.3 Eye Contact

Immediately lift the eyelid and rinse thoroughly with running water or saline for at least 15 minutes, continuously rotating the eyeball. If wearing contact lenses that can be easily removed, remove them immediately and continue rinsing. Call the poison control center or seek medical attention immediately after rinsing.

4.4 INGESTION

Do not induce vomiting. Rinse the mouth immediately and drink plenty of warm water to dilute the substance. If the patient is conscious and not vomiting, they may drink 1-2 cups of warm water. Immediately carry the product label or safety data sheet, call the poison control center or seek medical attention.

4.5 First Aid Precautions:

Emergency responders should wear appropriate personal protective equipment to avoid direct contact with patient contaminants. When seeking medical care, inform the doctor of the product's components and exposure methods to facilitate targeted treatment.

Part 5: Fire Safety Measures

5.1 Hazard Characteristics

This product is highly flammable with a flash point of approximately 120°C (closed cup). It may ignite when heated or exposed to open flames. Contact with strong oxidizers or acids may cause violent reactions, potentially leading to combustion or explosion. During combustion, toxic fumes such as carbon monoxide and nitrogen oxides may be produced.

5.2 Fire extinguishing media

Use mist water, fire-resistant foam, dry powder, or carbon dioxide to extinguish the fire. Avoid direct water spray on the leak to prevent splashing and potential harm.

5.3 Firefighter Protection

Firefighters must wear air respirators and full-body fireproof and gas-proof suits, and extinguish the fire from the upwind direction. When extinguishing the fire, they should move the containers to an open area as much as possible. If the containers in the fire scene have changed color or made abnormal sounds, they should evacuate immediately.

5.4 Fire Extinguishing Precautions

After the fire, the waste water produced by the fire should be properly treated to avoid flowing into the sewer, river and other environment, so as to prevent environmental pollution.

Part 6: Emergency Response to Leaks

6.1 Personal Protective Measures

Immediately isolate the contaminated area, set up warning signs, and prohibit unauthorized personnel from entering. Emergency responders must wear positive pressure air respirators, corrosion-resistant protective suits, and chemical-resistant gloves.

6.2 Environmental Protection Measures

Cut off the leakage source to prevent the leaked substance from entering sewers, drainage ditches, rivers, or soil. If the leaked substance has already entered water bodies or soil, immediately notify the environmental protection department and take appropriate environmental remediation measures.

6.3 Methods for handling leaks

Small leaks: absorb with dry sand, vermiculite or other inert material, collect in a closed container, label and dispose as hazardous waste.

For large-scale leaks, construct dikes or pits for containment, and use explosion-proof pumps to transfer the leaked material to dedicated collection containers, avoiding mixing with oxidizers, acids, or similar substances. The collected material must be disposed of by qualified entities in compliance with local regulations.

Part 7: Handling and Storage

7.1 Precautions for Operation and Disposal

The operation should be performed in a well-ventilated fume hood or open environment to avoid inhaling vapors or droplets. Operators must be professionally trained and familiar with the product's hazards and safe handling procedures. Protective equipment including goggles, chemical-resistant gloves, and protective clothing must be worn during operation to prevent direct contact with skin and eyes.

Do not smoke, eat or drink on the operation site. Avoid using mechanical equipment and tools that may produce sparks. Handle with care to prevent container damage and leakage. After operation, wash hands and exposed skin thoroughly and wash clothes before wearing again.

7.2 Storage Precautions

Store in a cool, dry, and well-ventilated warehouse with temperature not exceeding 30°C and relative humidity not exceeding 80%. Keep the container sealed by tightening the lid.

Store separately from oxidizers (e.g., potassium permanganate, chlorates), acids (e.g., sulfuric acid, hydrochloric acid), acidic chlorides, and anhydrides, maintaining a minimum distance of 1 meter. Strictly prohibit mixed storage or transportation. The warehouse must be equipped with appropriate emergency response devices and firefighting equipment (e.g., dry powder fire extinguishers, carbon dioxide fire extinguishers).

The storage area should be marked with clear warning signs for 'corrosive materials', 'flammable materials', and 'environmental hazards'. The warehouse must be locked, managed by designated personnel, and a system for registering entry and exit should be established.

PART 8 CONTACT CONTROL/INDIVIDUAL PROTECTION

8.1 Contact Control

Occupational exposure limits:

Component name	CAS	Standard source	type	standard value	remarks
Dibenzylamine	103-49-1	GBZ 2.1——2007	MAC	-	Not specified
			PC-TWA	-	
			PC-STEL	-	

biological limitation

non-avaible

monitoring method

GBZ/T 160.1 ~ GBZ/T 160.81-2004 Determination of toxic substances in air in the workplace (series of standards), EN 14042 Air in the workplace Procedure guidelines for the assessment of exposure to chemical or biological reagents

engineering control ：

Workplaces should be separated from other areas. Conduct operations in enclosed spaces to prevent leaks. Ensure proper ventilation. Install automatic alarm systems and emergency ventilation facilities. Provide emergency evacuation routes and designated safety zones. Mark red warning lines, warning signs, and Chinese warning instructions, and install communication alarm systems. Provide safety shower facilities and eye-wash stations.

