

SAFETY DATA SHEET



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24-Hour Emergency Number (CHEMTREC)

USA: 800-424-9300

International: 703-527-3887

**All non-emergency numbers should be directed
to Customer Service at 800-PURITY1**

DEBLOCK SOLUTION (15% DICHLOROACETIC ACID IN TOLUENE) SDS No. M0527a

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Deblock Solution (15% Dichloroacetic Acid in Toluene)

Synonyms: Deblock T

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:

Flammable Liquids: GHS Category 2

Skin Irritation: GHS Category 2

Serious Eye Damage: GHS Category 1

Carcinogenicity: GHS Category 2

Reproductive Toxicity: GHS Category 2

Aspiration Hazard: GHS Category 1

Label Elements

Signal Word: DANGER!

Hazard Statements:

H225 – Highly flammable liquid and vapor.

H304 – May be fatal if swallowed and enters airways.

H314 – Causes severe skin burns and eye damage.

H332 – Harmful if inhaled.

H335 – May cause respiratory irritation.

H351 – Suspected of causing cancer.

H361 – Suspected of damaging fertility or the unborn child

Precautionary Statements:

P210 – Keep away from heat/ sparks/ open flames/ hot surfaces. – No smoking.

P243 – Take precautionary measures against static discharge.

P260 – Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

P271 – Use only outdoors or in a well-ventilated area.

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

Clear focus. Consistent results. Complete confidence.

P301+P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

P303+P361+P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304+P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P403+P233 – Store in a well-ventilated place. Keep container tightly closed.

P501 – Dispose of contents/ container to an approved waste disposal plant.

Emergency Overview

May be fatal if swallowed, inhaled, or absorbed through the skin. Causes burns and irritation to eyes, skin, and respiratory tract. Causes excessive tearing. Absorbs through intact skin. Aspiration hazard. Can enter lungs and cause damage. Possible risk to the unborn child. Affects cardiovascular system, central nervous system, liver, and kidneys. Highly flammable liquid and vapor. Static electrical hazard.

HMIS Rating:

Health – 2* Flammability – 3 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS 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 | 79-43-6 | 14-16% | Yes |
| Toluene | 108-88-3 | 84-86% | 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 help immediately

Ingestion: If swallowed, rinse mouth with water. Get medical attention immediately; DO NOT induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. If not breathing, begin artificial respiration. DO NOT give mouth-to-mouth resuscitation.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover irritated skin with an emollient or anti-bacterial cream. Soap and cold water may be used. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

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: Toluene causes cardiac sensitization to endogenous catecholamines which may lead to cardiac arrhythmias. Do NOT use adrenergic agents such as epinephrine and pseudoepinephrine. Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Flammable liquid and vapor (GHS Category 2)

Auto-ignition Temperature: Toluene - 480° C (896° F)

Flash Point: Toluene - 4° C (39.2° F)

Flammable Limits: Lower Limit –1.1 vol %, Upper Limit – 7.1 vol %

Products of Combustion: May decompose into toxic products under fire conditions (carbon monoxide, carbon dioxide, hydrogen chloride gas).

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. Use water spray to keep fire exposed containers cool. Approach fire from

upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Toluene floats on water and may travel to a source of ignition and spread the fire. Water run-off can cause environmental damage and should be collected and confined.

Specific Explosion Hazards: Containers may explode in the heat of a fire.

Fire Fighting Media: Use sand, dry chemical, carbon dioxide, or appropriate foam. Solid streams of water may be ineffective and spread material. If water is the only media available, use in flooding amounts.

Special Remarks: None

National Fire Protective Association: (ESTIMATED) Health - 3, Flammability - 3, Reactivity - 0

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 sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Avoid runoff into streams and sewers. Provide ventilation to the affected area and remove all ignition sources. 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. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from moisture. Separate from oxidizing materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. 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 (Toluene):

ACGIH – 20 ppm TWA

NIOSH – 100 ppm TWA; 375 mg/m³; 500 ppm IDLH

OSHA Final PELs – 200 ppm; 300 ppm Ceiling

OSHA Vacated PELs: 100 ppm TWA; 375 mg/m³

Exposure Limits (Dichloroacetic Acid): None established

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Colorless liquid.

Odor: Pleasant, benzene-like, possibly pungent odor

Odor Threshold: Toluene – 2.9 ppm

Molecular Formula: Mixture

Molecular Weight: Mixture

Auto-ignition Temperature: Toluene - 480° C (896° F)

Flash Point: Toluene - 4° C (39.2° F)

Flammable Limits: Lower Limit –1.1 vol %, Upper Limit – 7.1 vol %

pH: Toluene - Not available; Dichloroacetic Acid – <2.5.

