



SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 10/07/2014

Version 1.1

SECTION 1. Identification

Product identifier

Product number	BI0841
Product name	Deblock Reagent 10% (v/v) Dichloroacetic Acid in Toluene For DNA Synthesis Novabiochem®

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for analysis
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Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America General Inquiries: +1-978-715-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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SECTION 2. Hazards identification

GHS Classification

Flammable liquid, Category 2, H225
Acute toxicity, Category 4, Oral, H302
Skin corrosion, Category 1A, H314
Serious eye damage, Category 1, H318
Reproductive toxicity, Category 2, H361
Specific target organ systemic toxicity - single exposure, Category 3, Central nervous system, H336
Specific target organ systemic toxicity - repeated exposure, Category 2, Central nervous system, H373
Aspiration hazard, Category 1, H304

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms



Signal Word
Danger

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Hazard Statements

- H225 Highly flammable liquid and vapor.
- H302 Harmful if swallowed.
- H304 May be fatal if swallowed and enters airways.
- H314 Causes severe skin burns and eye damage.
- H336 May cause drowsiness or dizziness.
- H361 Suspected of damaging fertility or the unborn child.
- H373 May cause damage to organs (Central nervous system) through prolonged or repeated exposure.

Precautionary Statements

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P233 Keep container tightly closed.
- P240 Ground/bond container and receiving equipment.
- P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- 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.
- P310 Immediately call a POISON CENTER or doctor/ physician.
- P321 Specific treatment (see supplemental first aid instructions on this label).
- P363 Wash contaminated clothing before reuse.
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.
- P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Chemical nature

Mixture of organic compounds

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Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

toluene (>= 70 % - < 90 %)

108-88-3

Exact percentages are being withheld as a trade secret.

Dichloro acetic acid (>= 10 % - < 30 %)

79-43-6

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. Call in physician.

Skin contact

After skin contact: wash off with plenty of water. Immediately remove contaminated clothing. If available swab with polyethylene glycol 400. Call a physician immediately.

Eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Pulmonary failure possible after aspiration of vomit. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Irritation and corrosion, respiratory paralysis, respiratory arrest, Drowsiness, Dizziness, Unconsciousness, inebriation, Nausea, Vomiting, Circulatory collapse, Headache, Convulsions, drowsiness, CNS disorders, Cough, Shortness of breath, shock, death
Risk of blindness!

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Foam, Carbon dioxide (CO₂), Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Combustible.

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Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air at ambient temperatures.
Pay attention to flashback.
Development of hazardous combustion gases or vapors possible in the event of fire.
Fire may cause evolution of:
Hydrogen chloride gas

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

Environmental precautions

Do not let product enter drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

Observe label precautions.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Store at room temperature.

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SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>toluene 108-88-3</i>			
ACGIH	Time Weighted Average (TWA):	20 ppm	
NIOSH/GUIDE	Recommended exposure limit (REL):	100 ppm 375 mg/m ³	
	Short Term Exposure Limit (STEL):	150 ppm 560 mg/m ³	
Z1A	Time Weighted Average (TWA):	100 ppm 375 mg/m ³	
	Short Term Exposure Limit (STEL):	150 ppm 560 mg/m ³	
OSHA/Z2	Ceiling Limit Value:	300 ppm	
	Time Weighted Average (TWA):	200 ppm	
	Maximum concentration:	500 ppm	Ceiling Limit Value 10 minutes
<i>Dichloro acetic acid 79-43-6</i>			
ACGIH	Time Weighted Average (TWA): Skin designation:	0.5 ppm	Can be absorbed through the skin.

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

Flame retardant antistatic protective clothing.

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Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	No strong odor known.
Odor Threshold	No information available.
pH	No information available.
Melting point	No information available.
Boiling point	No information available.
Flash point	46.0 °F (7.8 °C)
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapor pressure	No information available.
Relative vapor density	No information available.
Density	No information available.
Relative density	No information available.
Water solubility	No information available.
Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	No information available.

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Explosive properties Not classified as explosive.

Oxidizing properties none

SECTION 10. Stability and reactivity

Reactivity

Vapors may form explosive mixture with air.

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Risk of explosion with:

fuming sulfuric acid, Nitric acid, silver, perchlorates, nitrogen dioxide, nonmetallic halides, acetic acid, halogen-halogen compounds, uranium hexafluoride, organic nitro compounds

Violent reactions possible with:

Strong oxidizing agents, Strong acids, sulfur, strong reducing agents, alkalines

Risk of ignition or formation of inflammable gases or vapors with:

Metals

Conditions to avoid

Warming.

Incompatible materials

rubber, various plastics

Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact

Target Organs

Eyes

Skin

Respiratory system

Central nervous system

Liver

Kidneys

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Acute oral toxicity

Symptoms: Nausea, Vomiting, If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute toxicity estimate: 719.6 mg/kg

Calculation method

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Lung edema, Possible damages:, damage of respiratory tract

Acute dermal toxicity
absorption

Skin irritation

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Mixture causes severe burns.

Eye irritation

Mixture causes serious eye damage. Risk of blindness!

