

GPS Safety Summary

Substance Name:

Dodecane-1-thiol

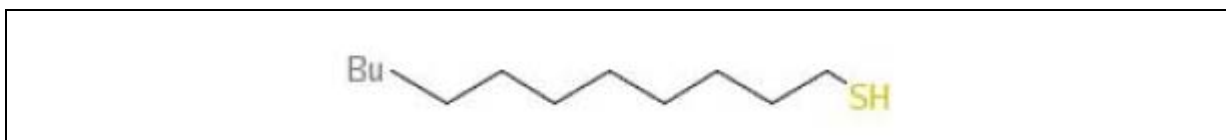
1. General Statement

Dodecane-1-thiol is a colourless liquid organic compound, with a characteristic odour. It is used as a chemical intermediate under strictly controlled conditions. Products containing dodecane-1-thiol are commercially available to industrial customers only.

Corrosive to the skin and eyes, skin sensitizer and very toxic to the aquatic life with long lasting effects, this substance must be carefully handled and stored to preserve human health and environment.

2. Chemical Identity

Name:	Dodecane-1-thiol
Brand name:	N-Dodecylmercaptan (NDM)
Chemical name (IUPAC):	Dodecane-1-thiol
CAS number(s):	112-55-0
EC number:	203-984-1
Molecular formula:	C ₁₂ H ₂₆ S
Structure:	



3. Use and applications

NDM has a variety of applications in the chemical, pharmaceutical, agrochemical synthesis.

NDM is a chain transfer agent used to control polymer molecular weight in radical polymerization processes, including synthetic rubbers (SBR, polychloroprene), polyacrylics (PMMA & coatings), ABS & other polymers such as polyvinyl acetate and polyvinylchloride (PVC).

NDM is also used as a chemical reactant in the manufacturing of antioxidants for polyolefins.

NDM is formulated as a tertiary collector in flotation processes for recovery of sulfide ores.

In organic synthesis, NDM performs all the standard reactions of primary mercaptans, such as addition on double bonds, reactions with aldehydes and ketones to give thioacetals (mercaptals) and thioketals, respectively, formation of metal-mercaptide salts.

4. Physical / Chemical properties

Property	Value
Physical state	Liquid at 20°C and 1013 hPa
Colour	Colourless
Odour	Stinging, characteristic
Density	0.85 at 20°C
Vapour pressure	0.33 kPa at 25°C
Freezing / boiling points	-7°C / 275°C at 1013hPa
Flammability	Not flammable based on flash point
Flash point	127°C
Self-ignition temperature	212°C at 1013 hPa (through analogy with a comparable product)
Explosive properties	Not explosive due to chemical structure
Oxidizing properties	Not oxidising due to chemical structure
Water solubility	0.225 mg/L at 25°C
Octanol-water partition coefficient (Log K _{ow})	> 6.5 at 25°C

5. Health Effects

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Of low toxicity by oral, dermal and inhalation routes
Irritation / corrosion Skin / eye/ respiratory tract	Corrosive to the skin. May induce severe irritation of the eyes. Risk of irritation of the respiratory system at high vapour concentration
Sensitisation	Strong sensitizer
Toxicity after repeated exposure Oral / inhalation / dermal	Inhalation studies with the substance and an oral study with an analogue substance did not suggest a significant systemic toxicity following repeated exposure
Genotoxicity / Mutagenicity	Not genotoxic
Carcinogenicity	No data available
Reproductive / Developmental Toxicity	Studies with the substance and with an analogue substance did not suggest toxic effects on the fertility and the development

6. Environmental Effects

Effect Assessment	Result
Aquatic Toxicity	Very toxic to aquatic organisms

Fate and behaviour	Result
Biodegradation	Data with an analogue substance suggest that the substance is not readily biodegradable
Bioaccumulation potential	No experimental data available to assess its bioaccumulation potential
PBT / vPvB conclusion	As the substance is registered as an isolated intermediate, the data is not required.

7. Exposure

7.1 Human health

The most likely route of human exposure (workers) to dodecane-1-thiol is through inhalation and/or to a much lesser extent dermal contact. In industrial settings, ingestion is not an anticipated route of exposures.

The substance is industrially manufactured and used within closed systems, under strictly controlled conditions, thus minimizing the occupational exposure potential.

Procedures, controls, collective and personal risk management measures are in place, which limit the occupational exposure. Workers who might accidentally come into contact with the undiluted substance should follow the safety measures recommended in the Safety Data Sheet.

When used under strictly controlled conditions as recommended in the Safety Data Sheet, exposure is negligible and thus risks acceptable.

7.2 Environment

Based on its physico-chemical properties, dodecane-1-thiol is not soluble in water and is expected to volatilise significantly from the aquatic compartment. It is not readily biodegradable and is expected to strongly adsorb on soil and sediment particles. No data is available for characterizing its bioaccumulation potential and thus no conclusion can be reached for the PBT assessment of this substance.

Dodecane-1-thiol is industrially manufactured and used in closed systems in a continuous or batch process and consumed when used as an intermediate, minimizing release to the environment.

Procedures, controls and risk management measures are in place, to limit the environmental exposure.

When used under strictly controlled conditions as recommended in the Safety Data sheet, releases to the environment are negligible and thus risks are acceptable.

More information about release measures and accidental release measures are available in the safety data sheet.

8. Risk Management recommendations

Human health measures	
Organizational	Implement high standards of occupational hygiene. Hygiene measures must be respected and incompatible materials must be clearly identified. Ensure operatives are well informed of the hazards and trained to minimize exposures. Maintain clear and up-to-date handling procedures and control their application. Collect the latest available Safety Data Sheet.

	Handle and store according to the indications of the Safety Data Sheet.	
Protection	Eye/Face protection:	Safety glasses with side shields
	Skin protection:	Combination with delayed penetration, protective suit
	Hand protection:	Gloves nitrile rubber (complying with EN 374)
	Respiratory protection:	In case of insufficient ventilation, wear suitable respiratory equipment.
Engineering controls	Manufacture and use in rigorously contained (closed) systems. Ensure sufficient air exchange and/or exhaust in work area. Use material of high integrity for loading and unloading. Routine monitoring and inspections for leaks to reduce fugitive emissions. Investigate engineering techniques to reduce exposures. Ensure that eyewash stations and safety showers are close to workstation locations.	
Environmental protective measures		
Do not release into the environment. Do not let product enter drains. Use techniques to minimize emissions (incineration or any treatment to minimize level of release). For recovery, pump into a labelled inert emergency tank. Absorb the remainder with an inert absorbent material. Destroy by oxidation with dilute solutions of hydrogen peroxide or sodium hypochlorite or 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)

This substance is listed on inventories in the USA, in Canada, in Australia, in New Zealand, in Japan, in Korea, in Philippines and in China.

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 safety data sheet. 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 to 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"> – Skin corrosion cat. 1C – Serious eye damage cat. 1 – Skin sensitization cat. 1A – Acute aquatic toxicity cat. 1 – M factor = 10 – Chronic aquatic toxicity cat. 1 – M factor = 10
Signal Word
Danger

Pictogram	
– GHS05: Corrosion	
– GHS07: Exclamation mark	
– GHS09: Environment	
Hazard statement	
<ul style="list-style-type: none"> – H314: Causes severe skin burns and eye damage – H317: May cause an allergic skin reaction – H410: Very toxic to aquatic life with long lasting effects 	
Alternative classification according to Globally Harmonized System (GHS)	
/	

10. Contact Information within Company

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

- Arkema web site : on the product page, an actualised contact name is provided
<http://www.arkema.com>
- **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: 2014/12/15
- 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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