Boiling Point: Toluene - 110.6° C @ 760 mm Hg; Dichloroacetic Acid – 194° C @ 760 mm Hg.

Freezing/Melting Point: Toluene: -95° C; Dichloroacetic Acid – 9-11° C

Decomposition Temperature: Toluene - not available; Dichloroacetic Acid: not available

Specific Gravity: Toluene – 0.86 g/cm³; Dichloroacetic Acid – 1.563 g/cm³

Vapor Density (Air=1): Toluene – 3.1; Dichloroacetic Acid – 5.5

Vapor Pressure: Toluene – 28.4 mm Hg @ 25° C; Dichloroacetic Acid – 1.0 mm Hg @ 68° F

Viscosity: Toluene - 0.59 cPs 20° C; Dichloroacetic Acid – Not available

Solubility: Toluene is insoluble; Dichloroacetic Acid is soluble in water.

Conductivity (Toluene): Nonconductive; Conductivity = <1 pS/m; Dielectric Constant = 2.38; Relaxation Time Constant = 21 seconds

Conductivity (Dichloroacetic Acid): Conductive; Conductivity = 7x10⁶ pS/m; Dielectric Constant = NA; Relaxation Time Constant = NA

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Ignition sources, excess heat, confined spaces, moisture.

Incompatibility With Various Substances: Strong oxidizing agents, strong bases, strong reducing agents, nitric acid, sulfuric acid.

Hazardous Decomposition Products: Carbon monoxide, carbon, dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: May be harmful if inhaled. Causes chemical burns to the respiratory tract. May cause lung damage. Causes respiratory tract irritation. Inhalation of high concentrations (>200 ppm) of toluene is clearly associated with central nervous system encephalopathy, headache depression, weakness, exhaustion, impaired coordination, transient memory loss, and impaired reaction time.

INGESTION HAZARD: Causes burns to the gastrointestinal tract. May cause perforation of the digestive tract. May cause central nervous system depression. Aspiration into lungs may cause chemical pneumonitis, which may be fatal. May be harmful if swallowed.

SKIN CONTACT HAZARD: Causes burns to skin. May be absorbed into body. Causes skin irritation. May be absorbed through intact skin. Repeated or prolonged exposure may cause drying and cracking of skin.

EYE CONTACT HAZARD: Contact causes burns. Damage may be delayed. Causes excessive tearing. Causes eye irritation. Vapors may cause eye irritation.

Chronic Exposure Hazards: Effects may be delayed. Prolonged skin contact may be painless and cause redness and subsequently a white appearance of the skin accompanied by wrinkling. Repeated or prolonged exposure may cause dermatitis and defatting of skin. Repeated exposure in combination with constant, loud noise can produce hearing loss and dizziness. Chronic hydrocarbon abuse, such as sniffing glue or light hydrocarbons as contained in this material, has been associated with irregular heart rhythms and potential cardiac arrest. Toluene abuse has been linked with kidney disease, as evidenced by blood, protein, and pus in the urine, accompanied by elevated serum creatinine, decreased urinary output, and metabolic and renal tubular acidosis. Although kidney toxicity is not common in cases of occupational toluene exposure, there has been at least one report of renal toxicity following a 40-year occupational exposure to toluene. Toluene does not cause severe bone marrow injury characteristic to benzene poisoning. Intentional abuse of toluene vapors has been linked to damage to the brain, liver, and kidneys, as well as to death. Repeated inhalation exposure to animals causes histological changes in the brain, degeneration of heart tissue, and possible immune system effects.

Animal Toxicity (Toluene):

Draize test, rabbit, eye: 870 ug Mild;
 Draize test, rabbit, eye: 2 mg/24H Severe;
 Draize test, rabbit, skin: 435 mg Mild;
 Draize test, rabbit, skin: 500 mg Moderate;
 Draize test, rabbit, skin: 20 mg/24 hr Moderate;
 Inhalation, mouse: LC50 = 400 ppm/42H;
 Inhalation, mouse: LC50 = 30,000 mg/m³/2H;
 Inhalation, mouse: LC50 = 19,900 mg/m³/7H;
 Inhalation, mouse: LC50 = 10,000 mg/m³;
 Inhalation, rat: LC50 = 49 mg/m³/4H;
 Oral, rat: LD50 = 636 mg/kg;
 Skin, rabbit: LD50 = 14,100 mg/kg;

In a well conducted study of mice, the oral LD50 of acetonitrile was calculated to be 617 mg/kg.