Specific target organ systemic toxicity - single exposure

Target Organs: Central nervous system

Mixture may cause drowsiness or dizziness.

Specific target organ systemic toxicity - repeated exposure

Mixture may cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

Aspiration hazard, Aspiration may cause pulmonary edema and pneumonitis.

Carcinogenicity

IARC

Group 2B: Possibly carcinogenic to humans

Dichloro acetic acid 79-43-6

OSHA

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH

Confirmed animal carcinogen with unknown relevance to humans.

Dichloro acetic acid 79-43-6

Further information

Systemic effects:

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After absorption of large quantities:

CNS disorders, inebriation, Convulsions, Unconsciousness, Headache, Dizziness, shock,

Circulatory collapse, respiratory paralysis, respiratory arrest, death

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Ingredients

toluene

Acute oral toxicity

LD50 Rat: 636 mg/kg (IUCLID)

Acute inhalation toxicity

LC50 Rat: 28.1 mg/l; 4 h (IUCLID)

Acute dermal toxicity

LD50 Rabbit: 12,124 mg/kg (IUCLID)

Skin irritation

Rabbit

Result: Irritations

OECD Test Guideline 404

Germ cell mutagenicity

Genotoxicity in vitro

Mutagenicity (mammal cell test): micronucleus.

Result: negative

(IUCLID)

Ames test

Result: negative

(Lit.)

Dichloro acetic acid

Acute oral toxicity

LD50 Rat: 2,820 mg/kg (RTECS)

Acute dermal toxicity

LD50 Rabbit: 801 mg/kg (RTECS) (Regulation (EC) No 1272/2008, Annex VI)

Germ cell mutagenicity

Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: positive

(National Toxicology Program)

SECTION 12. Ecological information

Ecotoxicity

No information available.

Persistence and degradability

No information available.

Bioaccumulative potential

No information available.

Mobility in soil

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No information available.

Ingredients

toluene

Toxicity to fish

LC50 Oncorhynchus mykiss (rainbow trout): 5.8 mg/l; 96 h (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates

EC50 Daphnia magna (Water flea): 6 mg/l; 48 h (ECOTOX Database)

NOEC E.sulcatum: 456 mg/l; 72 h (IUCLID)

Toxicity to algae

IC50 Pseudokirchneriella subcapitata (green algae): 12 mg/l; 72 h (Lit.)

Toxicity to bacteria

EC50 Photobacterium phosphoreum: 20 mg/l; 30 min (Lit.)

Theoretical oxygen demand (ThOD)

3,130 mg/g
(Lit.)

Distribution among environmental compartments

Adsorption/Soil

log Koc: 2.15

(experimental)

Moderately mobile in soils (Lit.)

Henry constant

683 Pa·m³/mol

(Lit.) Distribution preferentially in air.

Dichloro acetic acid

Toxicity to daphnia and other aquatic invertebrates

EC50 Daphnia magna (Water flea): 106 mg/l; 24 h (ECOTOX Database)

Toxicity to bacteria

EC0 Bacteria: 100 - 1,000 mg/l (External MSDS)

Biodegradability

98 %; 14 d

OECD Test Guideline 301C

Readily biodegradable.

Partition coefficient: n-octanol/water

log Pow: 0.92

(experimental)

(Lit.)

Bioaccumulation is not expected.

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Synthesis Novabiochem®**SECTION 13. Disposal considerations**

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information**Land transport (DOT)**

UN number

UN 2924

Proper shipping name

FLAMMABLE LIQUID, CORROSIVE, N.O.S. (CONT.
TOLUENE, DICHLOROACETIC ACID)

Class

3 (8)

Packing group

II

Environmentally hazardous

--

Air transport (IATA)

UN number

UN 2924

Proper shipping name

FLAMMABLE LIQUID, CORROSIVE, N.O.S. (CONT.
TOLUENE, DICHLOROACETIC ACID)

Class

3 (8)

Packing group

II

Environmentally hazardous

--

Special precautions for user

no

Sea transport (IMDG)

UN number

UN 2924

Proper shipping name

FLAMMABLE LIQUID, CORROSIVE, N.O.S. (CONT.
TOLUENE, DICHLOROACETIC ACID)

Class

3 (8)

Packing group

II

Environmentally hazardous

--

Special precautions for user

yes

EmS

F-E S-C

SECTION 15. Regulatory information**United States of America****SARA 313**

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients

toluene

108-88-3

85 %

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SARA 302

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Ingredients

toluene

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Ingredients

toluene

DEA List I

Not listed

DEA List II

Listed

Ingredients

toluene

108-88-3

US State Regulations

Massachusetts Right To Know

Remarks

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

Ingredients

toluene

New Jersey Right To Know

Ingredients

toluene

Dichloro acetic acid

California Prop 65 Components

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Ingredients

toluene

Dichloro acetic acid

California Prop 65 Components

WARNING: this product contains a chemical known in the State of California to cause cancer.

Ingredients

Dichloro acetic acid

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Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL.

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Full text of H-Statements referred to under sections 2 and 3.

H225	Highly flammable liquid and vapor.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date 10/07/2014

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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