

Product Stewardship Summary

Effective date: 1 September 2019

Supersedes: 17 October 2016

Tripropylene glycol diacrylate

General Statement

Tripropylene glycol diacrylate (TPGDA) is a difunctional acrylic monomer which can be polymerized by free radicals. TPGDA is a low to moderate hazard material and risk of adverse health effects associated with both occupational and consumer use of this chemical is anticipated to be low to moderate.

Chemical Identity

Name: Tripropylene glycol diacrylate

Brand Names: Not applicable

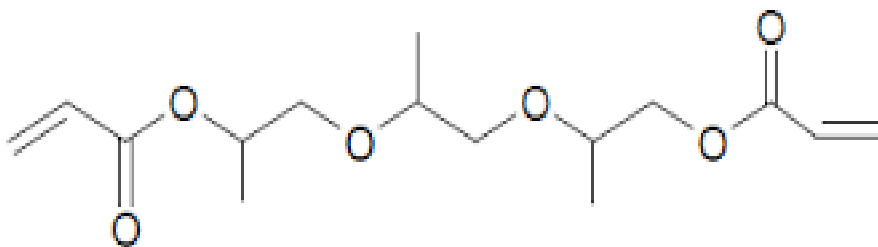
Chemical name (IUPAC): (1-methyl-1,2-ethanediyl)bis[oxy(methyl-2,1-ethanediyl)] diacrylate

CAS number(s): 42978-66-5

EC number: 256-032-2

Molecular formula: C₁₅O₂₄O₆

Structure:



Uses and Applications

TPGDA is used as a reactive component in formulated coatings and inks that are cured using UV or electron beam radiation. Some applications include floor coatings, coatings for plastic substrates on car parts and overprint varnishes for publication and packaging items.

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Physical/Chemical Properties

Phys/Chem Safety Assessment

Property	Value
Form	Fluid
Physical state	Liquid
Color	Yellowish
Odor	Ester-like
Density	1.04 g/cm ³ @ 20°C
Melting / boiling point	<-20 / >120 °C
Flammability	No data available
Explosive properties	No data available
Self-ignition temperature	214 °C
Vapor pressure	0 hPa @ 20°C
Mol weight	300.16 g/mol
Water solubility	4 g/L @ 20°C
Flash point	153°C
Octanol-water partition coefficient (Log _{k_{ow}})	2.0 @25°C

Exposure, Hazard and Safety Assessment

The following section describes possible exposure scenarios and hazards associated with tripropylene glycol diacrylate. The exposure assessment describes both the amount of and the frequency with which a chemical substance reaches a person, a population of people, or the environment. Hazard refers to the inherent properties of a substance that make it capable of causing harm to human health or the environment. The safety assessment reports the possibility of a harmful event arising from exposure to a chemical or physical agent under specific conditions. Just because a substance may possess potentially harmful properties does not mean that it automatically poses a risk. It is not possible to make that determination without understanding the exposure.

Human Health Effects

Human Exposure Assessment

Consumer: Tripropylene glycol diacrylate is used as a reactive component in formulated coatings and inks that are cured using UV or electron beam radiation. Therefore, consumer exposure is most likely limited to extremely low levels of unreacted material that may be present within consumer products.

Worker: In industrial settings, tripropylene glycol diacrylate is manufactured and handled in closed processes as much as possible, which ensures that worker exposure is minimized. When there is potential for exposure, during loading, unloading, sampling or during maintenance operations, exposure to tripropylene glycol diacrylate can be further minimized by the proper use of personal protective equipment.

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Human Hazard Assessment

Tripropylene glycol diacrylate is associated with low acute and repeat dose toxicity. It can cause eye and skin irritation and is associated with skin sensitization.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Low toxicity following oral, dermal or inhalation exposures.
Irritation / corrosion Skin / eye / respiratory test	Slightly irritating to the skin. Moderately irritating to the eyes. May causes respiratory irritation. 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 dermal route. After repeated exposure by dermal route, the predominant effect is local irritation. Similar materials did not cause toxicity to internal organs after repeated exposure in animal studies by oral route.
Genotoxicity / Mutagenicity	Neither mutagenic nor genotoxic.
Carcinogenicity	No carcinogenic effects anticipated.
Toxicity for reproduction	No expected adverse effect on fertility and development.

Human Health Safety Assessment

Consumer: Tripropylene glycol diacrylate is used as a reactive component in formulated coatings and inks that are cured using UV or electron beam radiation. Therefore, consumer exposure will be limited to extremely low levels of unreacted material that may be present in consumer products. Based on low toxicity and low consumer exposure potential, subsequent risk is unlikely.

Worker: In industrial settings, tripropylene glycol diacrylate is manufactured and handled primarily in closed processes which limit exposure. Based on good manufacturing processes and industrial hygiene, the occupational health risk associated with tripropylene glycol diacrylate is low.

