Safety Data Sheet

FC20-FEC

Fluoroethylene Carbonate

Revised 26-March-2023

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Fluoroethylene Carbonate
Catalog Number	FC20-FEC
CAS Number	114435-02-8
Supplier	Fluoryx Labs 3650 Research Way, #22 Carson City, NV 89706 USA
Identified Uses	Lithium-ion battery electrolyte additive, used to improve battery capacity, cycle life and low-temperature performance.
Emergency call (VelocityEHS)	+01-813-248-0585 (International) +1-800-255-3924 (USA)

2. HAZARDS INFORMATION

Emergency Overview

GHS Classification

Acute toxicity	Oral (Category 4), H302
Skin irritation	Category 2, H315
Eye irritation	Category 2A, H319
Skin sensitization	Category 1, H317

GHS Label elements, including precautionary statements

Pictogram

Signal word — Warning

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.

P272	Contaminated work clothing must not be allowed out of the workplace.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P302 + P352 IF ON SKIN:	Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P501	Dispose of contents/ container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Synonyms 4-Fluoro-1,3-dioxolan-2-one, FEC

Molecular Weight 106.05 g/mol

CAS No. 114435-02-8

EC No. 483-360-5

Chemical formula $C_3H_3FO_3$

Components

Material	Classification	Concentration
4-Fluoro-1,3-dioxolan-2-one, FEC	Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2A; Skin Sens.1; H302, H315, H319, H317	≤100%

4. FIRST AID MEASURES

General advice Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact Wash off with soap and plenty of water. Consult a physician.

In case of eye contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of any immediate medical attention and special treatment needed. No data available

5. FIREFIGHTING MEASURES

Suitable extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for firefighters	Wear self-contained breathing apparatus for fire fighting. Wear full protective equipment.
Hazardous combustion products	Hazardous decomposition products formed under fire conditions - carbon oxides, hydrogen fluoride.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust. For personal protection see section 8.
Environmental precautions	Prevent further leakage or spillage. Do not let product enter drains.
Methods for cleaning up	Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for Safe Handling	Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Advice on protection against fire and explosion	Provide appropriate exhaust ventilation at places where dust is formed.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. For precautions see section 2.2.
Conditions for Safe Storage	Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature 2 - 8 °C. Storage class (TRGS 510): 11: Combustible Solids.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Contains no substances with published occupational exposure limit values.

Appropriate engineering controls	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Personal protective equipment	
Respiratory protection	For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Skin protection	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact

	with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Material: Nature latex/chloroprene Minimum layer thickness: 0.6 mm Break through time: > 480 min Material tested:Lapren® (KCL 706 / Aldrich Z677558, Size M) Splash contact Material: Nature latex/chloroprene Minimum layer thickness: 0.6 mm Break through time: > 480 min Material tested: Lapren® (KCL 706 / Aldrich Z677558, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.
Eye protection	Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Body protection	Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Control of environmental exposure	Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Form	Wax
Color	White to off-white
Safety Data	
pH	No data available
Melting Point/Freezing Point	18 - 23 °C
Boiling Point	212 °C @ 1 atm
Flash Point	> 102.2 °C
Ignition Temperature	No data available
Auto-ignition Temperature	No data available
Lower Explosion Limit	No data available
Upper Explosion Limit	No data available
Thermal Decomposition Temperature	No data available

Vapor Pressure	No data available
Density	1.485 g/cm^3
Water Solubility	No data available
Partition Coefficient (*n*-octanol/water)	Log Pow: -0.367
Relative Vapor Density (Air = 1)	No data available
Odor	No data available
Odor Threshold	No data available
Evaporation Rate	No data available
Refractive index	No data available

10. STABILITY AND REACTIVITY

Storage stability — Stable under recommended storage conditions.

Possibility of hazardous reactions — No data available

Conditions to avoid — No data available. Keep dry.

Materials to avoid — Strong oxidizing agents.

Hazardous decomposition products — Hazardous decomposition products formed under fire conditions - carbon oxides, hydrogen fluoride.

11. TOXICOLOGICAL INFORMATION

Exposure limits — None established

Acute toxicity — No data available

Skin corrosion/irritation — No data available.

Serious eye damage/eye irritation — No data available.

Respiratory or skin sensitization — No data available.

Germ cell mutagenicity — No data available.

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity — No data available

Specific target organ toxicity (Globally Harmonized System)

- **Single exposure** — No data available
- **Repeated exposure** — No data available

Aspiration Hazard — No data available

Synergistic Effects — No data available

Additional Information — No data available

12. ECOLOGICAL INFORMATION

Toxicity	No data available
Endocrine disrupting properties	No data available
Persistence and Degradability	No data available
Bioaccumulative Potential	No data available
Mobility in Soil	No data available
PBT and vPvB Assessment	No data available
Air, Photolysis, ODP = 0	No data available Reference value for CFC 11: ODP = 1.
Air, Greenhouse Effect	GWP: No data available Reference value for carbon dioxide: GWP = 1.
Other adverse effects	No data available

13. DISPOSAL CONSIDERATIONS

Product	Offer non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Contact Fluoryx to return unused product.
Contaminated packaging	Dispose of as unused product.

14. TRANSPORTATION INFORMATION

DOT (US)	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

15. REGULATORY INFORMATION

TSCA Status	Listed.
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	Acute health hazard
Massachusetts Right to Know Components	No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right to Know Components	Dioxolane-1,3, 4-fluoro-, 2-oxo CAS-No. 114435-02-8
New Jersey Right to Know Components	Dioxolane-1,3, 4-fluoro-, 2-oxo CAS-No. 114435-02-8
California Prop. 65 Components	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Legal Disclaimer:

Not for drug, household, or other uses. The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. Unless noted to the contrary, the technical information applies only to pure product.

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End of SDS