

**PRODUCT SAFETY SUMMARY:
ETHYLENE CARBONATE**

This Product Safety Summary is intended to provide a general description of certain Huntsman chemical substances and products containing the chemical substance(s). The information in this Summary is not intended to replace the information included on the Safety Data Sheet (SDS), Product Safety Label, and other safe use and handling literature for the chemical substance(s).

Chemical Identity:

Name	Other Identifiers
Ethylene Carbonate	1,3-dioxolan-2-one 2-(carboxyoxo)ethyl carbonate 1,3-Dioxacyclopentan-2-one

General Product Overview:

Ethylene carbonate is a reactive intermediate or component with widespread sector of end use of article (i.e. manufacture of fine chemicals, scavenger, laboratory agent). Manufactured or used by Huntsman for industrial downstream users or professionals.

Applications and Uses:

Ethylene carbonate is used at industrial site as non-reactive processing aid or reactive process regulator in polymerization processes. Manufactured or formulated in the chemical industry in closed batch processes by mixing or blending, without or with occasional controlled exposure. Use at industrial site in “as such” form or leading to inclusion into/onto article.

Physical and Chemical Properties:

Ethylene carbonate is an odorless and colorless fine crystal solid. Certain physical/chemical properties specific to Ethylene carbonate are summarized below:

Physical/Chemical Property	Result
Molecular Weight	88.06 g/mol
Melting point	36 °C at 101 325 Pa
Boiling point	247 °C at 101 325 Pa
Density	1.32 g/cm ³ at 40°C
Partition coefficient (Log Kow)	0.11 at 20.0 °C

Physical/Chemical Property	Result
Vapour Pressure	1.0 Pa at 20.0 °C
Water Solubility	778 g/L at 20 °C
Flammability	Not classified
Explosiveness	Non-explosive
Oxidizing property	Non-oxidizing

Additional physical and chemical property information is available on the product Safety Data Sheet (SDS), which can be requested at SDS@huntsman.com.

Human Health Information:

The probability of experiencing health effects associated with exposure to ethylene carbonate is controlled, provided the recommendations stated in the Safety Data Sheet are enforced. Adverse health effects are subject to dose level, route, and duration of exposure.

Different regulatory classification criteria apply in different geographic regions. These different criteria may result in different human health regulatory classifications for the same product in different geographic regions. Specific regulatory classification information is contained in the Safety Data Sheet for each product in use in a specific geographic region. The acute and chronic health effects information set forth below is based on GHS criteria.

All instructions found on the packaging should be followed. Ethylene carbonate is safe when used appropriately. The uses identified for the substance have been assessed as safe under several regulatory programs.

Summary – Human Toxicological data:

Effect Assessment	Result
Acute Toxicity	Oral: LD ₅₀ > 2000 mg/kg bw Dermal: LD ₅₀ > 2000 mg/kg bw Inhalation: LD ₅₀ > 730 mg/m ³ air
Skin Irritation	Not irritating
Eye Irritation	Causes serious eye irritation (Cat. 2)
Sensitization	Non-sensitizer
Genotoxicity	Non-mutagenic

Ethylene carbonate is classified under the UN GHS classification criteria. More information can

be obtained in the Safety Data Sheet.

Acute Health Effects:

Likelihood/frequency of oral, skin and inhalation exposures are low, if used under strictly recommended conditions and closed process.

Acute oral toxicity of ethylene carbonate is low. The oral LD₅₀ for rats was determined to be >2000 mg/kg. Based on the LD₅₀ and the criteria of the CLP Regulation, the test item is not classified for acute oral toxicity.

Ethylene carbonate does not indicate skin irritation and skin sensitization and is considered to be non-corrosive.

Ethylene Carbonate is a moderate irritant (class 5 on a 1-8 scale) to the rabbit eye. According to the criteria specified in the CLP Regulation ethylene Carbonate should be classified as an eye irritant substance category 2 (reversible eye effects).

Summary - Ecotoxicological Data:

Effect Assessment	Result
Short term toxicity to aquatic invertebrates	EC ₅₀ :5900 mg/L
Short term toxicity to fish	LC ₅₀ > 100 mg/L
Toxicity to aquatic microorganisms	EC ₅₀ for freshwater algae > 100 mg/L

Ethylene carbonate was found to pose no hazard to aquatic species including *Ceriodaphnia dubia*, green algae *Pseudokirchneriella subcapitata*.

