

GPS Safety Summary

Substance Name:

Sebacic Acid

1. General Statement

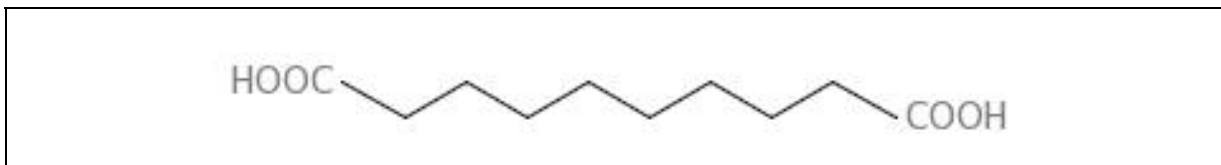
Sebacic acid is used in various applications. It can be used:

- to produce polymers such as polyamides, co-polyamides, co-polyesters, polyesters polyols, etc ..
- as a synthesis intermediate to produce esters which are widely used in cosmetics and as plasticizers in industrial applications (lubricants, plastics), etc..
- as a corrosion inhibitor (widely used under the form of a salt) in a coolant application
- as a buffering ingredient in cosmetics.

The substance is manufactured and handled in industrial settings.

2. Chemical Identity

Name:	Decanedioic acid
Chemical name (IUPAC):	Sebacic acid
CAS number:	111-20-6
EC number:	203-845-5
Molecular formula:	C ₁₀ H ₁₈ O ₄
Structure:	



3. Use and applications

Sebacic acid as a 10 carbon atoms dicarboxylic acid (DC10), is widely used to produce a various range of plastics, the most famous application being the manufacture of polyamides such as PA6.10, PA4.10, PA10.10 etc...There are also other types of polymers where sebacic can be used such as copolyamides, polyesters, copolyesters, alkyl resins, polyesters polyols, polyurethanes etc...

Sebacic acid is also widely used in cosmetics applications as a synthesis intermediate to produce esters (sebacate), most common being DIPS, DOS, DES, DBS. Cosmetics applications are various such as skin care with, for example, sunscreens, face/neck care or nail colour or after-shave lotion or hair tonics...

In cosmetic applications, it can be used as such, as a pH corrector (buffering). Main applications in this case are skin care and colour cosmetics.

As a synthesis intermediate to produce esters, it can also be used as plasticizers in industrial applications (lubricants, plastics,...).

Sebacic acid is also widely used to produce a salt derivative, the disodium sebacate, a corrosion inhibitor and in that case, main application is coolant (anti-freeze) fluids for air-craft, automotive and truck engines.

4. Physical / Chemical properties

At room temperature, sebacic acid is a white solid with the following physico-chemical properties:

Property	Value
Physical state	Solid at 20°C and 101.3 hPa
Form	Powder or granules
Colour	White
Odour	Fatty acid, light
Molecular weight	202 g/mol
Density	1.207 g/cm ³ at 20°C
Vapour pressure	0.001 Pa at 20°C
Melting / boiling points	134.5°C / 369°C at 1013 hPa
Flash point – flammability	Not applicable – Non flammable solid
Self-ignition temperature	Not applicable
Explosive / oxidizing properties	Not expected based on structure
Water solubility	0.209 g/L at 20°C
Dissociation constant (pK _a)	5 at 24°C
Octanol-water partition coefficient (Log K _{ow})	1.5 at 23°C

5. Health Effects

The dermal absorption of sebacic acid is considered as low. Experimental results showed that the substance is rapidly eliminated via urine.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Sebacic acid has low acute oral and dermal toxicity. It is not classified for acute dermal and oral toxicity. No information is available for acute inhalation.
Irritation / corrosion Skin / eye/ respiratory tract	Sebacic acid is not a skin or eye irritant.
Sensitisation	Sebacic acid is not a skin sensitizer.
Toxicity after repeated exposure Oral / inhalation / dermal	No toxicity was recorded in experimental studies after repeated oral exposure.
Genotoxicity / Mutagenicity	Sebacic acid is not a genotoxic.
Carcinogenicity	No information is available.
Reproductive / Developmental Toxicity	No effect is reported for embryo and fetal development.

6. Environmental Effects

The potential of sebamic acid for bioaccumulation is low. This product will not persist in the environment. It is harmful to aquatic organisms. Do not release in the environment.

Effect Assessment	Result
Aquatic Toxicity	Harmful to aquatic organisms

Fate and behaviour	Result
(Bio)degradation potential	Ready biodegradable
Bioaccumulation potential	Not expected to bioaccumulate
PBT / vPvB conclusion	Not considered to PBT or vPvB

*: Persistent, Bioaccumulative and Toxic (PBT)

** : very Persistent and very Bioaccumulative (vPvB)

7. Exposure

7.1 Human health

Sebamic acid is used in a wide variety of industrial and professional applications, thus resulting in a possible exposure of the general population to the substance. However due to the low level of toxicity of sebamic acid, this exposure does not pose a risk to the general population.

Worker exposure can occur in facilities manufacturing or using the substance. Sebamic acid has a low level of toxicity however whenever workers are exposed, during handling, loading, mixing, sampling or maintenance operations, they should follow the recommended safety measures in the extended Safety Data Sheet (eSDS).

7.2 Environment

Based on the physico-chemical properties of sebamic acid, a distribution modelling has determined that its main target compartment in the environment will be the water compartment where it is not expected to persist as it is readily biodegradable. In addition, based on its low potential for bioaccumulation, sebamic acid 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. Refer to the latest available extended safety data sheet (eSDS).
Engineering controls	Provide sufficient air exchange and/or exhaust in work rooms. Provide showers, eye-baths.

Protection	Eye/Face protection:	Safety glasses
	Skin protection:	Protective suit
	Hand protection:	Protective gloves
	Respiratory protection:	In the case of hazardous fumes, wear self contained breathing apparatus.
Environment protective measures		
Do not release into the environment. Do not let product enter drains.		

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:	
– Not classified	
Signal word	
– Not applicable	
Pictogram	
– Not applicable	
Hazard statement	
– Not applicable	
Additional classification according to Globally Harmonized System (GHS)	
– H402: Harmful 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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