

GPS/JIPS Safety Summary

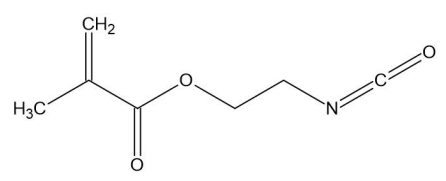
1. SUBSTANCE NAME

2-Isocyanatoethyl methacrylate (CAS No. 30674-80-7)

2. GENERAL STATEMENT

2-isocyanatoethyl methacrylate manufactured by our company is a functional monomer characterized by the presence of polymerizable methacryl groups and isocyanate groups that react with various active hydrogen compounds in the same molecule. The molecular design is facilitated by such means as synthesizing a polymer with an isocyanate group (oligomer) by reacting the double bond first and synthesizing a polymer with a double bond (oligomer) by reacting the isocyanate group first. It can be used in a wide range of fields, including paint and coating materials and light-sensitive resin materials. It is harmful to the human body and is life threatening if inhaled. It causes irritation to the skin and may cause allergic skin reaction. It also causes strong eye irritation. Therefore, it is necessary to wear protective equipment during use to protect the eyes and skin and prevent inhalation.

3. CHEMICAL IDENTITY

Item	Description
Chemical or generic name	2-Isocyanatoethyl methacrylate
Trade name	Karenz MOI
CAS No.	30674-80-7
Other Nos.	Japan: Chemical Substances Control Law (2)-3378 Japan: Industrial Safety and Health Act 2-(6)-1145
Chemical Formula	C ₇ H ₉ NO ₃
Structural Formnula	 <p>The structure shows a methacrylate backbone with a methyl group (H₃C) and a methylene group (CH₂) attached to the double bond. The ester group is linked to a 2-isocyanatoethyl chain (O-CH₂-CH₂-N=C=O).</p>
Source/References	Section 3 of the SDS issued by Resonac Corporation

4. USES AND APPLICATIONS

Main uses	It is used as a raw material for electronic materials (liquid resist, film resist, color filter resist, semiconductor tape, adhesive, bonding agent), printing (print plate, color calibration), medical care (soft contact lens, dental material), fiber/paper/wood (surface treatment agent), automobile (top coat, repair paint, part paint), home appliance (substrate, insulation material), and building materials (cement primer, paint, bonding agent).
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5. PHYSICAL/CHEMICAL PROPERTIES

2-isocyanatoethyl methacrylate is a colorless to slightly yellow liquid, having a pungent odor. It is stable under normal use conditions, but it is polymerized by heat, light, etc. When storing, it is necessary to avoid sunlight and to store it in a cool and dark place to avoid polymerization.

Appearance	Liquid
Colour	Colourless to slightly yellow
Odour	Pungent
Melting point/Boiling point	< -20.15 °C / 207 °C
Flash point	99 °C (Cleveland open style)
Explosive limits (vol %)	No data available
Auto-ignition temperature	422 °C
Vapour pressure	0.018 kPa (20 °C)
Relative density	1.1 (25°C)
Solubility	Water: Not measurable due to reaction. Organic solvents that do not contain active hydrogen:Easily soluble
Partition coefficient n-octanol/water (Log Pow)	1.72 (calculated)
Kinematic viscosity	1.6 mm ² /s (25°C)
Sources/references	Section 9 and 10 of the SDS issued by Resonac Corporation

6. HEALTH EFFECTS

Effect assessment	Results (GHS Hazard Classification)
Acute toxicity (oral)	Category 4 Harmful if swallowed
Acute toxicity (dermal)	Classification not possible
Acute toxicity (inhalation:gas)	Not applicable
Acute toxicity (inhalation:vapour)	Category 1 Fatal if inhaled
Acute toxicity (inhalation:dust,mist)	Classification not possible
Skin corrosion/irritation	Category 2 Causes skin irritation
Serious eye damage/eye irritation,	Category 1 Causes serious eye damage
Respiratory sensitisation	Category 1 May cause allergy or asthma symptoms or breathing difficulties if inhaled
Skin sensitisation	Category 1A May cause an allergic skin reaction
Germ cell mutagenicity	Classification not possible
Carcinogenicity	Classification not possible
Reproductive toxicity	Classification not possible
Specific target organ toxicity – Single exposure	Classification not possible
Specific target organ toxicity (repeated exposure)	Classification not possible
Aspiration hazard	Classification not possible
References	Section 2 and 11 of SDS issued by Resonac Corporation

