

SAFETY DATA SHEET



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DEBLOCK SOLUTION (3% DICHLOROACETIC ACID IN DICHLOROMETHANE)

SDS No. M0526a

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Deblock Solution (3% Dichloroacetic Acid in Dichloromethane)

Synonyms: Deblock Solution (DCA in DCM)

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Acute Toxicity, Oral: GHS Category 4

Acute Toxicity, Dermal: GHS Category 3

Skin Corrosion: GHS Category 1A

Eye Damage: GHS Category 1

Carcinogenicity: GHS Category 2

Acute Aquatic Toxicity: GHS Category 1

Label Elements

Signal Word: DANGER!

Hazard Statements:

H302 – Harmful if swallowed.

H312 – Harmful in contact with skin.

H314 – Causes serious skin burns and eye damage.

H332 – Harmful if inhaled.

H336 – May cause drowsiness or dizziness.

H350 – May cause cancer.

Precautionary Statements:

P243 – Take precautionary measures against static discharge.

P273 – Avoid release to environment.

P280 – Wear protective gloves/protective clothing/eye protection/face protection.

Clear focus. Consistent results. Complete confidence.

P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

Emergency Overview

Harmful if swallowed, inhaled, or absorbed through the skin. Affects central nervous system, cardiovascular system, liver, and blood. Causes irritation and possible burns to eyes, skin, and respiratory tract. Suspected cancer hazard. Possible static electrical hazard.

HMS Rating:

Health – 2* Flammability – 1 Physical Hazard – 0 PPE – User supplied

NOTE: HMS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Dichloroacetic Acid	76-03-9	<4%	Yes
Dichloromethane	79-43-6	>96%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If breathing is labored or with coughing, give 100% supplemental oxygen. If not breathing, begin artificial respiration. Get medical aid.

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 attention immediately.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention.

Eye Contact: Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Not expected to be a fire hazard.

Auto-ignition Temperature: Dichloromethane - 556.1° C (1033° F); Dichloroacetic Acid – 194° C (381.2° F).

Flash Point: Dichloromethane – Not available; Dichloroacetic Acid - 112° C (233.6° F).

Flammable Limits: Dichloromethane – Lower Limit – 15.1 @ 103xC, Upper Limit – 17.3 @ 148xC; Dichloroacetic Acid – Not available.

Products of Combustion: May decompose into highly toxic and irritating gases (hydrogen chloride, phosgene, carbon monoxide and carbon dioxide) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Vapors mixed with air in proper proportion will propagate a flame.

Specific Explosion Hazards: None

Fire Fighting Media: Use water, dry chemical, chemical foam, or alcohol resistant foam. Use water spray to keep fire exposed containers cool.

National Fire Protective Association: (Estimated) Health - 2, Flammability - 1, Reactivity - 1

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with inert material such as vermiculite, sand, or earth mixed with soda ash or lime. Provide ventilation to the affected area. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Keep away from oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Protect from moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles and face shield for eye and face protection. Use appropriate protective gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits for Dichloromethane:

ACGIH – 1 ppm TWA

NIOSH – Potential Occupational Carcinogen – see Appendix A Potential NIOSH carcinogen

OSHA Final PELs – 25 ppm (8 hr TWA); 125 ppm STEL (15 min TWA); 1800 mg/m³ TWA

OSHA Vacated PELs: Methylene chloride: 500 ppm TWA

Exposure Limits for Dichloroacetic Acid:

ACGIH – 0.5 ppm TWA; Skin - potential significant contribution to overall exposure by the cutaneous route

NIOSH – None established.

OSHA Final PELs – None established.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Ethereal with slight acidic odor

Molecular Formula: CCl₃COOH in CH₂Cl₂

Auto-ignition Temperature: Dichloromethane - 556.1° C (1033° F); Dichloroacetic Acid – 194° C (381.2° F).

Flash Point: Dichloromethane – Not available; Dichloroacetic Acid - 112° C (233.6° F).

Flammable Limits: Dichloromethane – Lower Limit – 15.1 @ 103xC, Upper Limit – 17.3 @ 148xC; Dichloroacetic Acid – Not available.

pH: Not available.