Summary – Environmental fate and pathways:

Effect Assessment	Result
Ready biodegradability	Readily biodegradable

Ethylene carbonate is considered to be readily biodegradable.

There is no long-term aquatic hazard anticipated as the substance is rapidly degradable ("readily biodegradable" in the carbon dioxide evolution test) and has no potential for bioaccumulation (Log Kow = 0.11). The substance is not supposed to be directly applied to soil and an indirect exposure to soil via sewage sludge transfer is unlikely since the substance is readily biodegradable. For a substance being considered as readily biodegradable, it can be assumed that it will be biodegraded within the STP process and therefore a transfer to the soil compartment is not

expected. Therefore, no tests on terrestrial organisms are provided. closed process in which the product is used does not lead to direct emissions to soil and air. Procedural and/or control technologies are used to minimize emissions and potential exposure during cleaning and maintenance activities.

Occupational (workers) Exposure:

At Huntsman, ethylene carbonate is manufactured in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions. During normal operating conditions, occupational exposure to ethylene carbonate is not expected in the manufacturing process. Procedural and/or control technologies are used to minimize exposure during sampling, cleaning, maintenance, or in more open handling systems. Appropriate engineering controls (such as ventilation) and personal protective equipment should be used in accordance with the exposure guidelines and workplace practices identified in the Safety Data Sheet.

Workers working with propylene carbonate in industrial operations could be exposed during maintenance, sampling, testing, or other procedures. Workplace exposure is controlled and minimized by use of proper occupational handling procedures and personal protection and safety equipment. Potential routes of worker exposure to ethylene carbonate are through dermal contact and to a minor extent, through inhalation in a ethylene carbonate manufacturing facility or in the various industrial facilities that use ethylene carbonate. Ingestion is not an anticipated route of exposure. Worker exposure can occur in industrial facilities where the substance is produced or formulated into end-use products. Within this assessment, both industrial workers and trained professionals are evaluated. The exposure has been assessed as safe if the substance is used as directed on the label, avoiding splashes onto skin and into eyes. Huntsman follows and recommends customers to follow workplace exposure guidelines through a variety of industrial hygiene and ventilation measures. The substance has been assessed as safe for professional and industrial use when the provisions identified in the SDS are followed carefully.

Likelihood/frequency of skin and inhalation exposure is low, due to its usage under strictly controlled conditions and closed process. Also, no combined exposure of workers is expected as there are no consumer uses for ethylene carbonate, while exposure during service life is negligible.

Consumer Exposure:

Huntsman does not market ethylene carbonate directly for consumer use.

There are no consumer uses for ethylene carbonate, although some dermal exposure from the service life is expected. A very low residual release during the service life of articles. Hence, oral and inhalation exposure are considered not relevant, while dermal exposure can be considered as negligible. Further, it is recommended to keep ethylene carbonate away from the reach of children and avoid direct contact.

Environmental exposure:


Ethylene carbonate is readily biodegradable and not harmful to aquatic organisms. Conclusively, all identified uses are safe for the environment based on the scientific facts and when carried out in compliance with recommended risk management measures and applicable regulations.

Regulatory Information/Classification and Labeling:

Regulations exist that govern manufacture, sales, transportation, use and disposal of ethylene carbonate. These regulations may vary by city, state, country, or geographic region. Information can be found by consulting the relevant SDS.

Under the Globally Harmonized System (GHS) for Hazard Communication, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the Safety Data Sheets. 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. The hazard statements and symbols presented here refer to the hazard properties of the concentrated substance and are meant to provide a brief overview of the substance's labeling. It is not intended to be comprehensive or to replace information found in the Safety Data Sheet.

Labeling according to GHS:

Hazard pictograms	
Signal word	Warning
Hazard statements	H319: Causes serious eye irritation. H373: May cause damage to organs through prolonged or repeated exposure H302: Harmful if swallowed.

Note: The hazard statements and symbols presented here refer to the hazard properties of the concentrated substance and are meant to provide a brief overview of the substance's labeling. It is not intended to be comprehensive or to replace information found in the Safety Data Sheet.

References:

- Anvitha Material Safety Data Sheet.
- Information on registered substance (ECHA): <https://echa.europa.eu/registration-dossier/-/registered-dossier/14909>.

**Additional Information:**

Information on registered substances is available on the European Chemicals Agency (ECHA) website at <https://echa.europa.eu>.

Disclaimer

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity, and behavior of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity, and behavior should be determined by the user and made known to handlers, processors, and end users.

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