- GHS (Globally Harmonized System of Classification and Labelling of Chemicals): A system that classifies chemicals according to the type and degree of hazards, labels the information, and provides safety data sheets according to globally harmonized rules.
- Not applicable: Since the priority of physical state, chemical structure, chemical property, and hazard items used in the GHS classification procedures does not fall under the category, it is not subject to the classification for the category.
- Not classified: Sufficient information has been obtained to implement the GHS classification, and as a result of the classification, it does not fall under any of the hazard categories specified in the GHS.
- Classification not possible : There is not enough information for GHS classification, and classification is not possible.

7. ENVIRONMENTAL EFFECTS

Effect assessment	Results (GHS Hazard Classification)
Hazardous to the aquatic environment, short-	Classification not possible

term (acute)	
Hazardous to the aquatic environment, long-term (chronic)	Classification not possible
Hazardous to the ozone layer	Classification not possible
Sources/references	Sections 2 and 12 of the SDS issued by Resonac Corporation

Environmental fate/dynamics	
Mobility in soil	Koc=64.7
Persistence/degradability	Biodegradation test (OECD TG301B, 28 days): degradation rate 87%
Bioaccumulation potential	Log Pow = 1.72 Accumulation is suggested to be low.
Conclusion about PBT/vPvB	The criteria for persistent bioaccumulative and toxic (PBT; remaining persistently in the environment and possessing high bioaccumulation potential and toxicity) and very persistent and very bioaccumulative (vPvB; remaining very persistently in the environment and possessing very high bioaccumulation potential) chemicals are believed to inapplicable.
Sources/references	Sections 12 of the SDS issued by Resonac Corporation

8. EXPOSURE

Details	Exposure potentials through main uses
Occupational exposures	Exposure to this product occurs in manufacturing facilities and various industrial facilities that use the substance, but the exposure in operators is relatively low because all of them are in closed processes under controlled conditions; therefore, there is almost no possibility of atmospheric release of the product. However, inhalation and contact with the skin/eyes may occur during sampling, filling, and transfer operations.
Consumer exposures	This product is not used directly by general consumers.
Environmental exposures	Since our company products are typically manufactured and used in closed processes, the potential for release into the environment is limited.
Precautions	If there is a possibility of exposure in other uses, take appropriate measures with reference to recommended risk management measures.

9. RISK MANAGEMENT RECOMMENDATIONS

Recommended risk management measures can minimize risks to workers, consumers, and the environment from Section 8 exposure scenarios.

Details	Risk management recommendations
Worker	Technical measures, local exhaust, and general ventilation Install local exhaust ventilation and general ventilation equipment at the manufacturing, storage, and handling areas for our company products, and install eyewash facility and safety shower near the handling areas.
	Permissible concentration It is not established.

	<p>Protective equipment</p> <p>During operation, wear a gas mask for organic gas or an air-line mask, gloves, apron, boots (use a chloroprene rubber protective equipment because it penetrates the rubber protective equipment) to avoid contact with the skin; also use goggles to prevent air from entering so that eye irritation can be avoided.</p>
	<p>Precautions</p> <p>The operation manager should educate operators about the selection of appropriate protective equipment, proper usage method, and control method of the work site.</p>
Consumer	This product is not used directly by general consumers.
Environment	Take care not to discharge the spilled product into rivers, etc., and affect the environment. Since the product has a strong odor or irritancy, take appropriate measures, such as notifying people in the vicinity of the leakage.
Special notes (emergency measures in case of leakage, etc.)	If the product leaks, allow it to be absorbed by an absorbent, such as vermiculite, sawdust, and sand, and treat it with dilute ammonia water (e.g., 50% ethylene glycol water mixed with concentrated ammonia water [1/10 amount]). Immediately remove ignition sources from the vicinity and prepare suitable extinguishing media.
Precautions	For normal handling, emergency response, disposal, and transportation control measures, refer to sections 4, 5, 6, 7, 8, 13, and 14 of the SDS issued by Resonac Corporation.

