

Ethylchloroformate

This document provides a brief description of ethylchloroformate, its uses, and the potential hazards associated with short and long term exposure. Environmental impact information for accidental releases is included. This information is general in nature and is not intended as a replacement for the safety data sheet (SDS), product label and other safe handling literature. For additional information consult the LANXESS Corporation safety data sheet.

Identification

Product Name:	Ethylchloroformate
Chemical Name:	Ethyl chloroformate
Synonym(s):	Chloroformic acid ethyl ester Carbonochloridic acid ethyl ester Ethoxycarbonyl chloride
CAS Number:	541-41-3

Description

Overview:	Ethylchloroformate is a colorless to light yellow liquid at ambient temperatures. The chemical has a pungent, unpleasant odor.										
Uses:	Ethylchloroformate is sold by LANXESS for use as an intermediate in the production of agricultural products. The chemical compound is also used as an intermediate in the production of dyes, pharmaceuticals and other products.										
Properties:	<table><tr><td>Melting Point:</td><td>-80 °C (-112 °F)</td></tr><tr><td>Flash Point:</td><td>10 °C (50 °F) Closed cup</td></tr><tr><td>Auto-ignition:</td><td>Not available</td></tr><tr><td>Solubility in Water:</td><td>Miscible. Water reactive: Reacts with water to release toxic gas.</td></tr><tr><td>Boiling Point:</td><td>94 °C (201 °F)</td></tr></table>	Melting Point:	-80 °C (-112 °F)	Flash Point:	10 °C (50 °F) Closed cup	Auto-ignition:	Not available	Solubility in Water:	Miscible. Water reactive: Reacts with water to release toxic gas.	Boiling Point:	94 °C (201 °F)
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Potential Human Health Effects

Occupational Exposure

Potential for occupational exposure exists during manufacture, at bulk unloading, storage and staging areas and during the charging of reactor vessels in facilities using ethylchloroformate as an intermediate in the manufacture of other products. A much lower potential for exposure exists in facilities using ethylchloroformate in closed manufacturing processes by trained personnel.

Employee Training

Workers handling ethylchloroformate should be trained to implement proper handling procedures and to understand the potential health and physical hazards of this product. LANXESS recommends a half face, negative pressure, air-purifying, elastomeric respirator equipped with a combination organic vapor/acid gas cartridge and P-100 filter (OV/AG/P100) for atmospheres or environments up to a concentration of approximately 1000 ppm and a full face, negative pressure, air-purifying elastomeric respirator equipped with combination organic vapor/acid gas cartridge and P-100 filter for atmospheres or environments up to a concentration of approximately 5000 ppm. When handling ethylchloroformate, chemical safety goggles with a face shield as described above, PVC gloves and suitable permeation resistant clothing and foot protection should also be worn.

Consumer Exposure

LANXESS Corporation does not sell ethylchloroformate to the general public and only sells this product to pre-approved customers.

Short-Term Health Effects

Ethylchloroformate is corrosive to the skin and eyes. Symptoms of exposure include redness, itching, tearing, swelling and burning. Permanent skin or eye damage is possible. Eye contact may cause blindness. Inhalation of ethylchloroformate is corrosive to the respiratory tract and lungs, with symptoms of coughing, burning, ulceration, and pain. May cause pulmonary edema (a build up of fluid in the lungs) with symptoms of breathing difficulty and tightness of the chest. Symptoms may be delayed. Inhalation in sufficient quantities may be fatal. Ethylchloroformate is toxic if swallowed and corrosive to the digestive tract. Symptoms of ingestion may include abdominal pain, nausea, vomiting, diarrhea, burning and ulceration. Ingestion in sufficient quantities may be fatal. Existing eye, skin and respiratory tract disorders may be aggravated with exposure to this chemical.

Long-Term Health Effects

Skin sensitization may occur in susceptible individuals.

Physical Hazards

Ethylchloroformate is highly flammable and corrosive in both liquid and gas forms. Ethylchloroformate reacts with water, producing hydrogen chloride gas and may present a potential explosion hazard if a product vapor/air mix is exposed to a source of ignition. Reacts violently in contact with strong oxidants. Avoid contact with non-noble metals, iron salts, alkali metals, alcohols, amines and bases. Containers may rupture with exposure to extreme heat or when contents have been contaminated with water. Heating to decomposition may release carbon monoxide, carbon dioxide, halogenated compounds and other potentially toxic fumes or gases. Vapors are heavier than air and may travel along the ground. Avoid heat, open flames and other potential sources of ignition. Do not pressurize.

Potential Environmental Impact

Ethylchloroformate is readily biodegradable. Vapors released to the atmosphere will degrade rapidly in the presence of sunlight and moisture. A release to water may pose a danger to fish (moderate toxicity), invertebrates (moderate toxicity) and aquatic plants (moderate toxicity) prior to degradation through hydrolysis. Ethylchloroformate is not expected to adsorb to suspended soils and sediments and is not expected to accumulate in the tissues of aquatic organisms.

Conclusion

Under normal conditions of anticipated use as described in this Product Safety Assessment, and if the recommended safe use and handling procedures are followed, ethylchloroformate is not expected to pose a significant risk to human health or the environment.

References

International Chemical Safety Card, ETHYL CHLOROFORMATE, International Programme on Chemical Safety (IPCS)

Safety Data Sheet (SDS), ETHYLCHLOROFORMATE, LANXESS Corporation

MedlinePlus Medical Encyclopedia, U.S. National Library of Medicine and the National Institutes of Health

ToxNet Hazardous Substance Data Bank, U.S. National Library of Medicine, National Institutes of Health and the U.S. Department of Health and Human Services

Contact Information

LANXESS Corporation, Product Safety & Regulatory Affairs, 111 RIDC Park West Drive, Pittsburgh, PA 15275-1112, USA, Phone 1-800-526-9377 [1-800-LANXESS]

Notices

Use and Application Information

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.