

Product Stewardship Summary

Methyldiethanolamine

General Statement

Methyldiethanolamine is an alkyl alkanolamine that is used in gas treatment applications and serves as an intermediate in the synthesis of numerous products. Methyldiethanolamine is a low hazard material and risk of adverse health effects associated with both occupational and consumer use of this chemical is anticipated to be low.

Chemical Identity

Name: Methyldiethanolamine

Brand Names:

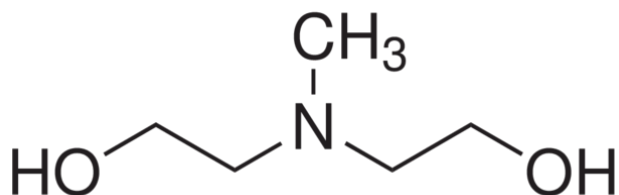
Chemical name (IUPAC): 2,2'-(methylimino)diethanol

CAS number(s): 105-59-9

EC number: 203-312-7

Molecular formula: C₅H₁₃NO₂

Structure:



Uses and Applications

Methyldiethanolamine is used as an intermediate in the synthesis of numerous products. Its unique chemistry has resulted in its use in diverse areas, including coatings, textile lubricants, polishes, detergents, pesticides, personal-care products, pharmaceuticals, urethane catalysts, and water-treatment chemicals. Methyldiethanolamine is also used in gas treatment.



RESPONSIBLE CARE[®]

© Registered trademark, Ashland or its subsidiaries, registered in various countries

[™] Trademark, Ashland or its subsidiaries, registered in various countries

* Trademark owned by a third party

© 2016, Ashland



Physical/Chemical Properties

Phys/Chem Safety Assessment

Property	Value
Form	
Physical state	Liquid
Color	Colorless
Odor	Ammonia-like
Density	1.04 g/cm ³ @ 20°C
Melting / boiling point	-21.3 / 243.3 °C
Flammability	No data available
Explosive properties	No data available
Self-ignition temperature	280 °C
Vapor pressure	0.1 hPa @ 54.8°C
Mol weight	119.16 g/mol
Water solubility	Soluble
Flash point	138°C
Octanol-water partition coefficient (LogK _{ow})	-1.16 @ 23°C

Exposure, Hazard and Safety Assessment

The following section describes possible exposure scenarios and hazards associated with methyldiethanolamine. The exposure assessment describes both the amount of and the frequency with which a chemical substance reaches a person, a population of people, or the environment. Hazard refers to the inherent properties of a substance that make it capable of causing harm to human health or the environment. The safety assessment reports the possibility of a harmful event arising from exposure to a chemical or physical agent under specific conditions. Just because a substance may possess potentially harmful properties does not mean that it automatically poses a risk. It is not possible to make that determination without understanding the exposure.

Human Health Effects

Human Exposure Assessment

Consumer: Methyldiethanolamine is used as an intermediate in the synthesis of numerous products. It is not sold for direct consumer use. Consumer exposures will be limited to low concentrations that may be present in some consumer product formulations.

Worker: In industrial settings, methyldiethanolamine is manufactured and handled in closed processes as much as possible, which ensures that worker exposure is minimized. When there is potential for exposure, during loading, unloading, sampling or during maintenance operations, exposure to methyldiethanolamine can be further minimized by the proper use of personal protective equipment.

Human Hazard Assessment:

Methyldiethanolamine is low for both acute and repeat dose toxicity. It can cause moderate eye and slight skin irritation. Methyldiethanolamine does not cause reproductive toxicity in experimental animals at exposure concentrations below that which causes toxicity in the mother. It is neither mutagenic or genotoxic. No data are available to assess the carcinogenic potential of this material.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Low toxicity by all routes of exposure.

Irritation / corrosion Skin / eye / respiratory test	Slightly irritating to the skin. Moderately irritating to the eyes. Not anticipated to result in skin sensitization.
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause significant toxicity to internal organs after repeated exposure in animal studies by dermal route. Based on similarly structured chemicals, not anticipated to cause significant toxicity to internal organs after repeat oral exposures.
Genotoxicity / Mutagenicity	Neither mutagenic or genotoxic.
Carcinogenicity	No data available.
Toxicity for reproduction	No adverse effects on fertility and development are reported at doses that are not toxic to the mother.

Human Health Safety Assessment

Consumer: Methyldiethanolamine is used as an intermediate in the synthesis of numerous products and is not sold for direct consumer use. Based on both the low toxicity associated with methyldiethanolamine and the low anticipated consumer exposures, health risk associated with this material is considered low.

Worker: In industrial settings, methyldiethanolamine is manufactured and handled primarily in closed processes which limit exposure. Based on good manufacturing processes and industrial hygiene the occupational health risk associated with methyldiethanolamine is low.