8.2 Personal Protective Equipment

Respiratory protection: When the concentration of vapor in the air is high, wear a self-suction filtering gas mask (half mask) with a corresponding filter cartridge; in emergency rescue or evacuation, wear a positive pressure air respirator.

Eye protection: Wear chemical safety goggles and a face mask if necessary.

Skin protection: Wear chemical-resistant protective clothing (e.g. nitrile rubber) and chemical-resistant gloves (e.g. nitrile gloves) and avoid direct skin contact.

Other protections: Eye wash stations and spray devices are provided at the site for emergency use; emergency kits containing first aid medicines (e.g. burn ointment) are provided; and staff are given regular occupational health examinations.

Part 9: Physical and Chemical Properties

Appearance and characteristics: colorless to pale yellow liquid

Odor: ammonia

pH: 10.6

Melting point/boiling point (°C): –26°C (lit.)

Boiling point, initial boiling point, and boiling range (°C): 300°C (lit.)

Autoflame temperature (°C): 425°C

Flash point (°C): 150°C (liter)

Decomposition temperature (°C):>150°C

explosive limit [% (vol. fraction)]: no data

evaporation rate [acetate (n-butyl) ester, 1]: no data

Saturated vapor pressure (kPa):0.00115mmHg at 25°C

Flammability (solid, gas): no data

Relative density (water as 1):1.026 g/mL at 25°C (lit.)

Vapor density (air at 1): no data

Olfactory threshold (mg/m3): no data

n-octanol/water partition coefficient (lg P): no data

Solubility: Water solubility: 0.05 g/L (20 °C).

Viscosity: no data

Part 10 Stability and Reactivity

10.1 stability

Under normal storage and operation conditions, the chemical properties of this product are stable and it is not easy to decompose.

10.2 Incompatible compounds

Strong oxidizing agents (e.g. potassium permanganate, hydrogen peroxide, chlorate, etc.), acids (e.g. sulfuric acid, hydrochloric acid, nitric acid, etc.), acid chlorides (e.g. chloroacids, etc.), and anhydrides (e.g. acetic anhydride, etc.).

10.3 Conditions for avoiding contact

High temperature, open flame, direct sunlight, and humidity (stable, but sealed to prevent moisture absorption affecting purity).

10.4 Hazards of Polymerization

Do not aggregate.

10.5 Decomposition products

When heated or burned, it may decompose to produce toxic gases such as carbon monoxide, carbon dioxide, nitrogen oxides (e.g., NO, NO_2), and amines.

Part 11 Toxicological Information

11.1 Acute toxicity

Oral toxicity: The oral LD_{50} in rats is approximately 300-500 mg/kg (reference value), classified as acute toxicity (oral route, category 4).

Skin toxicity: The percutaneous LD_{50} in rabbits was>2000 mg/kg (reference value), which belongs to the acute toxicity-skin category 5. The percutaneous irritation test in rabbits showed that it could cause severe skin burns, which belongs to the skin corrosion category 1B.

Inhalation toxicity: No established LC_{50} data for rats, but its vapor is known to irritate the respiratory tract.

11.2 Stimulants

Eye irritation: The rabbit eye irritation test showed that direct contact could cause serious eye injury, which belongs to the category of eye corrosion 1B.

Skin irritation: As mentioned earlier, it can cause severe skin burns and irritation.

11.3 Other toxicological information

No data on carcinogenicity, teratogenicity or reproductive toxicity are available.

Part 12: Ecological Information

12.1 Toxicity to aquatic organisms

It is highly toxic to aquatic organisms and may cause long-term adverse effects in aquatic environments. This product contains the following environmentally hazardous substances.

组分	淡水鱼	水蚤	淡水藻	细菌毒性
二苄胺	LC50 = 21.4 mg/L, 96h (Danio rerio)	EC50 = 9.7 mg/L, 48h (Daphnia magna)	EC50 = 18.8 mg/L, 72h NOEC = 0.1 mg/L (Desmodesmus subspicatus)	EC50 = 171 mg/L, 30 min

12.2 Biodegradability

It is not easily biodegradable. It is insoluble in water and cannot be persistent.

Component	降解性
二苄胺 103-49-1 (>95)	3% (28d)

12.3 Bioaccumulation

The octanol/water partition coefficient (log KOW) is approximately 3.5 (a reference value), indicating moderate bioaccumulation potential with moderate accumulation capacity.

12.4 Environmental Mobility

This product is slightly soluble in water and readily soluble in organic solvents. After leakage, it may spread on the soil surface or seep into groundwater through the soil, causing groundwater pollution.

Part 13: Disposal of Waste

13.1 Methods for disposing of waste

This product and its container must be disposed of as hazardous waste. Random disposal, burial, or discharge into water bodies is strictly prohibited. Prior to disposal, comply with national and local regulations and entrust qualified hazardous waste disposal units to conduct incineration or chemical treatment.

During incineration, ensure sufficient temperature (≥1000℃) and install exhaust gas treatment systems to remove toxic gases like nitrogen oxides, preventing secondary pollution.

