



Cis-2,6-Dimethylmorpholine

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

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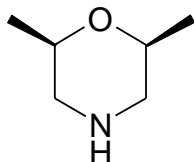
SECTION 1: IDENTIFICATION OF THE SUBSTANCE/ MIXTURE AND OF THE COMPANY/ UNDERTAKING

1.1 Product identifier

PRODUCT NAME : Cis-2,6-Dimethylmorpholine
CAS RN : 6485-55-8
EC# : 229-353-0
Substance Name : cis-2,6-dimethylmorpholine
De : cis-2,6-Dimethylmorpholin
Es : cis-2,6-dimetilmorfolina
Fr : cis-2,6-diméthylmorpholine

MOLECULAR FORMULA : C₆H₁₃NO

STRUCTURAL FORMULA :



1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1 Relevant identified uses

Cis-2,6-Dimethylmorpholine is used as an intermediate in pharmaceutical industry.

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Ingrevia Limited

FACTORY & REGISTERED OFFICE: Jubilant Ingrevia Limited, Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, India T +91-5924-267437, +91-5924-267438

HEAD OFFICE: Jubilant Ingrevia Limited, Plot 1-A, Sector 16-A, Institutional Area, Noida, Uttar Pradesh, 201301 - India T +91-120-4361000 - F +91-120-4234881 / 84 / 85 / 87 / 95 / 96 support@jubl.com - www.jubilantingrevia.com

1.4. Emergency telephone number

For Chemical Emergency ONLY (in the case of fire, leak, spill, exposure or accident) Call

Chemtrec: 1-800-424-9300 (US), 1-703-527-3887 (Outside U.S.)

Chemtrec (India) : 000-800-100-7141

For ALL other emergencies call Emergency Control Room Gajraula at 99970 22412

SECTION 2: HAZARD(S) IDENTIFICATION

2.1. Classification of the substance or mixture

GHS-US classification

Flammable Liquid: Category 3

Acute toxicity-oral: Category 4

Acute toxicity-dermal: Category 4

Skin Corrosion/irritation: Category 1

Eye damage/irritation: Category 1

2.2. Label Element



According to GHS Classification

Hazard Pictogram: GHS 02, GHS 05 & GHS 07

Signal Word: **Danger!**

GHS 02: Flame GHS 05: Corrosion GHS 07: Exclamation mark



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HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS

- H226: Flammable liquid and vapour.
- H302: Harmful if swallowed
- H312: Harmful in contact with skin.
- H314: Causes severe skin burns and eye damage.

PRECAUTIONARY STATEMENTS

- P210: Keep away from heat/sparks/open flames/hot surfaces-No smoking.
- P233: Keep container tightly closed.
- P243: Take precautionary measures against static discharge.
- P280: Wear protective gloves/eye protection/face protection/protective clothing.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P260: Do not breathe dust or mist.
- P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P330: Rinse mouth.
- P302+P352: IF ON SKIN: Wash with plenty of soap and water.
- P363: Wash contaminated clothing before reuse.
- P301+P330+P331: IF SWALLOWED: Rinse mouth Do not induce vomiting.
- P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P310: Immediately call a POISON CENTER or doctor/physician.
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do,
- P405: Store locked up.
- P501: Dispose of contents/container to local/regional/national/international regulations

2.3 Other Hazards

- Not available. For further details see section 12.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

S.No.	Chemical	CAS #	EC#	% Composition
1	Cis-2,6-Dimethylmorpholine	6485-55-8	229-353-0	Max 98%

SECTION 4: FIRST AID MEASURES

Description of first aid measures

Key symptoms

Acute effects:

- Cis-2, 6-Dimethylmorpholine is harmful if swallowed and also harmful in contact with skin. It causes severe skin burns and eye damage.

Chronic effects:

- To the best of our knowledge, the chronic health effects of this product have not been fully investigated.

