

## SAFETY DATA SHEET

### 1. SUBSTANCE AND SOURCE IDENTIFICATION

**Product Identifier**

**SRM Number:** 1972  
**SRM Name:** 1,3-Dioxolan-2-one (Ethylene Carbonate) Triple-Point Standard  
**Other Means of Identification:** Not applicable.

**Recommended Use of This Material and Restrictions of Use**

This Standard Reference Material (SRM) is intended to be used to calibrate thermometers near 36.314 °C. A unit of SRM 1972 consists of approximately 60 g of ethylene carbonate, which is estimated to be 99.999 % to 99.9999 % pure, sealed under vacuum in a borosilicate glass tube containing a re-entrant thermometer well.

**Company Information**

National Institute of Standards and Technology  
Standard Reference Materials Program  
100 Bureau Drive, Stop 2300  
Gaithersburg, Maryland 20899-2300

Telephone: 301-975-2200  
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Website: <http://www.nist.gov/srm>

Emergency Telephone ChemTrec:  
1-800-424-9300 (North America)  
+1-703-527-3887 (International)

### 2. HAZARDS IDENTIFICATION

**Note:** Under normal conditions of use, this material will remain enclosed in the borosilicate glass tube. The following information is provided in case the tube breaks resulting in exposure to the ethylene carbonate.

**Classification**

**Physical Hazard:** Not classified.  
**Health Hazard:** Serious Eye Damage/Irritation Category 2A

**Label Elements****Symbol****Signal Word**

WARNING

**Hazard Statement(s)**

H319 Causes serious eye irritation.

**Precautionary Statement(s)**

P264 Wash hands thoroughly after handling.

P280 Wear protective gloves, protective clothing, and eye protection.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists: Get medical attention.

**Hazards Not Otherwise Classified:** Not applicable.**Ingredients(s) with Unknown Acute Toxicity:** Not applicable.

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### 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

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**Substance:** 1,3-Dioxolan-2-one (ethylene carbonate)

**Other Designations:** Glycol carbonate, dioxolone-2, ethylene, carbonic acid, ethylene glycol carbonate

Components are listed in compliance with OSHA's 29 CFR 1910.1200; for the actual values see the NIST Certificate of Analysis.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Ethylene carbonate	96-49-1	202-510-0	99.9

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### 4. FIRST AID MEASURES

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**Description of First Aid Measures:**

**Inhalation:** If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Seek immediate medical attention.

**Skin Contact:** Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention, if needed. Thoroughly clean and dry contaminated clothing before reuse.

**Eye Contact:** Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**Ingestion:** Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

**Most Important Symptoms/Effects, Acute and Delayed:** Eye, skin, and respiratory tract irritation.

**Indication of any immediate medical attention and special treatment needed, if necessary:** If any of the above symptoms are present, seek immediate medical attention.

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### 5. FIRE FIGHTING MEASURES

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**Fire and Explosion Hazards:** Slight fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

**Extinguishing Media:**

Suitable: Alcohol-resistant foam, carbon dioxide, regular dry chemical, and water.

Unsuitable: None listed.

**Specific Hazards Arising from the Chemical:** Thermal decomposition will form oxides of carbon.

**Special Protective Equipment and Precautions for Fire-Fighters:** Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

**NFPA Ratings** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 2

Fire = 1

Reactivity = 0

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### 6. ACCIDENTAL RELEASE MEASURES

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**Personal Precautions, Protective Equipment and Emergency Procedures:** Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

**Methods and Materials for Containment and Clean up:** Avoid heat, flames, sparks and other sources of ignition. Remove sources of ignition. Reduce vapors with water spray. Absorb with sand or other noncombustible material. Collect spilled material in appropriate container for disposal. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

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### 7. HANDLING AND STORAGE

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**Safe Handling Precautions:** See Section 8, "Exposure Controls and Personal Protection".

**Storage:** Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances (see Section 10, "Stability and Reactivity").

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## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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**Exposure Limits:** No occupational exposure limits available.

**Engineering Controls:** Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**Personal Protection:** In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

**Respiratory Protection:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye/Face Protection:** Wear splash resistant safety goggles with a face shield. An eyewash station should be readily available near areas of use.

**Skin and Body Protection:** Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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### Descriptive Properties

<b>Appearance (physical state, color, etc.):</b>	colorless solid
<b>Molecular Formula:</b>	C <sub>3</sub> H <sub>4</sub> O <sub>3</sub>
<b>Molar Mass (g/mol):</b>	88.06
<b>Odor:</b>	odorless
<b>Odor threshold:</b>	not available
<b>pH:</b>	not available
<b>Evaporation rate:</b>	not available
<b>Melting point/freezing point (°C):</b>	36 (97 °F)
<b>Relative Density (g/L) as specific gravity (water = 1):</b>	1.39 at 39 °C
<b>Vapor Pressure (mmHg):</b>	0.01 at 20 °C
<b>Vapor Density (air = 1):</b>	3
<b>Viscosity (cP):</b>	not available
<b>Solubility(ies):</b>	soluble in water, ether, butanol, carbon tetrachloride, alcohol, ethyl acetate, benzene, chloroform
<b>Partition coefficient (n-octanol/water):</b>	not available

### Thermal Stability Properties

<b>Autoignition Temperature (°C):</b>	not available
<b>Thermal Decomposition (°C):</b>	not available
<b>Initial boiling point and boiling range (°C):</b>	177 (351 °F) at 100 mmHg
<b>Explosive Limits, LEL (Volume %):</b>	not available
<b>Explosive Limits, UEL (Volume %):</b>	not available
<b>Flash Point (Closed Cup):</b>	143 °C (289.4 °F)
<b>Flammability (solid, gas):</b>	not available

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** Stable at normal temperatures and pressure.