Animal Toxicity (Dichloroacetic Acid):

Draize test, rabbit, skin: 2 mg/24H Severe;
 Draize test, rabbit, eye: 50 µg open Severe;
 Oral, rat: LD50 = 2820 mg/kg;
 Skin, rabbit: LD50 = 510 mg /kg;

Carcinogenicity: No component is listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Toluene

Epidemiology: No information available.

Teratogenicity: In an epidemiological study of toluene and pregnancy, occupational exposures to toluene were said to be associated with an increased incidence of renal, urinary, gastrointestinal, and cardiac anomalies. Reduced fetal weight, effects on learning and memory, and hearing loss in males were observed in the of-spring of rats exposed by inhalation at levels that did not cause toxic affects in the mother.

Reproductive Effects: Many reports of reproductive effects of toluene abuse or heavy occupational exposure are confounded by mixed solvent exposure or fetal alcohol syndrome. In women exposed to toluene in lab work, the risk of spontaneous abortion increased 4.7 times.

Mutagenicity: No information available.

Neurotoxicity: No information available.

Dichloroacetic Acid

Investigated as a tumorigen, mutagen, and reproductive effector.

12. ECOLOGICAL INFORMATION

Ecotoxicity (Toluene):

Bluegill: LC50 = 17 mg/L/24H;
 Shrimp: LC50 = 4.3 ppm/96H;
 Fathead minnow: LC50 = 36.2 mg/L/96H;
 Sunfish (Fresh water): TLm = 1180 mg/L/96H

Ecotoxicity (Dichloroacetic Acid): Harmful to aquatic organisms

Environmental Fate (Toluene): When released to soil, product is expected to evaporate and be microbially biodegraded. In water, product is expected to biodegrade and volatilize. Photochemically produced hydroxyl radicals degrade this material

Environmental Fate (Dichloroacetic Acid): No information available.

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. This material is a "U" listed waste (U220).

14. TRANSPORT INFORMATIONUS DOT, IATA, IMO

Proper Shipping Name: Flammable Liquids, Corrosive, n.o.s. (Toluene, Dichloroacetic Acid)

Hazard Class: 3(8)

UN Number: UN2924

Packing Group: II

Canada TDG

Additional Information: Flashpoint -4 C

15. REGULATORY INFORMATIONUS Federal Regulations:

TSCA: CAS# 108-88-3 and CAS# 79-43-6 are listed on the TSCA Inventory.

Health and Safety Reporting List: CAS# 108-88-3 – Effective 10/4/82, sunset 10/4/92.

Chemical Test Rules Not listed

Section 12b: Not listed

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

CERCLA Hazardous Substances: CAS# 108-88-3; 1000 lbs/454 kg final RQ; CAS# 79-43-6 does not have an RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 108-88-3– immediate, fire; CAS # 79-43-6: immediate, delayed.

Section 313: Toluene (CAS# 108-88-3) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements. Dichloroacetic Acid (CAS# 79-43-6) is not reportable.

Clean Air Act: CAS# 108-88-3 is listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Air Act: CAS# 79-43-6 is not listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 108-88-3 is listed as a Hazardous Substance. It is a Priority Pollutant. It is a Toxic Pollutant.

Clean Water Act: CAS# 79-43-6 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 108-88-3 is on the following state right-to-know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts

CAS# 79-43-6 is on the following state right-to-know lists: New Jersey

California Prop 65: The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Dichloroacetic acid, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: None of the chemicals in this product are listed

Canada:

DSL/NDL: CAS# 108-88-3 and CAS# 79-43-6 are listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of B2, 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# 108-88-3 and CAS# 79-43-6 are listed on Canada's Ingredient Disclosure List.

DSCL (EEC):

Hazard Symbols: C, T, F

Risk Phrases: R11 – Highly Flammable; R20/21/22 – Harmful by inhalation, in contact with skin, and if swallowed; R34 – Causes burns; R36/37/38 – Irritating to eyes, skin, and respiratory system; R40 – Harmful: danger of serious damage to health; R-50 – Cause harm to aquatic organisms; R63 – Possible risk of harm to the unborn child; R65 – Harmful: may cause lung damage if swallowed; R67 – vapors may cause drowsiness and dizziness.

Safety Phrases: S16 – Keep away from sources of ignition-no smoking; S26 – In case of contact with eyes, rinse immediately with water and seek medical advice; S28 – After contact with skin, wash immediately with plenty of water; S36/37/39: Wear suitable protective clothing, gloves, and eye/face protection; S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
WGK (Water Danger/protection CAS# 108-88-3: 2; CAS# 79-43-6: 1

16. OTHER INFORMATION

Originally Prepared: 2/11/2008

Last Revised: 07/11/2018 – Updated hazard and precautionary statements. Corrected typographically errors, corrected mixed fonts and font sizing.

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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