FIRST AID

- **Eye Contact:** If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. If irritation persists, seek medical attention.
- **Skin Contact:** Immediately take off all contaminated clothing. Wash thoroughly with water for at least 15 minutes. Wash contaminated clothes before reuse. If irritation persists, seek medical attention.
- **Inhalation:** Remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell
- **Ingestion:** If swallowed call a poison center if you feel unwell. Rinse mouth. Do NOT induce vomiting by use of emetics. Seek medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

Flash Point: 41.5°C

Flammability: Flammable Liquid



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5.1. Extinguishing media

Appropriate extinguishing media: Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water may also be used. Water sprays can be effective in cooling down the fire-exposed containers and knocking down the vapors.

5.2. Special Protective Equipment and Precautions for Fire Fighter

- Evacuate the area and fight fires from a safe distance.
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions or as per locally valid procedures.
- Fire fighters must wear Self Contained Breathing Apparatus (SCBA) and full protective clothing. The chemical is harmful in contact with skin.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

5.3. Unusual fire and explosion hazard

- When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 : Personal precautions, protective equipment and emergency procedures

- **Personal precautions:** Evacuate personnel to safe areas. Control access to area. Use personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.

6.2 : Environmental precautions

- Prevent further leakage or spillage if safe to do so. Use appropriate container to avoid environmental contamination. Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Local authorities should be advised if significant spillages cannot be contained. If the product contaminates rivers and lakes or drains inform respective authorities. If the spill area is porous, the contaminated material must be collected for subsequent treatment or disposal.

6.3 : Methods and materials for containment and cleaning up

- Wear Appropriate respirator, impervious boots and heavy rubber (or otherwise impervious) gloves.
- Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Prevent entry into waterways, sewers, basements or confined areas.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- A vapour-suppressing foam may be used to reduce vapours.
- Clean up all tools and equipment.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.

6.4 : Reference to other sections

- Never return spills in original containers for re-use. Dispose of in accordance with local regulations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

- Do not get in eyes, on skin or on clothing.
- Use only in a chemical fume hood.
- Protect against electrostatic charges.
- Avoid direct contact with the substance.
- Ensure there is sufficient ventilation of the area.
- Do not handle in a confined space.
- Avoid the formation or spread of mists in the air.
- Smoking is forbidden.
- Use non-sparking tools.

7.2. Storage

- Keep container tightly closed.
- Store at ambient temperature in dry & well-ventilated place.
- Ensure adequate ventilation during use.



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- Keep away from direct sunlight, heat and sparks (sources of ignition).
- Keep only in original container.
- Air sensitive. Store under Argon.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Exposure Limits Values

Chemical name	STEL (ppm)	NIOSH	OSHA	ACGIH
Cis-2,6-Dimethylmorpholine	None available	None available	None available	None available

Exposure Limits (International):

- Not available.

8.2. Exposure controls

Appropriate Engineering Controls:

- Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3. Personal Protection

- **Eye/face protection:** Safety glasses with side-shields. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
- **Skin protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
- **Body Protection:** Impervious clothing, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
- **Respiratory protection:** Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

General Hygiene and general comments:

- Wash hands and face after working with the substance.
- Apply skin protective barrier cream
- Immediately change contaminated clothing

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

- Information on basic physical and chemical properties.

Sr.No.	Parameter	Typical value
1	Appearance	Colorless to pale yellow colored liquid.
2	Odor	Amine- like odour.
3	Odor Threshold	Not available.
4	Melting point	-85 °C
5	Boiling point	141.3°at 1 000.2 mBar
6	Flash point	41.5°C
7	Evaporation rate (n-BuAc=1)	Not available
8	Explosive limits / Flammability limits	Lower:1.6% Upper:12.9 %
9	Vapor pressure	7 mbar @ 20 °C
10	Vapor density (air=1)	Not available
11	Relative density (water=1)	0.94 g/cm ³ at 20°C
12	Solubility	Soluble in water, Methanol.
13	pH	Not available



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14	Log kow (octanol/water)	-0.15
15	Auto-ignition temperature	280°C at atm. press. of 1013.0 hPa
16	Decomposition temperature	Not available
17	Viscosity	5.3 mPa.s at 20 °C
18	Molecular Weight	115.18
19	pKa (@250C)	Not available
20	Log Koc	Not available
21	Flammable Material	Yes
22	Oxidizer	No
23	Flammability	Flammable material
24	Explosive material	No