**Stability:**  X  Stable   Unstable

**Possible Hazardous Reactions:** None listed.

**Conditions to Avoid:** Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

**Incompatible Materials:** Acids, bases, reducing agents, and oxidizing materials.

**Fire/Explosion Information:** See Section 5, "Fire Fighting Measures".

**Hazardous Decomposition:** Thermal decomposition will produce oxides of carbon.

**Hazardous Polymerization:**   Will Occur  X  Will Not Occur

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## 11. TOXICOLOGICAL INFORMATION

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**Route of Exposure:**  X  Inhalation  X  Skin  X  Ingestion

**Symptoms Related to the Physical, Chemical and Toxicological Characteristics:** Eye, skin, and respiratory tract irritation.

**Potential Health Effects (Acute, Chronic and Delayed):**

**Inhalation:** May cause respiratory irritation with sore throat and coughing. May cause chronic irritation of the nose, throat and lungs.

**Skin Contact:** May cause mild irritation.

**Eye Contact:** Acute exposure may cause moderate irritation. Repeated or prolonged exposure may cause conjunctivitis.

**Ingestion:** Acute ingestion of ethylene carbonate may cause abdominal pain, nausea, and vomiting. Chronic exposure in animals has shown kidney and liver damage.

**Numerical Measures of Toxicity:**

**Acute Toxicity:** Not classified.

Rat, Oral LD50: 10 g/kg

Rabbit, Dermal LD50: >3 g/kg

**Skin Corrosion/Irritation:** Not classified.

Rabbit, Open Skin: 660 mg (mild)

**Serious Eye Damage/Irritation:** Category 2A; Reported to cause moderate conjunctival irritation and slight corneal damage when tested on rabbits.

**Respiratory Sensitization:** Not classified; no data available.

**Skin Sensitization:** Not classified; no data available.

**Germ Cell Mutagenicity:** Not classified; no data available.

**Carcinogenicity:** Not classified.

**Listed as a Carcinogen/Potential Carcinogen**   Yes  X  No

Ethylene carbonate is not listed by NTP, IARC or OSHA as a carcinogen/potential carcinogen.

**Reproductive Toxicity:** Not classified; no data available.

**Specific Target Organ Toxicity, Single Exposure:** Not classified; no data available.

**Specific Target Organ Toxicity, Repeated Exposure:** Not classified; no data available.

**Aspiration Hazard:** Not classified; no data available.

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## 12. ECOLOGICAL INFORMATION

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**Ecotoxicity Data:** No data available.

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** 3.2 (low).

**Mobility in Soil:** No data available.

**Other Adverse effects:** No data available.

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## 13. DISPOSAL CONSIDERATIONS

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**Waste Disposal:** Dispose of waste in accordance with all applicable federal, state, and local regulations.

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## 14. TRANSPORTATION INFORMATION

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**U.S. DOT and IATA:** Not regulated by DOT and IATA.

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## 15. REGULATORY INFORMATION

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### U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	Yes.
CHRONIC HEALTH:	No.
FIRE:	No.
REACTIVE:	No.
PRESSURE:	No.

### State Regulations:

California Proposition 65: Not listed.

U.S. TSCA Inventory: Listed.

TSCA 12(b), Export Notification: Not listed.

### Canadian Regulations:

WHMIS Information: Not provided for this material.

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## 16. OTHER INFORMATION

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Issue Date: 10 June 2015

Sources: ChemAdvisor, Inc., SDS *Ethylene Carbonate*, 20 March 2015.

### Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transportation Agency	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration	STEL	Short Term Exposure Limit
LD50	Median Lethal Dose or Lethal Dose, 50 %	STOT	Specific Target Organ Toxicity
LEL	Lower Explosive Limit	TLV	Threshold Limit Value
MSDS	Material Safety Data Sheet	TPQ	Threshold Planning Quantity
NFPA	National Fire Protection Association	TSCA	Toxic Substances Control Act
NIOSH	National Institute for Occupational Safety and Health	TWA	Time Weighted Average
NIST	National Institute of Standards and Technology	UEL	Upper Explosive Limit
n.o.s.	Not Otherwise Specified	WHMIS	Workplace Hazardous Materials Information System

**Disclaimer:** Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The certified values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail [srmmsds@nist.gov](mailto:srmmsds@nist.gov); or via the Internet at <http://www.nist.gov/srm>.