Material Safety Data Sheet

Di-N-Butylamine

Revision Date *13-Jan-2011*

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name	**Di-N-Butylamine**
Synonyms	Dibutylamine
Use of the Substance/Preparation	Chemical intermediate
Company/Undertaking Identification	**Taminco, Inc.** Two Windsor Plaza, Suite 411 7540 Windsor Drive Allentown, PA 18195 (800) 223-3258
Emergency telephone number	In case of emergency call CHEMTREC 1-800-424-9300 703-527-3887 (International Calls), 02-8014-4880 (Australia local calls)

2. HAZARDS IDENTIFICATION

Appearance

Clear, Colorless liquid; Ammoniacal odor

Emergency Overview

- DANGER!
- Flammable liquid and vapor
- Corrosive
- Causes skin and eye burns
- May cause blindness
- Harmful by inhalation, in contact with skin and if swallowed
- Inhalation may cause severe mucous membrane and respiratory irritation, shortness of breath and pulmonary edema
- The substance is identified as a hazardous chemical according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Principal Routes of Exposure

- Inhalation
- Skin contact
- Eye contact

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %
Di-n-butylamine	111-92-2	100

4. FIRST AID MEASURES

Ingestion

- Never give anything by mouth to an unconscious person
- Do not induce vomiting without medical advice
- If victim is conscious
- Rinse mouth
- drink 1 or 2 glasses of water
- Prevent aspiration of vomit, if possible
- Immediate medical attention is required

Skin Contact

- Immediately flush skin with running water for 20 minutes or until no traces remain. Wash with soap and water. Remove contaminated clothing immediately.
- Seek immediate medical attention/advice

Eye Contact

- Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 30 minutes.
- Immediate medical attention is required

Inhalation

- Move to fresh air
- Do not give mouth-to-mouth
- If breathing is difficult, give oxygen
- If breathing is irregular or stopped, administer artificial respiration
- Consult a physician after significant exposure
- Symptoms may be delayed

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

- Alcohol-resistant foam
- water spray
- carbon dioxide (CO2)
- dry chemical

Specific methods

- In case of fire, stop leak if safe to do so
- Evacuate area and fight fire from a safe distance
- Use only non-sparking tools
- Keep people away from and upwind of spill/leak
- Suppress (knock down) gases/vapors/mists with a water spray jet
- In the event of fire, cool tanks with water spray
- Do not allow run-off from fire fighting to enter drains or water courses

Special protective equipment for fire-fighters

- Firefighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent)

Specific hazards

- Flammable
- Eliminate all ignition sources if safe to do so
- Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind
- Pay attention to flashback
- Fire or intense heat may cause violent rupture of packages
- In case of fire hazardous decomposition products may be produced such as
- Nitrogen oxides (NOx)
- Ammonia
- Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

- Avoid contact with skin, eyes and clothing
- In case of inadequate ventilation wear respiratory protection
- Remove all sources of ignition
- Evacuate personnel to safe areas
- Keep people away from and upwind of spill/leak
- Take precautionary measures against static discharges
- Pay attention to flashback
- Suppress (knock down) gases/vapours/mists with a water spray jet
- Do not use sparking tools

Environmental Precautions

- Should not be released into the environment
- Prevent product from entering drains

Methods for Clean-up

- Use only non-sparking tools
- Large spills should be collected mechanically (remove by pumping) for disposal
- Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container
- Keep in suitable, closed containers for disposal
- Dispose of as special waste in compliance with local and national regulations

7. HANDLING AND STORAGE

Storage

Technical measures/Precautions

- In accordance with local and national regulations
- Keep containers tightly closed in a dry, cool and well-ventilated place
- Keep away from open flames, hot surfaces and sources of ignition
- Protect containers from physical damage
- To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded

Incompatible products

- Materials to avoid
- Oxidizing agents
- Mineral acid
- organic acids
- Peroxides
- Do not use sodium nitrite or other nitro sating agents in product

Handling

Technical measures/Precautions

- In accordance with local and national regulations
- Use only in area provided with appropriate exhaust ventilation
- Ensure that eyewash stations and safety showers are close to the workstation location

Safe handling advice

- Wear personal protective equipment
- Ensure adequate ventilation
- In case of insufficient ventilation, wear suitable respiratory equipment
- Do not breathe vapors or spray mist
- Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors)
- Ground and bond containers when transferring material
- Do not use sodium nitrite or other nitro sating agents in product
- Empty containers retain product residue and may be hazardous
- Wash thoroughly after handling

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL
Di-n-butylamine	Not listed	None Established

Respiratory Protection

- In accordance with local and national regulations
- Use only in area provided with appropriate exhaust ventilation
- Avoid breathing dust/fume/gas/mist/vapors/spray
- In case of insufficient ventilation, wear suitable respiratory equipment
- a respirator with filter for organic vapor
- In case of higher concentration
- wear a positive-pressure supplied-air respirator with full facepiece
- The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace

Engineering measures

- Local exhaust
- Use explosion-proof equipment

Personal Protective Equipment

Eye Protection

- Face-shield
- Chemical resistant goggles must be worn
- Ensure that eyewash stations and safety showers are close to the workstation location

Hand protection

- Impervious gloves
- Solvent-resistant gloves
- Request information on glove permeation properties from the glove supplier

Skin Protection

- Solvent-resistant apron and boots
- Wash contaminated clothing before re-use
- Choose body protection according to the amount and concentration of the dangerous substance at the work place

Environmental exposure controls

- Prevent product from entering drains
- Do not contaminate surface water
- Avoid subsoil penetration