SECTION 10: STABILITY AND REACTIVITY

- **Reactivity:** Stable under recommended transport or storage conditions.
- **Stability:** Stable under normal conditions. Stable at room temperature.
- **Conditions to avoid:** Incompatible chemicals, Heat. Hot surfaces. Sources of ignition. Flames. Air
- **Incompatible chemicals:** Strong oxidizing agents, Strong acids.
- **Hazardous decomposition products:** Hazardous reactions will not occur under normal transport or storage conditions. When heated to decomposition it emits toxic fumes of nitrogen oxide, carbon dioxide and carbon monoxide.
- **Hazardous Polymerization:** Not reported.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

a) Acute Toxicity:

It is harmful if swallowed and in contact with skin. To the best of our knowledge the chemical, physical and toxicological properties of this chemical have not been thoroughly investigated.

- **RTECS#:** QE1750000
- **LC50 Oral Rat:** 1 270 mg/kg bw
- **LD50 Dermal Rat:** > 1 000 - < 2 000 mg/kg bw
- **LC50 Inhalation Rat:** >4000 PPM

b) Skin Corrosion/irritation

- Causes severe skin burns and eye damage.(Mild skin irritation and severe eye irritation).

c) Serious eye damage/irritation:

- Causes severe eye damage

d) Respiratory or skin sensitization:

- No data is available

e) Germ cell mutagenicity:

- cis-2,6 -dimethylmorpholine is considered not to be a mutagenic substance under in vitro conditions
- cis-2,6 -dimethylmorpholine is considered not to be a mutagenic substance under in vivo conditions

f) Carcinogenicity:

Components	ACGIH - Carcinogens	IARC	NTP	OSHA HCS - Carcinogens	Australia - Prohibited Carcinogenic Substances	Australia - Notifiable Carcinogenic Substances
cis-2,6-Dimethylmorpholine	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed

g) Reproductive Toxicity:

- No data is available

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity



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- Freshwater Algae Data: 96.9 mg/L EC50 *Desmodesmus subspicatus* 72 h
- Freshwater Fish Species Data: 387 mg/L LC50 *Pimephales promelas* 96 h 1
387 mg/L LC50 *Pimephales promelas* 96 h static 1
- Water Flea Data: 187 mg/L EC50 *Daphnia magna* 48 h

12.2. Persistence and degradability

- Biodegradation in water: Not readily biodegradable
- Biodegradation in Soil: Cis-2,6-dimethylmorpholine slowly degraded in soil under aerobic conditions with a DT50 of 149 days.

12.3. Bio accumulative potential

Cis-2,6-Dimethylmorpholine (6485-55-8)	
Bio concentration factor	Not available
Log Kow	-0.15

- It is expected to have low potential to concentrate in fatty tissue of fish and aquatic organisms

12.4. Mobility in soil

Cis-2,6-Dimethylmorpholine (6485-55-8)	
Koc	13.33 (log Koc: 1.12)
Henry's Constant	0.02 Pa m ³ /mol
Log Kow	-0.15

- Leaching of 2,6-dimethylmorpholine into deeper soil layers cannot be excluded.

12.5. Other adverse effects

Environment Fate:

- Though this compound is expected to have low potential to concentrate in fatty tissue of fish and aquatic organisms, it is still recommended that the material should not be disposed into the environment. The material should never be disposed into the sewage.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

- Dispose of this material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws. Note that disposal regulations may also apply to empty containers and equipment reinstates.

SECTION 14: TRANSPORT INFORMATION

This substance is considered to be Hazardous for transport by Air/Rail/Road and Sea and thus it is regulated by IATA/ICAO/ARD/RID/IMO/IMDG/ US DOT.

