



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

"VOLAN" BONDING AGENTS
9720CR Revised 11-OCT-2008

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"VOLAN" is a registered trademark of DuPont.

Corporate MSDS Number : DU004667
Formula : C4H6O3Cl4Cr2
Grade "VOLAN"; "VOLAN" L

Company Identification

MANUFACTURER/DISTRIBUTOR
Zaclon LLC
2981 Independence Road
Cleveland, Ohio 44115

PHONE NUMBERS

Product Information : 1-800-356-7327
Transport Emergency : CHEMTREC: 1-800-424-9300

-COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	9'
ISOPROPYL ALCOHOL**	67-63-0	40-56
ACETONE	67-64-1	10
CHROMIUM AQUA CHLOROHYDROXY METHACRYLATE COMPLEXES		
*"VOLAN"	111031-82-4	19-21
*"VOLAN" L	15096-41-0	17-18
CHLOROACETONE	78-95-5	0.3
ISOPROPYL CHLORIDE***	75-29-6	<0.1
WATER	7732-18-5	16-30

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Components (Remarks)

**17-21 (Grade dependent).

***In equilibrium with isopropanol and the chloride ion.

Note: A small amount of the chromium chloride is hydrolyzed to give hydrochloric acid. See pH in the Physical Data section.

HAZARDS IDENTIFICATION

Potential Health Effects

Causes eye burns. Causes irritation of the skin, nose and throat.

HUMAN HEALTH EFFECTS:

Skin contact may cause skin irritation with discomfort or rash. There are rare inconclusive reports of human sensitization from skin contact with Isopropyl Alcohol. Repeated and/or prolonged exposure may cause: Defatting of the skin with itching, redness or rash.

Eye contact may cause eye corrosion with corneal or conjunctival ulceration, pain or blurred vision.

Exposure to the product mists or vapors may cause irritation of the eyes and skin.

Inhalation may cause irritation of the respiratory tract with coughing and discomfort; or temporary central nervous system depression with anaesthetic effects such as dizziness, headache, confusion, incoordination, drowsiness, and loss of consciousness.

Ingestion may cause irritation of the digestive tract with stomach pain, heartburn, nausea, vomiting or diarrhea; or temporary central nervous system depression; however there may be no symptoms at all.

Inhalation, ingestion, or skin contact to isopropyl alcohol may cause nonspecific effects such as headache, nausea and weakness, flushing of the face, or low blood pressure.

Isopropyl chloride has been associated with abnormal liver and kidney function and temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.19 are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

If large amounts are inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

SKIN CONTACT

Wash skin with soap and plenty of water while removing contaminated clothing. Wash clothing before reuse.

INGESTION

If swallowed, do not induce vomiting. Give two glasses of water or activated charcoal slurry. Call a physician
Never give anything by mouth to an unconscious person.

Notes to Physicians

To prepare activated charcoal slurry, suspend 50 gm of activated charcoal in 400 mL of water in a bottle and shake well. Administer 5 mL/kg of body weight, or 350 mL for an

-FIRE FIGHTING MEASURES

-Flammable Properties
average adult.

Flash Point	2 C (36 F)
Method	TCC
Flammable limits in Air, %by Volume	
LEL	: 2
UEL	12
Autoignition	>399 C (>750)
Autodecomposition	Not available

Actual Autoignition Temperatures (AIT's) can be affected by the concentration of vapors and oxygen, vapor/air contact time, pressure, volume, catalytic impurities, etc. Process conditions should be analyzed to determine if the AIT may be higher or lower.

Fire and Explosion Hazards:

OSHA Class 1B Flammable Liquid. Follow appropriate National

Material Safety Data Sheet

Fire Protection Association (NFPA) codes for handling and storage facilities.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Evacuate personnel to a safe area. Cool tank/container with water spray.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus.

Initial Containment

Remove source of heat, sparks, flame, impact, friction or electricity.

Spill Clean Up

Discarded material is a RCRA Hazardous Waste.

Accidental Release Measures

Wear protective clothing. Dike spill. Soak up with sand, earth, or other non-combustible material and dispose of in covered metal containers. Prevent liquid from entering sewers, waterways, or low areas. After bulk removal, flush spill area with plenty of water.

HANDLING AND STORAGE

Handling (Personnel)

Do not get in eyes. Avoid breathing vapors or mist. Avoid contact with skin. Avoid contact with clothing. Wash thoroughly after handling.

Use with adequate ventilation.

Storage

Keep away from heat, sparks, and flame. Keep containers tightly closed and in an upright position. Do not store or mix with oxidizing agents.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Good general ventilation should be provided to keep component concentrations below the recommended exposure limits and avoid flammable mixtures with air. Use explosion-proof motors, electrical fittings, and nonsparking tools and equipment. Containers should be grounded.

Personal Protective Equipment

Have available and wear as appropriate to prevent eye or skin contact: coverall chemical splash goggles, safety spectacles (side shields preferred), and neoprene, polyvinylchloride, or nitrile gloves. Wear flame resistant clothing. If direct inhalation exposure is likely, wear NIOSH approved respiratory protection.