Boiling Point: 104° C (Dichloromethane)

Freezing/Melting Point: 54-58° C (Dichloroacetic Acid)

Decomposition Temperature: Not available

Specific Gravity: 1.33 to 1.56 (Water=1)

Vapor Density (Air=1): 2.9 – 4.5

Vapor Pressure: 350 mm Hg @ 20° C for Dichloromethane; 1.3 mm Hg @ 20° C for Dichloroacetic Acid

Viscosity: Not available

Solubility: Soluble in water

Conductivity (Dichloromethane): Semiconductive; Conductivity = 4300 pS/m; Dielectric Constant = 8.93; Relaxation Time Constant = 1.8×10^{-2} seconds

Conductivity (Trichloroacetic Acid): Conductive; Conductivity = 7×10^6 pS/m; Dielectric Constant = NA; Relaxation Time Constant = NA

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperature and pressure

Conditions to Avoid: Incompatible materials, strong oxidants.

Incompatibility With Various Substances: Strong oxidizing agents, strong bases, strong acids, moisture. Dichloromethane can react dangerously with nitrogen tetroxide, liquid oxygen, potassium, sodium, sodium-potassium alloys, lithium, potassium hydroxide with N-methyl-N-nitroso urea, potassium t-butoxide, and finely powdered aluminum, mixtures of these materials, and liquid ammonia or dimethylaminopropylamine.

Hazardous Decomposition Products: Hydrogen chloride, phosgene, carbon monoxide, carbon, dioxide.

Hazardous Polymerization: Has not been reported.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

Inhalation Hazard: Causes irritation to respiratory tract with possible burns. Symptoms may include burning sensation, coughing, wheezing, and shortness of breath. Has a strong narcotic effect with symptoms of mental confusion, light-headedness, fatigue, nausea, vomiting and headache. Causes formation of carbon monoxide in blood which affects cardiovascular system and central nervous system. Continued exposure may cause increased light-headedness, staggering, unconsciousness, and even death. Exposure may make the symptoms of angina (chest pains) worse.

Ingestion Hazard: May cause irritation of the gastrointestinal tract with nausea, vomiting, and possible burns. If vomiting results in aspiration, chemical pneumonia could follow. Absorption through gastrointestinal tract may produce symptoms of central nervous system depression ranging from light headedness to unconsciousness.

Skin Contact Hazard: Causes irritation, redness, pain, and possible burns. Liquid degrades the skin. May be absorbed through skin.

Eye Contact Hazard: Cause eye irritation and possible burns. Contact can produce pain, inflammation and temporal eye damage.

Chronic Exposure Hazards: Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated contact with skin may cause dermatitis. May have fetal effects. Adverse reproductive effects have been reported in animals. Laboratory experiments have resulted in mutagenic effects. Chronic exposure may cause blood effects. Animal studies have reported the development of tumors.

Animal Toxicity (Dichloromethane):

Inhalation, mouse: LC50 = 14,400 ppm/7H;

Inhalation, rat: LC50 = 88 g/m³/30M;

Oral, rat: LD50 = 1600 mg/kg;

Carcinogenicity (Dichloromethane):

ACGIH: A3- animal carcinogen; California: carcinogen, initial date 4/1/88; NIOSH: occupational carcinogen; NTP: suspect carcinogen; OSHA: possible select carcinogen; IARC: Group 2B carcinogen

Animal Toxicity (Dichloroacetic Acid):

Draize test, rabbit, skin: 2 mg/24H Severe

Oral, rat: LD50 = 2820 mg/kg;

Skin, rabbit: LD50 = 510 uL/kg;

Carcinogenicity (Dichloroacetic Acid):

ACGIH - A3 - Confirmed animal carcinogen with unknown; IARC - Group 2B carcinogen; NTP – not listed; CA Prop 65 - carcinogen, initial date 5/1/96.

Epidemiology: A historical cohort study of persons occupationally exposed to dichloromethane showed no significantly increased cancer or ischemic heart disease mortality compared to a group of non-exposed employees, as well as general

population controls. The most recent update and expansion of this study demonstrated no unusual mortality patterns for hypothesized cause of latency. See IARC Volume 41 for a more detailed discussion. Tumorigenic effects of dichloroacetic acid have been reported in experimental animals.

