

MATERIAL SAFETY DATA SHEET

RUGBY® 100 g/L ME (EW) INSECTICIDE/NEMATICIDE

MSDS Ref. No: 95465-99-9-5

Version: Global

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Revision No: 4

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the EC directive, 91/155/EEC and other regulatory requirements. The information contained herein is for the concentrate as packaged, unless otherwise noted.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: RUGBY® 100 g/L ME (EW)

INSECTICIDE/NEMATICIDE

PRODUCT CODE: 1444

ACTIVE INGREDIENT: Cadusafos

CHEMICAL FAMILY: Organophosphorous Pesticide

MOLECULAR FORMULA: C₁₀H₂₃O₂PS₂ (cadusafos)

SYNONYMS: FMC 67825; O-ethyl S,S-di-sec-butyl phosphorodithioate;

IUPAC: S,S-di-sec-butyl O-ethylphosphorodithioate

ALTERNATE TRADENAME(S): Rugby 10 EW; 10 ME; 100 ME

MANUFACTURER

FMC CORPORATION
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103 USA

Emergency Telephone Numbers:

Emergency Phone (FMC) 800-331-3148 (U.S.A. & Canada)

Emergency Phone (FMC) 716-735-3765 (Reverse charges)

CHEMTREC (800) 424-9300 (U.S.A. & Canada)

(202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt.%</u>	<u>PEL/TLV</u>	<u>EC No.</u>	<u>EC Class</u>
Cadusafos	95465-99-9	10.95	None	None	None
Surfactant Blend	0000-00-0	<16	None	None	None

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS:

- Light-green liquid with an odorless to mild garlic odor.
- Slightly combustible. May support combustion at elevated temperatures.
- Thermal decomposition and burning may form toxic by-products.
- For large exposures or fire, wear personal protective equipment.
- Highly toxic to fish and aquatic organisms. Keep out of drains and water courses.
- Expected to be highly toxic if inhaled, and moderately toxic if swallowed or absorbed through the skin.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing, breathing or absorption through the skin. Symptoms of overexposure include headache, light-headedness, weakness, abdominal cramps, nausea, excessive salivation, perspiration, blurred vision, tearing, pin-point pupils, blue skin color, convulsions, tremor and coma.

MEDICAL CONDITIONS AGGRAVATED: See "Notes to Medical Doctor" in Section 4 below.

4. FIRST AID MEASURES

EYES: Flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

SKIN: Wash with plenty of soap and water.

INGESTION: Drink 1 or 2 glasses of water and induce vomiting by touching the back of the throat with a finger or by giving syrup of ipecac. Never induce vomiting or give anything by mouth to an unconscious person. Contact a medical doctor.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor immediately.

NOTES TO MEDICAL DOCTOR: This product is expected to be highly toxic if inhaled, and is moderately toxic if swallowed or absorbed

through the skin. It is mildly irritating to the eyes, and non-irritating to the skin. Atropine sulfate is antidotal. Support respiration as needed with removal of secretions, maintenance of a patent airway and, if necessary, artificial ventilation. If cyanosis is absent: Adults - start treatment by giving 2 mg atropine intravenously or intramuscularly, if necessary, and repeat with 0.4 - 2.0 mg atropine at 15 minute intervals until atropinization occurs (tachycardia, flushed skin, dry mouth, mydriasis); Children under 12 - initial dose = 0.05 mg/kg body weight and repeat dose = 0.02 - 0.05 mg/kg body weight. Start 2-PAM (Protopam®, Ayerst®) at the same time, following manufacturer's recommended dosages and administration. Morphine, reserpine, phenothiazines and theophylline are probably contraindicated. At first sign of pulmonary edema, the patient should be given supplemental oxygen and treated symptomatically. Observe patient to insure that these symptoms do not recur as atropinization wears off. If in eyes, instill one drop of homatropine. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care. Some individuals have a genetically determined low level of plasma pseudocholinesterase. These persons are particularly vulnerable to the action of the muscle-paralyzing drug succinylcholine, often administered to surgical patients. They may be unusually sensitive to organophosphate toxicity; this has not yet been proven. Patients with advanced liver disease, malnutrition, chronic alcoholism and dermatomyositis exhibit low plasma cholinesterase activities. Some cholinesterase depression may occur during early stages of pregnancy or with use of birth control pills.

5. FIRE FIGHTING MEASURES

FLASH POINT AND METHOD: >93°C (>200°F) (CC)

EXTINGUISHING MEDIA: Foam, CO₂ or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

EXPLOSION HAZARDS: Slightly combustible. This material may support combustion at elevated temperatures.

FIRE FIGHTING PROCEDURES: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe smoke, gases or vapors generated.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, sulfur dioxide and phosphorus pentoxide.

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8,

"Exposure Controls/Personal Protection". Keep unprotected persons and animals out of the area.

Keep material out of lakes, streams, ponds and sewer drains. Dike to confine spill and absorb with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.

To clean and neutralize spill area, tools and equipment, wash with a suitable solution (i.e., bleach or caustic/soda ash and either ethylene glycol or an appropriate alcohol, i.e., methanol, ethanol or isopropanol). Follow this by washing with a strong soap and water solution. Absorb as above, any excess liquid and add to the drums of waste already collected. Repeat if necessary. Dispose of drummed waste according to the method outlined in Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Store in a cool, dry, well-ventilated place. Do not use or store near heat, open flame or hot surfaces. Store in original containers only. Keep out of reach of children and animals. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Use local exhaust at all process locations where vapor or mist may be emitted. Ventilate all transport vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For splash, mist or spray exposure, wear chemical protective goggles or a face shield.

RESPIRATORY: For splash, mist or spray exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization). Respirator use and selection must be based on airborne concentrations.

