

GPS Safety Summary

Substance Name:

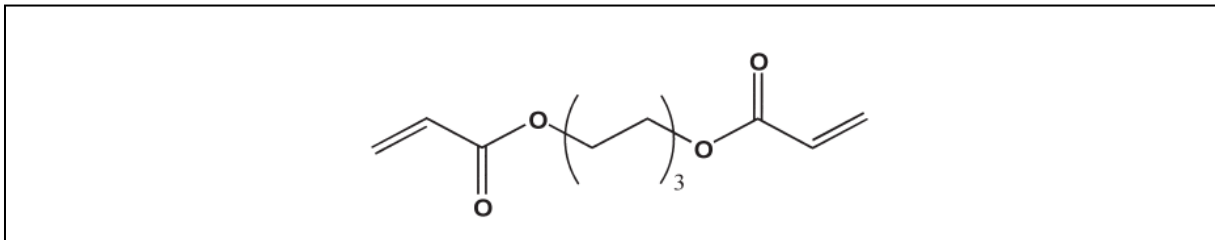
HEXANE-1,6-DIOL DIACRYLATE

1. General Statement

HDDA is a difunctional acrylic monomer which can be polymerised by free radicals. In particular, HDDA is designed for use in ultra violet and electron beam curing applications.

2. Chemical Identity

Name: HEXANE-1,6-DIOL DIACRYLATE
Brand names: SR 238
Chemical name (IUPAC): 1,6-hexanediol diacrylate
CAS number(s): 13048-33-4
ES number: 235-921-9
Molecular formula: C₁₂H₁₈O₄
Structure:



3. Use and applications

SR 238 is used as a reactive component in formulated coatings and inks that are cured using either Ultra Violet Light or Electron Beam radiation.

Typical applications of such coatings and inks include:

- Furniture and Floor coatings on wooden substrates
- Coatings for plastic substrates as in automotive applications
- Overprint varnishes for publications and packaging items.
- Offset, Screen, Flexo and Inkjet printing inks for a variety of substrates including paper, plastic metal and glass

4. Physical / Chemical properties

Property	Value
Physical state	Liquid at 20°C and 1013.25 hPa
Form	
Particle size	Not applicable
Colour	colourless

Odour	Characteristic
Molecular weight	226 g/mol
Density	1.2019 g/cm ³ at 20°C
Vapour pressure	0.0006 hPa at 20°C
Freezing / boiling points	7.8°C / not applicable (At temperatures above 100°C, the substance polymerises)
Flammability (optional) H statement in case classified	Non flammable upon ignition.
Flash point	> 110°C at 1013.25 hPa
Self-ignition temperature	235°C
Explosive / oxidizing properties	Note expected based on structure
Water solubility	343 mg/L
Dissociation constant (pK _a)	Not applicable
Octanol-water partition coefficient (Log K _{ow})	2.81 at 25°C

5. Health Effects

5.1 Consumer

Not applicable

5.2 Worker

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Does not cause acute toxicity
Irritation / corrosion Skin / eye/ respiratory tract	Skin contact causes irritation. Eye contact causes irritation. May be irritating for respiratory tract.
Sensitisation	May cause an allergic skin reaction.
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause toxicity to internal organs after repeated exposure in animal studies by oral route. Similar materials did not cause toxicity to internal organs after repeated exposure in animal studies by dermal route.
Genotoxicity / Mutagenicity	Based on the available test data, not expected to cause genetic effects.
Carcinogenicity	No data is available.
Toxicity for reproduction	Does not cause effects on the reproduction or on the foetal development in animal studies.

6. Environmental Effects

In contact with water, HDDA will hydrolyse slowly. However HDDA is readily biodegradable.

As HDDA is readily biodegradable in water, it is assumed that HDDA is also biodegradable in soil and sediment and thus can be considered as non persisting in soil and sediment.

After evaporation or exposure to the air, the product will be rapidly degraded by photochemical processes.

Adsorption to solid soil phase is not expected.

Effect Assessment	Result
Aquatic Toxicity	Toxic to aquatic organisms.

Fate and behaviour	Result
Biodegradation	Readily biodegradable.
Bioaccumulation potential	Significant accumulation in organisms is not to be expected.
PBT / vPvB conclusion	This substance is not considered to be persistent, bioaccumulative nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulative (vPvB).

7. Exposure

7.1 Human health

Consumer exposure:

Since the consumer is not exposed directly to the unreacted monomer of HDDA, an exposure to the consumer is negligible.

Worker:

Exposure can occur either in an HDDA manufacturing facility or in the various industrial facilities that use HDDA. Those working with HDDA in industrial operations could be exposed during maintenance, sampling, testing, or other procedures. Each industrial facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. Safety showers and eye-wash stations should be accessible nearby. Workers should follow the safety measures recommended in the Extended Safety Data Sheet (eSDS).

7.2 Environment

HDDA is readily biodegradable and will therefore be degraded rapidly within the waste water treatment process. Based on this information and on additional hazard data, the substance is not regarded to pose an unacceptable risk for the environment. All uses of HDDA are considered to be safe for the environment.

8. Risk Management recommendations

Human health measures	
Eye/Face protection	Safety glasses with side-shields
Skin protection	Long sleeved clothing
Hand protection	Gloves: nitrile rubber > 0,5 mm,(suitable gloves tested to EN374). Replace gloves immediately when torn or any change in appearance (dimension, colour, flexibility, etc) is noticed
Respiratory protection	When using concentrated chemicals always make sure that there is adequate ventilation.
Organizational measures	Ensure workers are duly trained to minimize exposure

Engineering control	Apply technical measures to comply with the occupational exposure limits When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment
Environment protective measures	
Do not allow material to contaminate ground water system. All effluent releases that may include the substance must be directed to a (municipal) waste water treatment plant that removes the substance from the final releases to the receiving water.	

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 e-SDS. 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, the pure substance is classified:	
<ul style="list-style-type: none"> – Skin Corrosion/Irritation; Category 2. – Serious Eye Damage/Eye Irritation; Category 2. – Skin Sensitization; Category 1. 	
Signal word	
– Warning	
Pictogram	
– GHS07: Exclamation mark	
Hazard statement	
<ul style="list-style-type: none"> – H315 – Causes skin irritation – H317 – May cause an allergic skin reaction – H319 - Causes serious eye irritation 	
Alternative classification according to Globally Harmonized System (GHS)	
<ul style="list-style-type: none"> – H313 – May be harmful in contact with skin – H315 – Causes skin irritation – H317 – May cause an allergic skin reaction – H319 – Causes serious eye irritation – 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: 2016-03-11
- 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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