Teratogenicity: Dichloromethane: Specific developmental abnormalities (musculoskeletal/urogenital) observed: Inl-mus TClO – 1250 ppm/tH, Oral-rat, TDLo = 1260 mg/kg (6-15D preg). Developmental abnormalities: Craniofacial, Ihl-mouse, TClO=100 ppm/7Hr (female, 6-15D post); Musculoskeletal, Oral-rat, TDLo+1260 mg/kg (6-15D preg). Teratogenic effects of dichloroacetic acid have been reported in experimental animals.

Reproductive Effects: Adverse reproductive effects have occurred in experimental animals with dichloroacetic acid.

Mutagenicity: Tumorigenic effects of dichloroacetic acid have been reported in experimental animals.

Neurotoxicity: No data available.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Dichloromethane has a moderate potential to affect some aquatic organisms. It is resistant to biodegradation and has a flow potential to persist in the aquatic environment. 96-hr, EC50 (loss of equilibrium); Fathead minnow: 99 mg/L; 96-hr, EC10: 66.3 mg/L; Bluegill sunfish: 96-hr, LC50=220 mg/L; Water flea: 24-hr, LC50=2270 mg/L; No observed effect level: 1550 mg/L.

Environmental Fate: Dichloromethane is not likely to bioconcentrate. Do not empty into drains.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. Dichloromethane is a "U" listed waste under 40 CFR 261.33 (U080).

14. TRANSPORT INFORMATION

US DOT, IATA, IMO

Proper Shipping Name: Corrosive Liquid, Toxic, n.o.s. (Dichloroacetic Acid, Dichloromethane)

Hazard Class: 8, 6.1

UN Number: UN2922

Packing Group: II

Canada TDG

Additional Information: Not available

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 75-09-2 and CAS# 79-43-6 are listed on the TSCA Inventory.

Health and Safety Reporting List: CAS# 75-09-2 effective date: 10/4/1982; Sunset date: 10/4/1992; CAS# 76-03-9 not listed.

Chemical Test Rules: CAS# 75-09-2 and CAS# 79-43-6 are not listed.

Section 12b: CAS# 75-09-2 and CAS# 79-43-6 are not listed.

TSCA Significant New Use Rule: Neither component has an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 75-09-2 – 1000 lb final RQ; 454 kg final RQ; CAS# 79-43-6 not listed

SARA Section 302: Neither component has a TPQ

SARA Codes: CAS# 75-09-2 – acute, chronic; CAS# 76-03-9 – immediate; CAS# 79-43-6 – immediate, delayed

Section 313: Dichloromethane (CAS# 75-09-2) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements. CAS# 79-43-6 not listed

Clean Air Act: CAS# 75-09-2 is listed as a hazardous air pollutant (HAP). Neither component is a Class 1 Ozone Depleter. Neither component is a Class 2 Ozone Depleter.

Clean Water Act: CAS# 75-09-2 is listed as a Hazardous Substance. Neither component is a Priority Pollutant. Neither component is a Toxic Pollutant.

OSHA: Neither component considered highly hazardous by OSHA.

US State Regulations:

CAS# 75-09-2 and CAS# 79-43-6 are on the following state right-to-know lists: California, Florida, New Jersey, Pennsylvania, Minnesota, and Massachusetts

The following statements are made in order to comply with the California State Drinking Water Act: WARNING: This product contains Methylene chloride, a chemical known to the state of California to cause cancer. California No Significant Risk Level = 50 ug/day. WARNING: This product contains Dichloroacetic acid, a chemical known to the state of California to cause cancer.

Canada:

DSL/NDL: CAS# 75-09-2 and CAS# 79-43-6 are listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of D1B, D2A, D2B, E. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 76-03-9 and CAS# 79-43-6 are listed on Canada's Ingredient Disclosure List.

DSCL (EEC):

Hazard Symbols: Xn, N

Risk Phrases: R36/37/38 – Irritating to eyes, respiratory system, and skin; R40 – Possible risk of irreversible effects; R50 – Toxic to aquatic organisms.

Safety Phrases: S23 – Do not inhale gas/fumes/vapor/spray; S24/25 – Avoid contact with skin and eyes; S36/37: Wear suitable protective clothing and gloves; S61 - Avoid release to the environment. Refer to special instructions / safety data sheets.

WGK (Water Danger/protection): CAS# 75-09-2: 2; CAS# 79-43-6: 1

16. OTHER INFORMATION

Originally Prepared: 3/23/2006

Last Revised: 1/14/2017 – H&P statements in Section 2. Updated PPE recommendations in Section 8..

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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