S.No	Agency	UN Number	Proper Shipping name	Hazard Class	Packing Group
Land Transport	DOT/ADR/RID	UN 2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S. contains (2,6-DIMETHYLMORPHOLINE)	8 (3)	II
Maritime Transport	IMDG	UN 2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S. contains (2,6-DIMETHYLMORPHOLINE)	8 (3)	II
Air Transport	IATA	UN 2734	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S. contains (2,6-DIMETHYLMORPHOLINE)	8 (3)	II



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Hazard Label	Corrosive Flammable liquid 8 (3)	
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SECTION 15: REGULATORY INFORMATION

Classification (as per Regulation (EC) No 1272/2008):

- **Hazards Class and Category:** Flamm. Liquid Cat 3, Acute tox-Oral. Cat 4, Acute tox.-Dermal Cat. 4, skin corr/irri Cat. 1, Eye damage/Irri Cat 1
- **Hazard Statements:** H226;H302,H312,H314,318

Chemical Inventory Lists:	Status
TSCA:	Not listed
EC/ List No.	229-353-0
Canada(DSL/NDSL):	Not listed
Korea:	Not Listed
Australia:	Not listed
Taiwan	Listed in TCSI
New Zealand	Not Listed
Philippines	Not listed
China: IECSC	Not listed

US information

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

Cis-2,6-Dimethylmorpholine is not listed

SARA 302/304 : Cis-2,6-Dimethylmorpholine is not listed

SARA 311/312 : See section 2 for more information

California Prop. 65: Cis-2,6-Dimethylmorpholine is not listed

CAA (Clean Air Act): Cis-2,6-Dimethylmorpholine is not listed

CWA (Clean Water Act): Cis-2,6-Dimethylmorpholine is not listed

EU Information

Water hazard class (WGK): WGK 1 (Slightly hazardous to water)

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006: Cis--2,6 Dimethyl morpholine is not listed

SECTION 16: OTHER INFORMATION

a) Compilation information of safety data sheet

Date of compilation : March 26, 2010
Chemical : cis-2,6-Dimethylmorpholine
CAS # : 6485-55-8
File Name : 0584Gj Ghs05 Div.03 sds cis-2,6-Dimethylmorpholine
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b) A key or legend to aberrations and acronyms used in the safety data sheet

- PBT =Persistent Bio accumulative and Toxic.
- vPvB= Very Persistent and Very Bio accumulative.
- SCBA= Self Contained Breathing Apparatus.
- NIOSH REL= National Institute for Occupational Safety and Health Recommended Exposure Limit.
- OSHA PEL=Occupational Safety and Health Administration Permissible Exposure Limit.



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- OELTWA= Occupational Exposure Limit Time Weighted Averages.
- RTECS= Registry of Toxic Effects of Chemical Substances.
- NTP=National Toxicology Program.
- IARC= International Agency for Research on Cancer.
- EPA=Environmental Protection Agency.
- TSCA= Toxic Substances Control Act.
- SARA= Superfund Amendments and Reauthorization Act.
- WHIMS= Workplace Hazardous Materials Information System.
- DSL/NDL= Domestic/Non-Domestic Substances List.
- BCF = Bio Concentration Factor.
- TLV = Threshold Limit Value.
- ACGIH = American Conference of Governmental industrial Hygienists.
- REACH = Registration, Evaluation .Authorization and Restriction of Chemicals.
- CLP = Classification, Labeling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonized System.
- ADR = Accord European relative au transport international de marchandises.
- IMDG-Code = International Maritime Code for Dangerous Goods.
- EmS = Emergency measures on Sea.
- ICAO = International Civil Aviation Organization.
- IATA/DGR= International Air Transport Association/Dangerous Goods Regulation.

c) Key Literature reference and sources for data

Biographical reference and data sources

- Globally Harmonized System of Classification and Labelling of Chemicals.
- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009.
- Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2517
- USEPA/Prevention, Pesticides, and Toxic Substances; Citizen's Guide to Pest Control and Pesticide Safety p.23 (September 1995) EPA 730-K-95-001
- US EPA; Estimation Program Interface (EPI) Suite. Ver. 4.1. Nov, 2012. Available from, as of June 21, 2016: <http://www2.epa.gov/tsca-screening-tools/> (3) Franke C et al; Chemosphere 29: 1501-14 (1994)
- O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Cambridge, UK: Royal Society of Chemistry, 2013., p. 1373.
- California Environmental Protection Agency/Department of Pesticide Regulation; Summary of Toxicology Data for Picaridin. Chemical Code No. 5908 (April 4, 2005). Available from, as of June 27, 2016

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

(End of Safety Data Sheet)