GPS Safety Summary

Substance Name:

Tert-dodecanethiol

1. General Statement

Tert-dodecanethiol is a colourless liquid organic compound, with a characteristic odour. It is used as an intermediate and a chain transfer agent. Products containing tert-dodecanethiol are commercially available to industrial customers only.

Irritant for the skin and eyes, causing skin sensitization and causing long lasting harmful effects to the aquatic life, this substance must be carefully handled and stored to preserve human health and environment.

2. Chemical Identity

Name:	Tert-dodecanethiol
Brand name:	Tertiododecylmercaptan (TDM)
Chemical name (IUPAC):	2,3,3,4,4,5-hexamethylhexane-2-thiol
CAS number(s):	25103-58-6
EC number:	246-619-1

3. Use and applications

TDM is a chain transfer agent used mainly in cold radical polymerization processes. It is used to control the molecular weight in the manufacturing of butadiene & styrene based processes such as butadiene latex (SBL) & synthetic rubbers (e-SBR and NBR), ABS, polystyrene (PS) and styrene varnishes.

TDM can also be used in the polymerization of various monomers, such as vinyl chloride and chlorotrifluoroethylene.

TDM is used as a chemical intermediate in various syntheses: extreme pressure additives, fragrances, non-ionic surfactants and fungicides.

4. Physical / Chemical properties

Property	Value
Physical state	Liquid at 20°C and 1013 hPa
Colour	Colourless, light yellow
Odour	Stinging, characteristic
Density	0.858 at 20°C
Vapour pressure	0.2 hPa at 25°C
Freezing / boiling points	<-20°C / 238°C at 1013hPa
Flammability	Not flammable based on Flash point

Flash point	95°C
Self-ignition temperature	212°C at 995 hPa
Explosive properties	Not explosive due to chemical structure
Oxidizing properties	Not oxidising due to chemical structure
Water solubility	3.93 µg/L at 20°C
Octanol-water partition coefficient (Log K_{ow})	7.43 at 20°C

5. Health Effects

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Based on analogue substances, considered of low toxicity by oral, dermal and inhalation routes
Irritation / corrosion Skin / eye/ respiratory tract	Irritating to the skin and the eyes. Not irritating for the respiratory tract
Sensitisation	Skin sensitizer
Toxicity after repeated exposure Oral / inhalation / dermal	Liver and kidney effects were observed following repeated exposure in inhalation studies with the substance and an oral study with an analogue substance
Genotoxicity / Mutagenicity	Not genotoxic
Carcinogenicity	No data available
Reproductive / Developmental Toxicology	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	No effect up to the limit of solubility

Fate and behaviour	Result
Biodegradation	Not readily biodegradable
Bioaccumulation potential	Moderately bioaccumulable
PBT / vPvB conclusion	Not considered to be PBT* or vPvB**

*: Persistent, Bioaccumulative and Toxic (PBT)
**: very Persistent and very Bioaccumulative (vPvB)

7. Exposure

7.1 Human health

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

The probability of exposure to workers is expected to be low because on manufacturing, formulation and application site, enclosed controlled environment are used and the product is transported in well sealed containers. Worker exposure during (un)loading, mixing, sampling, analysis and maintenance operations must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

For more information about conditions recommended, refer to the extended safety data sheet in Europe.

7.2 Environment

Based on its physico-chemical properties, tert-dodecanethiol is not soluble in water. The substance is not readily biodegradable and it is expected to strongly adsorb on soil and sediment particles. Based on the available data, it can be considered as moderately bioaccumulable.

Releases of this product to sewage, drainage systems and water bodies under normal conditions of use should be avoided: treatment of effluents should be organised to remove the left over substance. Spillage should be quickly collected in the event of an accidental release. More information about release measures and accidental release measures are available in the extended safety data sheet.

8. Risk Management recommendations

<table>
<tr><th colspan="3">Human health measures</th></tr>
<tr><td>Organizational</td><td colspan="2">Implement a good basic standard of occupational hygiene.
Ensure operatives are well informed of the hazards and trained to minimize exposures.
Hygiene measures must be respected and incompatible materials must be clearly identified.</td></tr>
<tr><td rowspan="4">Protection</td><td>Eye/Face protection:</td><td>Safety glasses.</td></tr>
<tr><td>Skin protection:</td><td>At the workplace: combination with delayed penetration.
Intervention at incident: anti-acid suit, waterproof suit.</td></tr>
<tr><td>Hand protection:</td><td>Splash contact, intermittent and prolonged: gloves nitrile rubber, glove thickness: 0.75 mm.</td></tr>
<tr><td>Respiratory protection:</td><td>In case of insufficient ventilation, wear suitable respiratory equipment (effective dust mask).
High concentrations or prolonged activity: self contained breathing apparatus.</td></tr>
<tr><td>Engineering controls</td><td colspan="2">Ensure sufficient air exchange and/or exhaust in work area.
Ensure that eyewash stations and safety showers are close to workstation locations.</td></tr>
<tr><th colspan="3">Environmental protective measures</th></tr>
<tr><td colspan="3">Do not release into the environment.
Do not let product enter drains.
For recovery, pump into a labelled inert emergency tank. Absorb the remainder with an inert absorbent material. Destroy by oxidation with dilute solution of hydrogen peroxide or sodium hypochlorite, or by incineration in accordance with local and national regulations.</td></tr>
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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: — Skin irritation, cat. 2 — Eye irritation, cat. 2 — Skin sensitization, cat. 1B — Chronic aquatic toxicity cat. 4	
Signal Word	
– Warning	
Pictogram	
– GHS07: Exclamation mark	
Hazard statement	
– H315: Causes skin irritation – H319: Causes serious eye irritation – H317: May cause an allergic skin reaction – H413: May cause long lasting harmful effects to aquatic life	
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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