10. STATE AGENCY REVIEW

Hazard assessment	Situations of review
International Chemical Safety Cards	None
OECD HPV	None
NITE-CHRIP (NITE Chemical Risk Information Platform)	https://www.nite.go.jp/en/chem/chrip/chrip_search/srhInput
GHS Classification Results by the Japanese Government	https://www.nite.go.jp/chem/english/ghs/10-mhlw-0159e.html


11. REGULATORY INFORMATION / GHS CLASSIFICATION AND LABELLING INFORMATION

Regulatory information only in Japan

Applicable laws	Regulatory situations
Industrial Safety and Health Act	Not applicable
Poisonous and Deleterious Substances Control Act	Not applicable
Fire Service Act	Category IV flammable liquids, Class III petroleum, water-immiscible liquids (Article 2, Paragraph 7 of the Act, Hazardous materials, Annexed Table 1) Class III petroleum, water-immiscible liquids
Ship Safety Act	Poisonous substances: Poison (Article 2 and 3 of Regulations for the Carriage and Storage of Dangerous Goods in Ship, Cabinet

	Order Concerning the Control of Hazardous Materials appended Table 1)
Civil Aeronautics Act	Properties prohibited from transportation (Article 194 of Civil Aeronautics Act Enforcement Regulations)
Port Regulations Act	Hazardous materials (Poison) (Article 21-2 of the Act, Article 12 of Enforcement Ordinance, Notification of the Enforcement Regulations of the Port Regulations Act specifying the types of hazardous materials)
Act on the Assessment of Releases of Specified Chemical Substances in the Environment and the Promotion of Management Improvement and Transfer Register / PRTR)	Not applicable
UN classification	6.1
UN No.	UN2206 Isocyanate solution, toxic, n.o.s.

Hazards	Classification results (hazard information)
Health hazards	Acute toxicity (oral), Category 4
	Acute toxicity (inhalation:vapour), Category 1
	Skin corrosion/irritation, Category 2
	Serious eye damage/eye irritation, Category 1
	Respiratory sensitisation, Category 1
	Skin sensitisation, Category 1A

Labelling Information	
Hazard pictograms (GHS)	
Signal word (GHS)	Danger
Hazard statements (GHS)	Harmful if swallowed. (H302) Causes skin irritation. (H315) May cause an allergic skin reaction. (H317) Causes serious eye damage. (H318) Fatal if inhaled. (H330) May cause allergy or asthma symptoms or breathing difficulties if inhaled. (H334)

12. CONTACT INFORMATION

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13. DATE OF ISSUE / REVISION, ADDITIONAL INFORMATION

Date of issue: November 30, 2021

Revisions:

Date of revision	Revised section	Revised item	Version
January 1, 2023	3, 10, 11, 12, 13	Update to the latest information	Rev.2

The contents are based on the safety data sheet (SDS) created on January 1, 2023.

Special instructions: none

14. DISCLAIMER

The safety summary is part of the effort for the voluntary management of chemical substance in the chemical industry (GPS/JIPS: Japan Initiative of Product Stewardship). The purpose of the safety summary is to provide information on the safe handling of the product as an overview and not to provide professional information, such as the risk evaluation process and its impact on human health and the environment. This document is not meant to serve as an alternative to risk evaluation, such as a Safety Data Sheet (SDS) or a Chemical Safety Report (CSR). This safety summary is being written as accurately as possible based on data such as laws, materials, and information available at the time of publication, but it does not include all data. It does not guarantee anything.