9. PHYSICAL AND CHEMICAL PROPERTIES

General Information

Physical State	Liquid
Color	Colorless
Odor	Ammoniacal

Important Health Safety and Environmental Information

Boiling Point/Range	160°C 320°F
Flash Point	40.5°C 105°F
Viscosity	0.85 mPas @ 20°C
Vapor Pressure	2.2 hPa @ 20 °C
Vapor Density	4.5 (Air =1.0)
Partition Coefficient (n-octanol/water)	log Pow 2.06 @ 25°C
pH	> 12.5
Water solubility	3.8 g/l @ 20°C
Oxidizing Properties	none
Melting Point/Range	-60 - -59°C -76 - -74°F
Density	0.7577g/cm3 @ 22.9 °C
Flammability	flammable The substance or mixture is not classified as pyrophoric
Autoignition Temperature	255°C

10. STABILITY AND REACTIVITY

Stability

- Stable under recommended storage conditions

Conditions to Avoid

- Keep away from open flames, hot surfaces and sources of ignition
- Do not use sodium nitrite or other nitro sating agents in product
- Materials to avoid
- Oxidizing agents
- acids

Hazardous Decomposition Products

- None under normal use
- Nitrogen oxides (NOx)
- Carbon monoxide
- Carbon dioxide (CO_2)
- Ammonia

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Eye Contact Causes eye burns. May cause blindness. Liquid causes severe inflammation of conjunctiva and may cause severe damage of the cornea. May cause a perception of a "blue haze" or "fog" around lights.

Skin Contact Causes skin burns. May be absorbed through the skin in harmful amounts.

Inhalation Vapors irritating to eyes and respiratory tract. May be harmful if inhaled. May cause delayed lung injury. Vapors may have a strong offensive odor which may cause headaches, nausea, and vomiting.

Ingestion Harmful if swallowed. If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	IARC	ACGIH	OSHA	NTP
Di-n-butylamine	Not Listed	Not Listed	Not Listed	Not Listed

Aggravated Medical Conditions Allergies. Eye disease. Respiratory disorders. Skin disorders.

Product Information

LD50/oral/rat = 550 mg/kg
LD50/dermal/rabbit = 768 mg/kg
LC50/inhalation/4h/rat = 1.15 mg/l
Eye irritation corrosive
Skin irritation corrosive
Sensitization Did not cause sensitization on laboratory animals
Mutagenic Effects Did not show mutagenic effects in animal experiments
Reproductive toxicity No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

LC50/96h/Rainbow trout = 37 mg/l
EC50/48h/daphnia = 8.4 mg/l
EC50/72h/algae = 16.91 mg/l
Toxicity to bacteria Not required: Readily biodegradable:

Mobility

Koc = 8138 @ 20°C

Persistence and Degradability

Readily biodegradable, according to appropriate OECD test

Bioaccumulative Potential

Not expected

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Dispose of in accordance with local regulations

Contaminated Packaging In accordance with local and national regulations. Empty containers should be taken for local recycling, recovery or waste disposal. Empty containers retain product residue and may be hazardous.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name	Di-n-butylamine
Hazard Class	8
Subsidiary Class	3
UN-No	UN2248
Packing Group	II
Reportable Quantity (RQ)	None
Marine Pollutant	No
Labelling	Corrosive and Flammable liquid

IMDG/IMO

Proper Shipping Name	Di-n-butylamine
Hazard Class	8
Subsidiary Class	3
UN-No	UN2248
Packing Group	II
Marine Pollutant	No
Labelling	Corrosive and Flammable liquid

IATA

UN-No	UN2248
Proper Shipping Name	Di-n-butylamine
Hazard Class	8
Subsidiary Class	3
Packing Group	II
Labelling	Corrosive and Flammable liquid

15. REGULATORY INFORMATION

International Inventories

All of the components in the product are on the following Inventory lists: U.S.A. (TSCA), Europe (EINECS/ELINCS/NLP), Canada (DSL/NDSL), Japan (ENCS), Japan Bioaccum (MITI), Australia (AICS), Philippines (PICCS), China (IECSC), Korea (KECL), New Zealand (NZIoC).

NOTE: X = Listed

Chemical Name	TSCA	EINECS	DSL	ENCS	MITI	AICS	PICCS	IECSC	KECL	NZIoC
Di-n-butylamine	X	203-921-8	X	(2)-137	(2)-137	X	X	X	97-1-21 KE-04223	X

OSHA HAZARD CLASSIFICATION: This material is classified as hazardous under Federal OSHA regulation: Corrosive, Toxic, Combustible liquid

SARA 311/312 Hazardous Categorization

Acute Health Hazard, Fire Hazard

SARA TITLE III SECTION 313 INFORMATION:
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

NOTE: X = Listed

CERCLA Hazardous Substances
This product does not contain any RQs or TPQs under this regulation.

State Right-to-Know

NOTE: X = Listed

Chemical Name	PA	NJ	MA
Di-n-butylamine 111-92-2	X	X.	X

California Proposition 65 This product does not contain any Proposition 65 chemicals.

WHMIS Hazard Class
B3 Combustible liquid
D1B Toxic materials
E Corrosive material

Canadian Environmental Protection Act This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

16. OTHER INFORMATION

HMIS	**Health** 3	**Flammability** 2	**Physical Hazard** 0
NFPA	**Health** 3	**Fire** 2	**Instability** 0

Legend: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Literary Reference -Taminco Proprietary Studies -Chemiekaarten : 25th ed. - 2010

Disclaimer: The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet