

MATERIAL SAFETY DATA SHEET**Trade Name: TCA Deblock Solution for DNA Synthesis****Section I - Chemical Products & Company Identification**

Proligo LLC	Proligo Biochemie GmbH	Creation Date: 2/99
6200 Lookout Rd	Georg-Heyken-Str. 14	Revision Date: 3/04
Boulder, Colorado 80301 USA	Hamburg, Germany D21147	Revision Number: 2

Product #: L020250, L020400, L023000, L320045, L820090

For emergency source information (USA) contact: Chemtrec 1-800-424-9300 24 Hours

For emergency source information (International) contact: Chemtrec 001-703-527-3887 (USA) 24 Hours

Trade Names/Synonyms: Deblock SolutionChemical Family: Dichloromethane Solution**Section 2 - Composition/Information On Ingredients - % by Weight**

<u>Chemicals:</u>	<u>Composition (w/w) %:</u>	<u>CAS Number:</u>	<u>Classification:</u>	<u>Odor Threshold:</u>
Dichloromethane	50-100%	75-09-02	Carcinogen Cat. 3 Xn; R:40	300 ppm
Trichloroacetic Acid	1-2.5%	76-03-9	C; R:35	Not Available

Section 3 - Hazards IdentificationNFPA (National Fire Protection Association) Ratings (Scale 0-4): **Health: 2** **Flammable: 1** **Reactivity: 0**

Emergency Overview: Possible risks of irreversible effects. Irritating to the eyes and skin. Do not breathe fumes. Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. May cause cancer based on animal data. Dichloromethane is converted to carbon monoxide in the body. Use prudent laboratory practices for handling chemical substances.

Potential Health Effects:

Skin Contact:	Short Term Exposure:	May be harmful, possible risk of irreversible effects. Irritant
	Long Term Exposure:	May cause defatting and dermatitis.
Eye Contact:	Short Term Exposure:	May be harmful, possible risk of irreversible effects. Irritant
	Long Term Exposure:	Possible eye burns.
Ingestion:	Short Term Exposure:	May be harmful, possible risk of irreversible effects.
	Long Term Exposure:	CNS depressions, excitement, headaches, dizziness, drowsiness, nausea, collapse, unconsciousness, coma and possible death due to respiratory failure. Possible cancer hazard based on animal studies. Possible risk of congenital malformation in the fetus.
Inhalation:	Short Term Exposure:	May be harmful, possible risk of irreversible effects.
	Long Term Exposure:	CNS, headache, dizziness, unconsciousness and coma. Possible cancer hazard based on animal studies.
Injection:	Short Term Exposure:	No information available
	Long Term Exposure:	No information available

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	Dichloromethane	Trichloroacetic Acid
ACGIH:	A2-Suspected human carcinogen	Not Classifiable as human carcinogen
NIOSH:	Occupational carcinogen	Not Listed
OSHA:	Possible select carcinogen	Not Listed
NTP:	Reasonably anticipated to be a human carcinogen	Not Listed
IARC:	Group 2B, possible carcinogen	Group 3, human inadequate evidence

According to 91/155 EC:

Hazard designation:

Xn Harmful

Information pertaining to particular dangers for man and environment

R 36/37 Irritating to eyes and skin

R 40 Possible risks of irreversible effects

***Classification system**

The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies

Section 4: First Aid Measures

- Skin Contact:** Remove contaminated clothing. Flush affected area with water and then wash with soap or mild detergent and water for at least 15 minutes. Observe for signs of irritation. If irritation is present, get medical attention.
- Eye Contact:** Wash eyes with large amounts of water or normal saline for at least 15 minutes. Observe for signs of irritation. If irritation is present, get medical attention.
- Ingestion:** Get medical attention. If victim is conscious and alert, give 2-4 cupfuls of milk or water.
- Inhalation:** Remove from exposure area to fresh air immediately. Get medical attention immediately.
- Injection:** If accidentally injected, get medical attention.

Note to Physician: There is no specific antidote. Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

FIRE AND EXPLOSION HAZARD: **FlashPoint:** Not applicable for mixture. **Explosion Limits:** LL 15.1 at 103°C and UL 17.3 at 148°C. **Autoignition Temperature:** 1033°F or 556.11°C.

EXTINGUISHING MEDIA: Use water spray, carbon dioxide or chemical foam, or dry chemical. Water may be effective for cooling, but may not effect extinguishment.

SPECIFIC HAZARDS: Vapors mixed with air in proper proportions will propagate a flame.

PROTECTION OF FIREFIGHTERS: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Use water spray to cool fire-exposed containers.