PROTECTIVE CLOTHING: Depending upon concentrations encountered, wear coveralls or long-sleeved uniform and head covering. For larger exposures as in the case of spills, wear full body cover barrier suit, such as a PVC suit. Leather items - such as shoes, belts and watchbands - that become contaminated should be removed and destroyed. Launder all work clothing before reuse (separately from household laundry).

WORK HYGIENIC PRACTICES: Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking or using tobacco. Shower at the end of the workday.

GLOVES:

Wear chemical protective gloves made of materials such as nitrile, Viton® brand or PVA materials. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks

COMMENTS: Personal protective recommendations for mixing or applying this product are prescribed on the product label. Information stated above provides useful, additional guidance for individuals whose use or handling of this product is not guided by the product label.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Odorless to mild garlic

APPEARANCE: Light-green liquid

pH: 7.0 @ 22°C

SOLUBILITY IN WATER: Disperses

SPECIFIC GRAVITY: 1.014 @ 20°C (water = 1)

MOLECULAR WEIGHT: 270.4 (cadusafos)

WEIGHT PER VOLUME: 8.41 lb/gal. (1014 g/L)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.

STABILITY: Stable

POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

DERMAL LD₅₀: 761 mg/kg (rat)

ORAL LD₅₀: 371 mg/kg (rat)

INHALATION LC₅₀: 0.026 mg/L/4 hr (rat) (cadusafos)

ACUTE EFFECTS FROM OVEREXPOSURE: This product is expected to be highly toxic if inhaled, and is moderately toxic if swallowed or absorbed through the skin. It is mildly irritating to the eyes, and non-irritating to the skin. Cadusafos is a cholinesterase-inhibiting pesticide which elicits symptoms in humans typical of other cholinesterase inhibition including headaches, light-headedness, weakness, abdominal cramps, nausea, excessive salivation, perspiration and blurred vision. More severe signs of cholinesterase inhibition include tearing, pin-point pupils, excessive respiratory secretions, cyanosis, convulsions, generalized tremor and coma. Excessive cholinesterase inhibition can result in death. Reduction of blood acetylcholinesterase levels can occur without symptoms of toxicity.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. In studies with laboratory animals, cadusafos did not cause reproductive toxicity, teratogenicity or carcinogenicity. Chronic exposure of cadusafos to laboratory animals caused decreased erythrocyte and plasma cholinesterase activity levels. An overall absence of genotoxicity has been demonstrated in mutagenicity testing with cadusafos, although it did cause a positive response in the cell transformation assay, but only in the presence of metabolic activation.

CARCINOGENICITY:

IARC: Not listed

NTP: Not listed

OSHA: Not listed

OTHER: Not Listed (ACGIH)

12. ECOLOGICAL INFORMATION

Unless otherwise indicated, the data presented below are for the active ingredient.

ENVIRONMENTAL DATA: Cadusafos has a half-life in soil of approximately 45 days which varies somewhat by soil type. The hydrolysis half-life of cadusafos is between 29 to 35 days in the pH region of 5 to 9. It is moderately mobile in soil and has a Log Pow of 3.9. This value, in association with a bioconcentration factor of 220, suggests that there will be little potential for bioaccumulation in the environment.

ECOTOXICOLOGICAL INFORMATION: With LC50 values of 1.6 µg/L to 170 µg/L to fish and aquatic arthropods in the laboratory, cadusafos is considered highly toxic. The aquatic arthropods are more sensitive than the fish. Care should be taken to avoid contamination of the aquatic environment. Cadusafos is also considered highly toxic to upland game birds (oral LD50 = 16.4 mg/kg, bobwhite quail) and moderately toxic to waterfowl (oral LD50 = 230 mg/kg, mallard).

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Open dumping or burning of this material or its packaging is prohibited. If spilled material cannot be disposed of by use according to label instructions, an acceptable method of disposal is to incinerate in accordance with local, state and national environmental laws, rules, standards and regulations. However, because acceptable methods of disposal may vary by location and regulatory requirements may change, the appropriate agencies should be contacted prior to disposal.

EMPTY CONTAINER: Non-returnable containers which held this material should be cleaned, prior to disposal, by triple rinsing. Containers which held this material may be cleaned by being triple-rinsed, and recycled, with the rinsate being incinerated. Do not cut or weld metal containers. Vapors that form may create an explosion hazard.

14. TRANSPORT INFORMATION

U.S. DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Organophosphorus pesticides, liquid, toxic, n.o.s.

TECHNICAL NAME: Cadusafos

PRIMARY HAZARD CLASS/DIVISION: 6.1

UN/NA NUMBER: UN3018

PACKING GROUP: II

REPORTABLE QUANTITY (RQ): None

U.S. SURFACE FREIGHT CLASS: Insecticides, NOI, Poison other than Class A Poison. NMFC Item 102100.

MARINE POLLUTANT #1: Not listed

NAERG: 152

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES

(40 CFR 355): Not listed

SECTION 311 HAZARD CATEGORIES (40 CFR 370):

Immediate, Delayed

SECTION 312 THRESHOLD PLANNING QUANTITY (40

CFR 370): The threshold planning quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs. This product contains the following ingredients with a TPQ of less than 10,000 lbs.: None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR

372): There are no ingredients in this product which are subject to Section 313 reporting requirements.

**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE
COMPENSATION AND LIABILITY ACT)**

CERCLA REGULATORY (40 CFR 302.4): Not listed

COMMENTS: Australian Hazard Code : 3XE

16. OTHER INFORMATION

REVISION SUMMARY

Viton - E.I. du Pont de Nemours and Co. Trademark; Rugby and FMC Logo - FMC Trademarks

Section(s) Revised : New Format