

GPS Safety Summary

Substance Name:

Dimethyl Sebacate

1. General Statement

Dimethyl sebacate (DMS) is mainly used as a synthesis intermediate to produce light stabilizers additives called HALS (Hindered Amines Light Stabilizer).

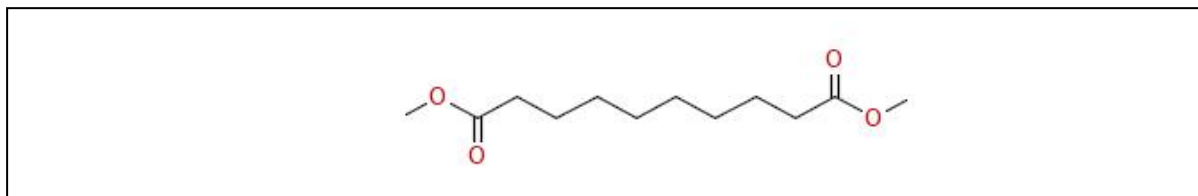
Dimethyl sebacate (DMS) can also be used as a plasticizer.

The substance is manufactured and handled in industrial settings.

2. Chemical Identity

Name: Dimethyl Sebacate
Chemical name (IUPAC): Dimethyl Sebacate
CAS number: 106-79-6
EC number: 203-431-4
Molecular formula: C₁₂H₂₂O₄

Structure:



3. Use and applications

Dimethyl Sebacate is mainly used as a synthesis intermediate to produce light stabilizers; it can also be used as a plasticizer, softening agent and solvent for cellulosic resin, synthetic resins and rubber.

4. Physical / Chemical properties

Depending on its purity the substance is either a white solid or an oily transparent liquid at ambient temperature:

Property	Value
Physical state	Solid at 20°C and 101.3 hPa
Colour	White
Molecular weight	230.3 g/mol
Density	0.99 g/cm ³ at 20°C
Vapour pressure	0.0008 hPa at 25°C
Melting / boiling points	26.3°C / 288°C at 101.3 hPa

Flash point – flammability	157°C
Self-ignition temperature	365°C at 980 hPa
Explosive / oxidizing properties	Not expected based on structure
Water solubility	301 mg/L at 20°C
Octanol-water partition coefficient (Log K _{ow})	3.38

5. Health Effects

There are no studies available in which the toxicokinetic properties (absorption, distribution, metabolism, elimination) of dimethyl sebacate were investigated. Based on the molecular structure, molecular weight, water solubility, and octanol-water partition coefficient oral, dermal and inhalative absorption cannot be excluded.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Not harmful by acute oral or dermal exposure.
Irritation / corrosion Skin / eye/ respiratory tract	The product is not a skin irritant. Product dust may cause damage to eyes.
Sensitisation	Based on the available test data, not expected to cause allergic skin reactions
Toxicity after repeated exposure Oral / inhalation / dermal	Based on the available test data, did not cause target organ toxicity after repeated exposure.
Genotoxicity / Mutagenicity	Based on inconclusive results in “in vitro” studies, further “in vivo” tests are necessary to conclude on the hazard potential.
Carcinogenicity	No data is available.
Toxicity for reproduction	Not classified. Based on the available test data, did not cause adverse effects on reproduction or on the development of offspring.

6. Environmental Effects

Due to its properties, the risk for the aquatic compartment is low. Indeed, the substance is neither bioaccumulative nor persistent and has a rapid degradation in water: it will be quickly removed by sewage treatment plants.

Effect Assessment	Result
Aquatic Toxicity	Toxic to algae, harmful to fish and aquatic invertebrates

Fate and behaviour	Result
(Bio)degradation potential	Readily biodegradable
Bioaccumulation potential	Not expected to bioaccumulate
PBT / vPvB conclusion	Not considered either as PBT (Persistent, Bioaccumulative, and Toxic chemical) nor as vPvB (Very Persistent and Very Bioaccumulative)

7. Exposure

7.1 Human health

Considering the life cycle of the substance (manufacture, use as intermediate of synthesis and as plasticiser), workers and then consumers may be exposed to dimethyl sebacate. Consumers will be exposed to very low levels of the substance thus resulting in no risk to the human health.

Worker exposure can occur in facilities manufacturing or using the substance. Worker activities are mainly undertaken in closed systems resulting in a low exposure. However when workers are exposed, during handling, loading, sampling or maintenance operations, they should follow the recommended safety measures in the extended Safety Data Sheet (eSDS). Given the eye damaging properties of the substance, special attention should be paid to avoid eye contact.

7.2 Environment

Based on its physico-chemical properties, dimethyl sebacate, when released in the environment, will mainly partition in the water compartment where it is not expected to persist as it is readily biodegradable.

In addition, based on its low potential for bioaccumulation, dimethyl sebacate is not expected to pose a risk to the food chain.

8. Risk Management recommendations

Human health measures	
Organizational	Implement good basic standards of occupational hygiene. Ensure operatives are well informed of the hazards and trained to minimise exposures. No sparking tools should be used. Refer to the latest available extended safety data sheet (eSDS).
Engineering controls	Should be handled in well ventilated areas. Provide sufficient air exchange and/or exhaust in work rooms. Ensure that eye- and handwash stations and safety showers are close to workstation locations.
Protection	Eye/Face protection: Safety glasses with side-shields
	Skin protection: Protective suit
	Hand protection: Protective gloves
	Respiratory protection: In the case of hazardous fumes, wear self contained breathing apparatus.
Environment protective measures	
Depending on the type of process, on-site waste water treatment may be required. Do not release into the environment. Do not let product enter drains. Shovel into suitable container for disposal. After cleaning, flush away traces with water. Recover waste water for processing later. Destroy the product by incineration (in accordance with local and national regulations).	

9. Regulatory Information / Classification and Labelling


9.1 Regulatory Information

This substance has been registered under:

- EU Regulation EC 1907/2006 (REACH)

9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. 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. Substances registered for REACH are classified according CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
According to REGULATION (EC) no 1272/2008: <ul style="list-style-type: none">— Eye Damage 1 ; H318: Causes serious eye damage.— Aquatic chronic category 3 ; H412: harmful to aquatic life with long lasting effects	
Signal word	
— Danger	
Pictogram	
— GHS05: corrosion	
Hazard statement	
<ul style="list-style-type: none">— H318: Causes serious eye damage.— H412: harmful to aquatic life with long lasting effects	
Additional classification according to Globally Harmonized System (GHS)	
— Aquatic acute category 2 ; H401: Toxic to aquatic life	

10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

- ICCA portal where the GPS Safety Summary is posted:
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

11. Date of Issues / Revision

- Date of issue: 2014/06/10
- Date of revision:

12. Disclaimer

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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