

GRANOL

MSDS

MANUFACTURER'S NAME & ADDRESS: ULTIMA SEARCH 9-10, Krishna Commercial Centre, 6- Udyog Nagar, S.V. Road, Goregaon (W), Mumbai-400062	FACTORY ADDRESS: A-2/2, Phase – I, GIDC, Vapi, Valsad District, Gujarat- 396195, India	CONTACT DETAILS: TEL NO: 022 28771506 FAX : 022 28724174 EMAIL: ultima@vsnl.com
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SECTION I. PRODUCT INFORMATION

PRODUCT NAME: Granol	CHEMICAL: EDCT	CHEMICAL FAMILY: Chlorinated Hydrocarbon
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USE: Grain Fumigant	FORM: Liquid	BIS REGISTRATION NO: VI 956 (1)/ED/CT (F) 5
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SECTION II. HAZARDOUS INGREDIENTS

INGREDIENT NAME: Ethylene Dichloride, Carbon Tetrachloride Mixture	% BY WEIGHT
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This product is a mixture of two or more chemicals as defined under O.S.H.A. standard 29 CFR1910.1200. An individual MSDS for each chemical ingredient which comprises 1% or greater of the mixture is included with and is considered as part of the complete material safety data sheet.

Chemical Ingredient No. 1

Common Name:Ethylene Dichloride
Chemical Name:Ethylene Dichloride
Chemical Formula:
Percent of Mixture (by volume)75%
MSDSAttached

Chemical Ingredient No. 2

Common Name:Carbon Tetrachloride
Chemical Name:Carbon Tetrachloride
Chemical Formula:CCl₄
Percent of Mixture (by volume)25%
MSDSAttached

DISCLAIMER: The physical values and properties described in this MSDS are typical values based on scientific literature and materials produced to date, and are believed to be reliable. Ultima Search provides no warranties; either expressed or implied and assumes no responsibility for the accuracy or completeness of the data contained herein. The information is supplied upon the condition that the persons receiving information will make their own determination as to the suitability for their purpose prior to the use of this product.

Material Safety Data Sheet

Ethylene Dichloride MSDS

Section 1: Chemical Product and Company Identification

Product Name: 1,2-Dichloroethane

CAS#: 107-06-2

TSCA: TSCA 8(b) inventory: 1,2-Dichloroethane

CI#: Not available.

Synonym: Ethylene dichloride

Chemical Formula: C₂H₄CL₂

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
{1,2-}Dichloroethane	107-06-2	100

Toxicological Data on Ingredients: 1,2-Dichloroethane: ORAL (LD50): Acute: 670 mg/kg [Rat]. 413 mg/kg [Mouse]. DERMAL (LD50): Acute: 2800 mg/kg [Rabbit]. VAPOR (LC50): Acute: 1414.2 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:

Extremely hazardous in case of ingestion. Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant). Corrosive to skin and eyes on contact. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:

Very hazardous in case of ingestion, of inhalation.
CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified 2B (Possible for human.) by IARC. Classified 2 (Reasonably anticipated.) by NTP.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.

The substance is toxic to lungs, the nervous system, liver, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:

If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical got on the victim's exposed skin, such as the hands : Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 413°C (775.4°F)

Flash Points: CLOSED CUP: 13°C (55.4°F). OPEN CUP: 18°C (64.4°F).

Flammable Limits: LOWER: 6.2% UPPER: 15.6%

Products of Combustion: These products are carbon oxides (CO, CO₂).

Fire Hazards in Presence of Various Substances:

Flammable in presence of open flames and sparks.
Slightly flammable to flammable in presence of oxidizing materials.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.
Slightly explosive to explosive in presence of oxidizing materials.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:

Flammable liquid. Corrosive liquid.

Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep locked up Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. Never add water to this product In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:

Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 10 CEIL: 75 (ppm) from ACGIH (TLV)

TWA: 40 CEIL: 300 (mg/m³) from ACGIH Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 98.96 g/mole

Color: Not available.

pH (1% soln/water): Not available.

Boiling Point: 83.5°C (182.3°F)

Melting Point: -35.3°C (-31.5°F)

Critical Temperature: Not available.

Specific Gravity: 1.2351 (Water = 1)

Vapor Pressure: 61 mm of Hg (@ 20°C)

Vapor Density: 3.42 (Air = 1)

Volatility: Not available.