Environmental Effects

Environmental Exposures

Methyldiethanolamine is inherently biodegradable and has low potential for bioaccumulation. Based on its physical and chemical properties, methyldiethanolamine is expected to have very high mobility in soil and will not adsorb to suspended solids and sediment in the aquatic environment. Volatilization from water surfaces is not expected.

Environmental Hazard Assessment

Effect Assessment	Result
Aquatic Toxicity	Low toxicity to fish and invertebrates; harmful to algae.

Fate and behavior	Result
Biodegradation	Inherently biodegradable.
Bioaccumulation potential	Not potentially bioaccumulative (log Kow = -1.16).
PBT / vPvB conclusion	Not considered to be either PBT or vPvB.

Environmental Safety Assessment

Based on the available data, methyldiethanolamine is considered not toxic to fish and aquatic invertebrates, although harmful to algae. If released to surface waters, risk to the aquatic environment is not anticipated as the material is not expected to persist or bioaccumulate and has a low toxicity to both fish and aquatic invertebrates.

Risk Management Recommendations

Exposure to methyldiethanolamine in the workplace can be controlled by sufficient ventilation, proper handling and storage techniques, and the use of appropriate personal protective equipment as recommended in the SDS. Consumer products that contain significant levels of this material should include necessary safety labeling and provide appropriate handling

and disposal methods.

A selection of occupational exposure limits are presented, below:

- No known occupational exposure limits.

Regulatory Agency Review

Methyldiethanolamine is on the following lists:

Australian Inventory of Chemical Substances (AICS)
China - Chemical Inventory of Existing Chemical Substances (IECSC) - CAS Numbers
Department of Homeland Security – Chemicals of Interest
Department of Homeland Security - Chemicals of Interest - Minimum Concentrations and Screening Threshold Quantities
Department of Homeland Security - Chemicals of Interest - Security Issue
ECHA - Draft Community Rolling Action Plan (CoRAP) (2013-2015)
ECHA - List of Pre-registered Substances
Environment Canada - Domestic Substances List (DSL)
Environment Canada - Domestic Substances List (DSL) Categorization of Existing Substances
EPA - Chemical Update System (CUS) - 2002
EPA - High Production Volume (HPV) - Chemical Hazard Data Availability
EPA - Inert Ingredients Permitted for Use In Nonfood Pesticide Products
EPA - Office of Pollution Prevention and Toxics (OPPT) High Production Volume (HPV) Program - 1990
EPA - TSCA - Inventory
EU - Cosmetic Ingredients and Fragrance Inventory
EU - European Inventory of Existing Commercial Substances (EINECS)
EU - Table 3.1 of Annex VI to the CLP Regulation
EU - Table 3.2 of Annex VI to the CLP Regulation
FDA - List of Indirect Additives
International Council of Chemical Associations (ICCA) - High Production Volume (HPV) Initiative
Mexico - National Inventory of Chemical Substances
National Cancer Institute - SMILES Notations
New Zealand - Inventory of Chemicals (NZIoC)
NFPA - Hazard Ratings
OECD - High Production Volume (HPV) Chemicals - 2004
OECD - High Production Volume (HPV) Chemicals - 2007
Philippine Inventory of Chemicals and Chemical Substances (PICCS)
Russia - Occupational Exposure Limits (OELs)
TETRATOX - Toxicity and Chemical Descriptor Data for 500 Aliphatic Chemicals

Regulatory Information / Classification and Labeling

Under the Globally Harmonized System for classification and labeling (GHS), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (Extended) SDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use.

GHS Classification:

Eye Irritation, Category 2A

Hazard Statements:

H319: Causes serious eye irritation

Signal Word: Warning

Precautionary Statements:

P264: Wash skin thoroughly after handling.

P280: Wear eye protection/ face protection/protective gloves.

P305: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337: If eye irritation persists: Get medical advice/ attention.

Hazard Pictograms:



Conclusion

Methyldiethanolamine is used as an intermediate in the synthesis of numerous products. When handled responsibly, the potential for eye irritation can be minimized, allowing consumers and workers to use materials containing methyldiethanolamine safely.

Contact Information with Company

Ashland Inc.
5200 Blazer Parkway
Dublin, Ohio 43017 <http://www.ashland.com/contact>

Date of Issue: October 17, 2016

Revision: 1

Additional Information

For more information on GHS, visit <http://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf> or http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.

Ashland product stewardship summaries are located at <http://www.ashland.com/sustainability/product/product-stewardship>

Disclaimer

All statements, information and data presented herein are believed to be accurate and reliable, but are not to be taken as a guarantee, an express warranty, or an implied warranty of merchantability or fitness for a particular purpose, or representation, express or implied, for which Ashland Inc. and its subsidiaries assume legal responsibility.

REACH registration is specific to Importers/Manufacturers that place the chemical on the EU market, and is specific to registered uses. Inclusion on the list of REACH Registered Substances does not automatically imply registration by Ashland.

Inclusion on the New Zealand Inventory of Chemicals applies only to the pure substance listed. The importer of record must determine whether or not their substances are in compliance.