



Material Safety Data Sheet

Name:	Diethyl Fluoromalonate 98%(Min,GC)
Synonym:	Diethyl Fluoromalonate; Diethyl Fluoropropanedioate; Fluoromalonic Acid Diethyl Ester; Propanedioic Acid, Fluoro-, Diethyl Ester
CAS:	685-88-1

★ Section 1 - Chemical Product 98%(Min,GC)

MSDS Name: Diethyl Fluoromalonate

Synonym: Diethyl Fluoromalonate; Diethyl Fluoropropanedioate; Fluoromalonic Acid Diethyl Ester; Propanedioic Acid, Fluoro-, Diethyl Ester

★ Section 2 - COMPOSITION, INFORMATION ON INGREDIENTS

CAS#	Chemical Name	emsds	EINECS#
685-88-1	Diethyl Fluoromalonate	98%(Min,GC)	211-684-7

Hazard Symbols: C
Risk Phrases: 34

★ Section 3 - FIRST AID MEASURES

Eyes: Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

Skin:

Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

Ingestion:

Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has



Banff Green Technologies, Inc

TEL: 86-21-54795870 FAX: 86-21-54795870 Email: sales@banffgt.com
ADDRESS: Floor 29, CapitaMalls Plaza, No. 6088 Humin Rd., Minhang Dist., Shanghai 201100, China

ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician:

★ Section 4 - FIRE FIGHTING MEASURES

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Combustible liquid.

Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

Extinguishing Media:

In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Use water spray to cool fire-exposed containers.

★ Section 5 - ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 7.

Spills/Leaks:

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

★ Section 6 - HANDLING and STORAGE

Handling:

Wash thoroughly after handling. Use only in a well-ventilated area.

Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not get on skin or in eyes. Do not ingest or inhale. Discard contaminated shoes. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances.

Corrosives area.



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★ Section 7 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits CAS# 685-88-1: Personal Protective Equipment Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHAs eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to minimize contact with skin.

Respirators:

A respiratory protection program that meets OSHAs 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

★ Section 8 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Color: colorless

Odor: Not available.

pH: Not available.

Vapor Pressure: Not available.

Viscosity: Not available.

Boiling Point: 121 - 122 deg C @ 30.00mm Hg

Freezing/Melting Point: Not available.

Autoignition Temperature: Not available.

Flash Point: 62 deg C (143.60 deg F)

Explosion Limits, lower: Not available.

Explosion Limits, upper: Not available.

Decomposition Temperature:

Solubility in water:

Specific Gravity/Density: 1.1290g/cm³

Molecular Formula: C₇H₁₁FO₄

Molecular Weight: 178.16



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★ Section 9 - STABILITY AND REACTIVITY

Chemical Stability:

Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid:

Incompatible materials, ignition sources, excess heat.

Incompatibilities with Other Materials:

Strong oxidizing agents, strong bases.

Hazardous Decomposition Products:

Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, hydrogen fluoride gas.

Hazardous Polymerization: Has not been reported.

★ Section 10 - TOXICOLOGICAL INFORMATION

RTECS#:

CAS# 685-88-1: OO1670000 LD50/LC50: Not available.

Carcinogenicity:

Diethyl Fluoromalonate - Not listed by ACGIH, IARC, or NTP.

Other:

See actual entry in RTECS for complete information.

★ Section 11 - ECOLOGICAL INFORMATION

★ Section 12 - DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

★ Section 13 - TRANSPORT INFORMATION

IATA

Shipping Name: CORROSIVE LIQUID, N.O.S.*

Hazard Class: 8

UN Number: 1760

Packing Group: II

IMO

Shipping Name: CORROSIVE LIQUID, N.O.S.



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RID/ADR

Shipping Name: CORROSIVE LIQUID, N.O.S.

Hazard Class: 8

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★ Section 14 - REGULATORY INFORMATION

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: C

Risk Phrases: R 34 Causes burns.

Safety Phrases: S 25 Avoid contact with eyes. S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 685-88-1: No information available.

Canada

None of the chemicals in this product are listed on the DSL/NDSL list.

CAS# 685-88-1 is not listed on Canadas Ingredient Disclosure List.

US FEDERAL

TSCA

CAS# 685-88-1 is not listed on the TSCA inventory.

It is for research and development use only.