Odor Threshold: 26 ppm

Water/Oil Dist. Coeff.: The product is equally soluble in oil and water; $\log(\text{oil/water}) = 0$

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether, n-octanol, acetone.

Solubility:

Easily soluble in methanol, diethyl ether, n-octanol, acetone.

Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.

Acute oral toxicity (LD50): 413 mg/kg [Mouse].

Acute dermal toxicity (LD50): 2800 mg/kg [Rabbit].

Acute toxicity of the vapor (LC50): 1414.2 ppm 4 hour(s) [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified 2B (Possible for human.) by IARC.

Classified 2 (Reasonably anticipated.) by NTP.

The substance is toxic to lungs, the nervous system, liver, mucous membranes.

Other Toxic Effects on Humans:

Extremely hazardous in case of ingestion.

Very hazardous in case of inhalation.

Hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Passes through the placental barrier in animal. Excreted in maternal milk in human.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Class 3: Flammable liquid.

Identification: : Ethylene dichloride : UN1184 PG: II

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute:

1,2-Dichloroethane

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: 1,2-Dichloroethane

Pennsylvania RTK: 1,2-Dichloroethane

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CARBON TETRACHLORIDE

1. Chemical Product and Company Identification

PRODUCT NAME: CARBON TETRACHLORIDE

CHEMICAL NAME: Carbon Tetrachloride

COMMON NAMES/SYNONYMS: Carbon Chloride, Carbon Tet, Halon 1040, R 10

TDG (Canada) CLASSIFICATION: 6.1 (9.2)

WHMIS CLASSIFICATION: D1A, D2A, D2B

PREPARED BY: Loss Control (908)464-8100/(905)501-1700

PREPARATION DATE: 6/1/95

REVIEW DATES: 6/7/96

2. Composition, Information on Ingredients

INGREDIENT	% VOLUME	PEL-OSHA ¹	TLV-ACGIH ²	LD ₅₀ or LC ₅₀ Route/Species
Carbon Tetrachloride FORMULA: CCl ₄ CAS: 56-23-5 RTECS #: FG4900000	100.0	10 ppm TWA 25 ppm Ceiling	5 ppm TWA 10 ppm STEL Skin	LD ₅₀ 2350 mg/kg (rat)

¹ As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

² As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents

3. Hazards Identification

EMERGENCY OVERVIEW

Inhalation of high concentrations of this compound may cause dizziness, nausea and possible loss of consciousness. Chronic exposure to this material may result in toxicity to the liver. Suspect carcinogen and reproductive toxin. Nonflammable. Decomposes into phosgene and hydrogen chloride under fire conditions.

ROUTE OF ENTRY:

Skin Contact Yes	Skin Absorption Yes	Eye Contact Yes	Inhalation Yes	Ingestion Yes
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PRODUCT NAME: CARBON TETRACHLORIDE

HEALTH EFFECTS:

Exposure Limits Yes	Irritant Yes	Sensitization No
Teratogen Yes	Reproductive Hazard Yes	Mutagen Yes
Synergistic Effects None Reported		

Carcinogenicity: -- NTP: Yes IARC: Yes OSHA: No

EYE EFFECTS:

Contact with product may cause mild irritation.

SKIN EFFECTS:

Contact with product could cause mild irritation. Prolonged contact may cause defatting of the skin and dermatitis. This product can be absorbed in harmful quantity through contact with unprotected skin.

INGESTION EFFECTS:

Ingestion effects are similar to effects from inhalation.

INHALATION EFFECTS:

Short term exposure may cause headache, dizziness and irritation to the respiratory system. Carbon tetrachloride is a central nervous system depressant and may cause loss of consciousness at high concentrations.

Chronic exposures may cause liver damage.

Long term exposures may also increase the risk of some forms of cancer.

This product is suspected of having adverse reproductive effects and is an experimental mutagen.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Individuals with anemia, diseases of the central nervous system or diseases of the kidney or liver should not be exposed to carbon tetrachloride.

NFPA HAZARD CODES

Health: 3
Flammability: 0
Reactivity: 0

HMIS HAZARD CODES

Health: 3
Flammability: 0
Reactivity: 0

RATINGS SYSTEM

0 = No Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

4. First Aid Measures

EYES:

Flush eyes immediately with lukewarm water for at least 15 minutes. A physician should see the patient promptly.

SKIN:

Remove contaminated clothing and flush affected areas with water. Seek medical attention.

INGESTION:

CALL LOCAL POISON CONTROL CENTER. If conscious, induce vomiting and continue until vomit is clear. A physician should see the patient promptly.

