Chemical Safety Data Sheet MSDS / SDS

Dimethyl terephthalate SDS

Revision Date:2024-04-25 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Dimethyl terephthalate

CAS: 120-61-6

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification

Classification of the substance or mixture

Not classified.

GHS label elements, including precautionary statements

Signal word: No signal word

Hazard statement(s)

none

Precautionary statement(s)

Prevention

none

Response

none

Storage

none

Disposal

none

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Dimethyl terephthalate
Common names and synonyms:	Dimethyl terephthalate
CAS number:	120-61-6
EC number:	204-411-8
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest.

Following skin contact

Rinse and then wash skin with water and soap.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth.

Most important symptoms/effects, acute and delayed

Molten DMT will cause severe burns of skin on contact. (USCG, 1999)

Indication of immediate medical attention and special treatment needed, if necessary

Call for medical aid. ... Move victim to fresh air. ... Remove contaminated clothing and shoes. Flush affected areas with plenty of water. If swallowed and victim is conscious, have victim drink water, or milk.

SECTION 5: Firefighting measures

Suitable extinguishing media

Extinguish with water, dry chemicals, foam, or carbon dioxide.

Specific hazards arising from the chemical

This chemical is combustible. (NTP, 1992)

Special protective actions for fire-fighters

Use water spray, foam, powder, carbon dioxide.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. Closed system, dust explosion-proof electrical equipment and lighting. Prevent deposition of dust. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Store in an area without drain or sewer access.Dimethyl terephthalate is stored molten in insulated heated tanks, and is perferentially shipped molten in insulated rail tank cars or tank trucks. It is also solidified into briquettes or flakes, and shipped in 1 ton or 25 kg bags.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Dimethyl terephthalate			
CAS No.	120-61-6			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m^3	ppm	mg/m^3
Canada - Ontario	?	5	?	?
Latvia	?	0,1	?	?
	Remarks			

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety spectacles.

Skin protection

Protective gloves.

Respiratory protection

Use ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state: Solid. Flakes.

Colour: Not stated.

Odour: no data available

Melting point/freezing point:	141 °C. Atm. press.:1 atm. Remarks:[Datum contained in Table 2 of the cited reference document].;140.65 °C. Atm. press.:1 atm. Remarks:[Datum contained in Table 13 of the cited reference document].
Boiling point or initial boiling point and boiling range:	284 °C. Atm. press.:1 atm.
Flammability:	Combustible.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	151 °C. Atm. press.:101.325 kPa.
Auto-ignition temperature:	1058° F (USCG, 1999)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	Liquid viscosity = 1.0682X10-3 Pa.s
Solubility:	less than 1 mg/mL at 55° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Pow = 2.21. Temperature:23 °C. Remarks:Mean of six measurements - duplicate determinations at water:n-octanol ratios of 2:1, 1:1 and 1:2.
Vapour pressure:	0 kPa. Temperature:20°C.
Density and/or relative density:	1.367 g/cm3. Temperature:20 °C.
Relative vapour density:	1.04 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces irritating fumes.

Chemical stability

no data available

Possibility of hazardous reactions

Dust explosion possible if in powder or granular form, mixed with air.DIMETHYL TEREPHTHALATE is an ester. Esters react with acids to liberate heat along with alcohols and acids. Strong oxidizing acids may cause a vigorous reaction that is sufficiently exothermic to ignite the reaction products. Heat is also generated by the interaction of esters with caustic solutions. Flammable hydrogen is generated by mixing esters with alkali metals and hydrides. Can generate electrostatic charges. [Handling Chemicals Safely 1980. p. 250]. This compound is sensitive to heat. The molten material reacts with water due to the temperature. This compound is incompatible with strong oxidizers, strong acids and strong bases.

Conditions to avoid

no data available

Incompatible materials

The polymer /produced from DMT/ had been produced for 12 yr by transesterification under nitrogen of the dimethyl ester with ethylene glycol at 250 deg C in presence of titanium butoxide catalyst. After incr the heating capacity of the vessel from a half coil to a full coil, 3 incidents of ignition of vapor after opening the vessel were noted. This is attributed to formation and ignition of mixtures of acetaldehyde or dioxane with ingressing air on the hot vessel surfaces.

Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat oral 4390 mg/kg

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

May cause mechanical irritation.

STOT-repeated exposure

no data available

Aspiration hazard

A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - Danio rerio (previous name: Brachydanio rerio) - 13 mg/L - 96 h. Remarks:(converted from results of organic carbon analysis).

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - > 23.5 mg/L - 48 h.

Toxicity to algae: ErC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - > 29 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge of a predominantly domestic sewage - > 1 000 mg/L - 3 h. Remarks:Respiration rate.

Persistence and degradability

AEROBIC: Dimethyl terephthalate, present at 100 mg/L, reached 84% of its theoretical BOD in two weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1). A 3 day river die-away test using 50, 40, and 5 ppm dimethyl terephthalate resulted in 100% biodegradation in all three tests of river water, and 27, 38, and 49% biodegradation, respectively, in the three tests of sea water(2). Dimethyl terephthalate, at a concentration of 0.5%, degraded completely in 15 days at 30 deg C in soil with a pH of 8.2 and 60% moisture content(3). The microbe Rhodococcus ruber 2B, isolated from sewage treatment facilities, was shown to accelerate the rate of degradation; terephthalate monoesters and terephthalic acid were identified as metabolites(3).

Bioaccumulative potential

An estimated BCF of 11 was calculated in fish for dimethyl terephthlate(SRC), using a log Kow of 2.25(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

The Koc of dimethyl terephthalate is estimated as 400(SRC), using a log Kow of 2.25(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that dimethyl terephthalate is expected to have moderate mobility in soil.

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)
IMDG: Not dangerous goods. (For reference only, please check.)
IATA: Not dangerous goods. (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

May be transported in molten form, UN number 3256.