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Environmental Effects

Environmental Exposures

Tripropylene glycol diacrylate is moderately biodegradable and has low potential for bioaccumulation. It is soluble in water. Based on its physical and chemical properties, tripropylene glycol diacrylate has a low potential for volatilization and is expected to have high mobility in soil. Volatilization from water surfaces is not expected.

Environmental Hazard Assessment

Effect Assessment	Result
Aquatic Toxicity	Highly toxic to fish and harmful to aquatic invertebrates and algae.

Fate and behavior	Result
Biodegradation	Moderately/partially biodegradable.
Bioaccumulation potential	Not potentially bioaccumulative (log Kow = 2.0).
PBT / vPvB conclusion	Not considered to be either PBT or vPvB.

Environmental Safety Assessment

Based on the available data, tripropylene glycol diacrylate is considered highly toxic to fish and harmful to both aquatic invertebrates and algae. It is readily biodegradable and has a low potential for bioaccumulation.

Risk Management Recommendations

Exposure to tripropylene glycol diacrylate in the workplace can be controlled by sufficient ventilation, proper handling and storage techniques, and the use of appropriate personal protective equipment as recommended in the SDS. Consumer products that contain significant levels of the substance should include necessary safety labeling and provide appropriate handling and disposal methods.

A selection of occupational exposure limits is provided, below:

- No occupational exposure limits identified.

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Regulatory Agency Review

Tripropylene glycol diacrylate is on the following lists:

Australian Inventory of Chemical Substances (AICS)
China - Chemical Inventory of Existing Chemical Substances (IECSC) - CAS Numbers
ECHA - List of Pre-registered Substances
Environment Canada - Domestic Substances List (DSL)
Environment Canada - Domestic Substances List (DSL) Categorization of Existing Substances
EPA - Chemical Update System (CUS) - 2002
EPA - High Production Volume (HPV) - Chemical Hazard Data Availability
EPA - Office of Pollution Prevention and Toxics (OPPT) High Production Volume (HPV) Program - 1990
EPA - TSCA - 8(a) - Preliminary Assessment Information Rules (PAIR)
EPA - TSCA - 8(d) - Health and Safety Data Rule (HSDR) Rule Terminations
EPA - TSCA - 8D Health and Safety Data Rule (HSDR) (d) - Listed Members of Categories
EPA - TSCA - Inventory
EPA - TSCA - Test Submissions - Section 4
ETUC - Priority List for REACH Authorisation
EU - Cosmetic Ingredients and Fragrance Inventory
EU - European Inventory of Existing Commercial Substances (EINECS)
EU - Table 3.1 of Annex VI to the CLP Regulation
EU - Table 3.2 of Annex VI to the CLP Regulation
FDA - Inventory of Effective Food Contact Substance (FCS) Notifications
International Council of Chemical Associations (ICCA) - High Production Volume (HPV) Initiative
Mexico - National Inventory of Chemical Substances
New Zealand - Inventory of Chemicals (NZIoC)
OECD - High Production Volume (HPV) Chemicals - 2004
OECD - High Production Volume (HPV) Chemicals - 2007
Philippine Inventory of Chemicals and Chemical Substances (PICCS)

Regulatory Information / Classification and Labeling

Under the Globally Harmonized System for classification and labeling (GHS), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (Extended) 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.

GHS Classification:

Eye Irritation, Category 2
Skin Irritation, Category 2
Skin Sensitization, Category 1
STOT SE, Category 3
Aquatic chronic toxicity, Category 2

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Hazard Statements:

H315: Causes skin irritation
H317: May cause allergic skin reaction
H319: Causes serious eye irritation
H335: May cause respiratory irritation
H411: Toxic to aquatic life with long-lasting effects

Signal Word: Warning

Precautionary Statements:

P261: Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264: Wash skin thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing must not be allowed out of the workplace.
P280: Wear eye protection/face protection/protective gloves.
P302: IF ON SKIN: Wash with plenty of soap and water.
P305: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P333: If skin irritation or rash occurs: Get medical advice/ attention.
P337: If eye irritation persists: Get medical advice/ attention.
P362: Take off contaminated clothing and wash before reuse.
P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.
P501: Dispose of contents/ container to an approved waste disposal plant

Hazard Pictograms:



Conclusion

Tripropylene glycol diacrylate is used as a reactive component in formulated coatings and inks that are cured using UV or electron beam radiation. Therefore, due to the extremely low levels of unreacted material present in consumer products exposure and subsequent risk is unlikely. When handled responsibly within an industrial setting, the potential for respiratory and eye irritation and skin

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sensitization can be minimized, allowing workers to use materials containing tripropylene glycol diacrylate safely.

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Additional Information

For more information on Product Stewardship at INEOS Composites, visit our website's Safety, Health and Environment (SHE) page: www.ineos.com/composites-she

For more information on GHS, visit <http://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf> or http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.

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Inclusion on the New Zealand Inventory of Chemicals applies only to the pure substance listed. The importer of record must determine whether their substances comply.