12.3 Waste Disposal Matters

The disposal personnel must wear positive pressure air respirators, corrosion-resistant protective clothing and gloves, and strictly comply with the hazardous waste disposal operation procedures. The disposal process should be properly recorded for environmental protection department inspection.

Part 14: Transportation Information

14.1 United Nations Code for Dangerous Goods (UN Code)

UN2735

14.2 United Nations Transport Names

Road and rail transport Amine or polyamine, liquid, corrosive, no other description (dibenzylamine)

Road and rail transport Amine or polyamine, liquid, corrosive, no other description (dibenzylamine)

AMINES, LIQUID，CORROSIVE LIQUID, N.O.S.（Dibenzylamine）

IMDG/IMO, IATA amine or polyamine, liquid, corrosive, no other remarks (dibenzylamine)

IMDG/IMO, IATA amine or polyamine, liquid, corrosive, no other remarks (dibenzylamine)

AMINES, LIQUID，CORROSIVE LIQUID, N.O.S.（Dibenzylamine）

14.3 United Nations Classification of Hazardous Materials

Category 8

14.4 Packaging Categories

Class II packaging

14.5 Packaging Methods

The product is packed in corrosion-resistant plastic or iron drums with a tight seal, and the net content of each drum does not exceed 200L. The outer packaging is a wooden box or pallet with an anti-shock lining to prevent damage during transportation.

14.6 Marine pollutants (Yes/No)

deny

14.7 Transportation Precautions

1. Transport vehicles must hold a hazardous materials transportation license, with drivers and escorts trained and certified; 2. Vehicles shall be equipped with firefighting equipment and spill response devices, displaying "Corrosive Materials" warning signs and "Upward" markings; 3. During transport, avoid direct sunlight, rain, and high temperatures, and strictly prohibit mixing with oxidizers or acids; 4. Regularly inspect packaging containers for leaks or damage during transit, addressing issues promptly; 5. Avoid routes through residential areas, water sources, bridges, tunnels, and other sensitive zones, and strictly avoid restricted areas; 6. Handle loading/unloading with care, avoiding spark-producing tools, and ensure personnel wear appropriate protective gear.

Part 15: Regulatory Information

The following laws, regulations, rules and standards provide corresponding provisions for the management of this chemical:

Component Dibenzylamine CAS: 103-49-1

15.1 Law of the People's Republic of China on the Prevention of Occupational Diseases

Catalogue of occupational hazards (2015): Not included

15.2 Regulations on the Safety Management of Hazardous Chemicals

Catalog of Hazardous Chemicals (2022): Not listed

List of Explosive-Prone Hazardous Chemicals (2017): Not included

15.3 List of Hazardous Chemicals Subject to Special Supervision

List of the first and second batches of key regulated hazardous chemicals: Not included

15.4 Measures for the Registration of Hazardous Chemicals Environmental Management (Trial)

List of hazardous chemicals under priority environmental management: Not listed

15.5 Regulations on the Administration of Narcotic Drugs and Psychotropic Substances

List of narcotic drugs: Not listed

List of psychotropic substances: Not listed

15.6 New Environmental Management Measures for Chemical Substances

China's current list of chemical substances (2013): included

Part 16 Other Information

16.1 Writing and revising information

1. Date of preparation: [20 March 2021]

2. Revision date: [24 November 2025]

3. Preparation unit: [Shandong Yuexing Chemical Co., Ltd.]

4. Data sources: The SDS data in this section is sourced from public chemical databases and corporate measurement data, with some reference values requiring verification based on actual product conditions.

5. Disclaimer: This Safety Data Sheet (SDS) is prepared based on available information and is intended to provide guidance on the safe use, storage, and transportation of this product. Given the variability in usage conditions and environments, the preparation unit does not guarantee the absolute accuracy or applicability of the SDS information. Users should conduct risk assessments based on actual conditions and implement appropriate safety measures.

16.2 References

[1] International Programme on Chemical Safety: International Chemical Safety Card (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home.

[2] International Agency for Research on Cancer, http://www.iarc.fr/.

[3] OECD Global Chemical Information Platform, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en.

[4] CAMEO Chemical Substance Database, USA, http://cameochemicals.noaa.gov/search/simple.

[5] American Medical Library: Chemical Identification Database, http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp.

[6] U.S. Environmental Protection Agency: Integrated Hazard Information System, website: http://cfpub.epa.gov/iris/.

[7] U.S. Department of Transportation: Emergency Response Guide, website: http://www.phmsa.dot.gov/hazmat/library/erg.

[8] German GESTIS-hazardous substances database, website: http://gestis-en.itrust.de/.

Abbreviations and acronyms

MAC (Maximum Allowable Concentration) refers to the maximum permissible concentration of toxic chemicals at a workplace, within a single working day, and at any given time.

PC-TWA (Time-Weighted Average Permissible Concentration) refers to the average permissible exposure concentration over an 8-hour workday and a 40-hour workweek, with time as the weighting factor.

PC-STEL (Permissible Concentration for Short-term Exposure) refers to the concentration level that permits short-term exposure (15 minutes) while complying with the PC-TWA (Permissible Concentration for Time-weighted Average Exposure).