Exposure Guidelines

Exposure Limits

"VOLAN" BONDING AGENTS

PEL	(OSHA)	0.5 mg/m ³ , as Cr,	8 Hr. TWA
TLV	(ACGIH)	0.5 mg/m ³ , as Cr,	8 Hr. TWA
AEL *	(DuPont)	0.5 mg/m ³ , as Cr,	8 Hr. TWA

Other Applicable Exposure Limits

ISOPROPYL ALCOHOL**

PEL	(OSHA)	400 ppm, 980 mg/m ³ ,	8 Hr. TWA
TLV	(ACGIH)	200 ppm, 8 Hr. TWA, A4	
		STEL 400 ppm	
AEL *	(DuPont)	200 ppm, 8 & 12 Hr. TWA	

ACETONE

PEL	(OSHA)	1000 ppm, 2400 mg/m ³ ,	8 Hr. TWA
TLV	(ACGIH)	500 ppm, 1188 mg/m ³ ,	8 Hr. TWA, A4
		STEL 750 ppm, 1782 mg/m ³ ,	A4
AEL *	(DuPont)	500 ppm, 8 & 12 Hr. TWA	

CHLOROACETONE

PEL	(OSHA)	None Established	
TLV	(ACGIH)	Ceiling 1 ppm, 3.8 mg/m ³ ,	Skin
AEL *	(DuPont)	None Established	

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point	77-79 C (171-174 F) @ 760 mm Hg
Vapor Density	. -2 (Air = 1)
Evaporation Rate	(Butyl Acetate = 1) Greater than 1
Solubility in Water	100 WT9
pH	: -3 in 19 water solution
Odor	Alcoholic
Form	. Liquid
Color	Blue-green
Specific Gravity	"VOLAN" = 1.02; "VOLAN" L = 0.95

STABILITY AND REACTIVITY

Chemical Stability

Stable.

Incompatibility with Other Materials

Incompatible with oxidizing agents.

Decomposition

Decomposes with heat; solvent vapors and gaseous hydrogen chloride will be emitted.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

"VOLAN " L Bonding Agent:

Oral LD50: 6746 mg/kg in rats

Isopropyl Alcohol:

Oral LD50: 4,700 mg/kg in rats

Inhalation 4 hour LC50: 16,000 ppm in rats

Skin Absorption LD50: 12,900 mg/kg in rabbits

Acetone:

Oral LD50, rat: 9,750 mg/kg

Inhalation 4 hour, LC50, rat: 31,983 ppm

Material Safety Data Sheet

(TOXICOLOGICAL INFORMATION - Continued)

Dermal LD50, rabbit: 20,000 mg/kg

These products are eye corrosives and are skin irritants but not skin sensitizers in animals. Toxic effects in described in animals from single ingestion exposures include lacrimation, weakness, lethargy and slight weight loss. Although some Chromium Compounds (Cr VI) have demonstrated carcinogenic activity in animals, Chromium III Compounds have not.

The effects in animals from single ingestion exposure to ISOPROPYL ALCOHOL at near lethal doses include histopathological changes of the stomach, lungs, kidneys, incoordination, lethargy, gastrointestinal tract irritation, inactivity or anaesthesia. Long-term ingestion exposure caused incoordination, lethargy, and reduced weight gain. The effects in animals from single exposure by inhalation include inactivity or anaesthesia, histopathological changes of the nasal cavity, and auditory canal. Repeated inhalation exposure caused narcosis, incoordination, and degeneration of the liver. No adequate animal data are available to define the carcinogenic potential of isopropyl alcohol. Animal data show developmental effects only at exposure levels of isopropyl alcohol producing other toxic effects in the adult animal; reproductive data on rats show no change in reproductive performance. Tests have shown that isopropyl alcohol does not cause genetic damage in bacterial or mammalian cell cultures, or in animals.

Repeated dermal exposure of animals to ACETONE caused dry skin and cataracts. Long-term dermal exposure caused no significant toxicological effects.

Repeated ingestion exposure to high doses of ACETONE caused kidney injury, reduced weight gain, and liver, hematological and testicular effects.

Single and repeated exposure by inhalation to high doses caused central nervous system depression, and decreased motor activity. Repeated exposures to higher concentrations caused incoordination and reduced weight gain.

In animal testing ACETONE has not caused carcinogenicity. Limited data on the exposure of pregnant rats to ACETONE show developmental toxicity only at exposure levels producing other toxic effects in the adult animal. Limited data on the exposure of pregnant mice to ACETONE show a reduction of fetal body weight and an increase in the incidence of late resorptions.

The NOEL (No-Observed-Effect-Level) for developmental toxicity in the rat and mouse study was 2200 ppm. Limited data on the exposure of rats and mice to ACETONE show reproductive toxicity only at exposure levels producing

(TOXICOLOGICAL INFORMATION - Continued)

other toxic effects in the adult animal. ACETONE does not cause genetic damage in bacterial cells. Test in mammalian cell cultures have been both positive and negative. Testing in yeast has also produced positive results.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Acetone: 96-hour LC50 - Bluegill sunfish: 8300 ppm
 96 hour LC50 - Fathead minnows: 7280-8120 mg/L
 48 hour LC50 - Daphnia magna: 39,000 ppm

Isopropyl Alcohol: 96-hour LC50 - Fathead minnows: 3,200 mg/L

DISPOSAL CONSIDERATIONS

Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/IATA
Proper Shipping Name Flammable Liquid, N.O.S. (Isopropanol and Acetone)
Hazard Class : 3
UN No. : 1993
Packing Group II
Label(s) Flammable Liquid

Shipping Containers

Steel Drums 55 gallon with removable polyethylene liner

55 gallon polyethylene drums

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : No
Fire : Yes
Reactivity : No
Pressure : No

LISTS:

Extremely Hazardous Substance - No
CERCLA Hazardous Substance - (Yes)*
Toxic Chemicals - (Yes)*

*Chromium Compound component only

OTHER INFORMATION

NFPA, NPCA-HMIS

NPCA-HMIS Rating
Health 3
Flammability 3
Reactivity 1

Personal Protection rating to be supplied by user depending on use conditions.

Additional Information

For further information, see the "VOLAN" Product Data Sheet.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsible for MSDS : John L. Curry MSDS Coordinator
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Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.