INHALATION:

PRODUCT NAME: CARBON TETRACHLORIDE

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area and given artificial resuscitation and supplemental oxygen. Medical assistance should be sought immediately. Further treatment should be symptomatic and supportive.

5. Fire Fighting Measures

Conditions of Flammability: Nonflammable		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None	UEL(%): None	
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

FIRE AND EXPLOSION HAZARDS:

Decomposes under fire conditions into phosgene and hydrogen chloride.

EXTINGUISHING MEDIA:

None required. Use media appropriate for surrounding materials.

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should use self-contained breathing apparatus to protect them from toxic decomposition products. If possible, use water spray to cool containers to prevent rupture.

6. Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

7. Handling and Storage

Electrical Classification:

Nonhazardous.

Incompatible with aluminum and zinc.

Use only in well-ventilated areas. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Protect containers from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where containers are stored to exceed 130°F (54°C). Containers should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty containers should be segregated. Use a "first in-first out" inventory system to prevent full containers being stored for excessive periods of time. Vapors should not be allowed to contact open flames. For additional storage recommendations, consult Compressed Gas Association's Pamphlet P-1.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

PRODUCT NAME: CARBON TETRACHLORIDE

8. Exposure Controls, Personal Protection

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Carbon Tetrachloride FORMULA: CCl ₄ CAS: 56-23-5 RTECS #: FG4900000	100.0	10 ppm TWA 25 ppm Ceiling	5 ppm TWA 10 ppm STEL Skin	LD ₅₀ 2350 mg/kg (rat)

¹ Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

ENGINEERING CONTROLS:

Hood with forced ventilation. Use local exhaust to prevent accumulation above the exposure limit.

EYE/FACE PROTECTION:

Safety goggles or glasses

SKIN PROTECTION:

Protective Gloves: Nitrile or Viton.

RESPIRATORY PROTECTION:

Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

OTHER/GENERAL PROTECTION:

Safety shoes, safety shower, eyewash "fountain."

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Liquid	
Vapor pressure at at 70 °F	: 98	mmHg
Vapor density (Air = 1)	: 5.5	
Evaporation point	: Not Available	
Boiling point	: 170	°F
	: 76.5	°C
Freezing point	: -9.4	°F
	: -23	°C
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Insoluble (0.08%)	
Odor threshold	: Not Available	
Odor and appearance	: Colorless liquid with strong ethereal odor.	

10. Stability and Reactivity

STABILITY:

Stable.

INCOMPATIBLE MATERIALS:

PRODUCT NAME: CARBON TETRACHLORIDE

Reacts with zinc, aluminum and alkali metals. Decomposes in open flame or at high temperatures.

HAZARDOUS DECOMPOSITION PRODUCTS:

Hydrogen chloride, phosgene.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. Toxicological Information

TUMORIGENIC:

An experimental carcinogen in experimental animal studies including rats, mice and hamsters.

REPRODUCTIVE:

Developmental defects observed following inhalation exposure of pregnant rats to 250 ppm for 8 hours.

MUTAGENIC:

A mutagen in mammalian and bacterial cell assay systems.

OTHER:

Degenerative changes to liver following chronic inhalation exposure in multiple animal studies with mammalian species including rats, mice, rabbits, guinea pigs, dogs and monkeys. Toxic effects to the lungs, immune system and bladder have also been reported in animal studies with mammalian species.

12. Ecological Information

No data given.

13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Carbon Tetrachloride (R-10)	Carbon Tetrachloride (R-10)
HAZARD CLASS:	6.1	6.1 (9.2)
IDENTIFICATION NUMBER:	UN 1846	UN 1846
SHIPPING LABEL:	POISON	POISON

Additional Marking Requirement: If net weight of product ≥ 10 pounds, the container must be also marked with the letters "RQ". **Additional Shipping Paper Description Requirement:** If net weight of product ≥ 10 pounds, the shipping papers must be also marked with the letters "RQ". PG: II are subject to reporting to the National Response Center under CERCLA, Section 304 SARA Title III.

PRODUCT NAME: CARBON TETRACHLORIDE

SARA TITLE III - HAZARD CLASSES:

Acute Health Hazard
Chronic Health Hazard

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS NUMBER	INGREDIENT NAME	PERCENT BY VOLUME
56-23-5	CARBON TETRACHLORIDE	25.0

This information must be included on all MSDSs that are copied and distributed for this material.