Section 6: Accidental Release Measures

OCCUPATIONAL SPILL: Wear appropriate protective clothing and chemically compatible gloves indicated in section 8. Absorb spill with inert material, such as dry sand or earth. Remove all sources of ignition. Place spillage in appropriate container for waste disposal. Use spark-proof tools. Wash contaminated clothing before reuse.

US CERCLA REPORTABLE QUANTITY (RQ): 1000 lbs. for Dichloromethane (RCRA code: U080).

MATERIAL SAFETY DATA SHEET**Trade Name: TCA Deblock Solution for DNA Synthesis****Section 7 - Handling and Storage**

Observe all federal, state and local regulations. Do not breathe fumes. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Keep tightly closed. Store in cool dry place. Use prudent laboratory practices for handling and storage of chemical substances. Avoid sources of ignition.

Section 8 - Exposure Controls/Personal Protection

Exposure Controls: Wear appropriate respirator where no engineering controls exist. Use in laboratory hood or other ventilated device. Do NOT breathe vapor. Danger of peroxide formation. Use nonsparking tools. Use prudent laboratory practices for handling chemical substances.

Eye Protection: Employees must wear splash-proof safety goggles to prevent eye contact with this substance.

Clothing: Employee must wear appropriate protective clothing (laboratory coat with long sleeves) and equipment to prevent skin contact with this material.

Gloves: Employee must wear appropriate protective gloves to prevent contact with this material.

Permissible Exposure Limits (USA):

	Dichloromethane	Trichloroacetic acid
<u>ACGIH TWA (ppm)</u>	50	1
<u>ACGIH STEL/C (ppm)</u>	2000 (5 min every 3 hrs) / 1000 ppm	N/A
<u>IDHL (ppm)</u>	2300 (Occupational Carcinogen)	Not Determined
<u>OSHA (ppm)</u>	25	None
<u>NIOSH (ppm)</u>	Occupational Carcinogen	1

Permissible Exposure Limits (Europe):

	Dichloromethane	Trichloroacetic acid
<u>Germany (ppm)</u>	100	N/A
<u>USSR-UNEP/IRPTC (MAC)</u>	50 mg/m ³ (workplace air)	5.0 mg/m ³ (workplace air)
<u>U. K. TWA (ppm)</u>	100	1
<u>U. K. STEL (ppm)</u>	N/A	Not Determined
<u>Japan (ppm)</u>	100	N/A

According to 91/155 EC:

Components with limit values that require monitoring at the workplace:

Dichloromethane (CAS # 75-09-2) 50-100%
OEL: Short-term value: 350 mg/m³, 100 ml/ m³

Trichloroacetic acid (CAS # 76-09-2) 1-2.5%
OEL: Short-term value: 5 mg/m³, 1ml/ m³

*Additional information about design of technical systems:
No further data; see item 7

Section 9 - Physical and Chemical Properties

DESCRIPTION: Liquid, Colorless, with distinctive ethereal odor

SOLUBILITY: Miscible with water at 20°C (68°F) 1.33g/cm³

FLASHPOINT: Not available (for DCM) and >110°C(>230°F) (for TCA)

BOILING POINT: 40°C(104°F) (for DCM) and 198°C(388°F) (for TCA)

MELTING POINT: Not determined

FREEZING POINT: -95°C(-139°F) (for DCM) and Not available for TCA

VAPOR PRESSURE: 350 mm (for DCM) and 1 mm at 51.1°C(124°F) (for TCA)

VAPOR DENSITY: 2.9 (for DCM) and < 1 (for TCA)

pH: pH 3-4 at 100 g/L in water(20°C, 68°F)

Danger of Explosion: Product is not explosive

MATERIAL SAFETY DATA SHEET**Trade Name: TCA Deblock Solution for DNA Synthesis**

Self-inflammability: Product is not selfigniting
Solvent Content: 0% Water

Section 10 - Stability and Reactivity

STABILITY: Stable
REACTIVITY: Sensitive to heat.
CONDITIONS TO AVOID: Contact with metals especially with powder form. Nitrogen oxide and metal salts. Avoid perchloric acid, nitric acid and metal oxides. Oxygen, amides, alcohols and aromatic hydrocarbons, water/KMNO₄, acids, impurities and dust.
INCOMPATIBILITIES: Strong oxidizers. 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 and magnesium.
DECOMPOSITION PRODUCTS: No decomposition if used according to specification.
POLYMERIZATION: Not available

Section 11 - Toxicology Information

TOXICITY: The toxicological properties of this material have not been thoroughly investigated as a mixture. Listed below is the lethal dose and lethal concentration for the individual components of the mixture.
Dichloromethane: LD50 (Oral Rat)=1600 mg/kg
 LC50 (Inhalation Rat)=52 g/m³
CARCINOGEN STATUS: Reasonably anticipated to be a human carcinogen. Confirmed carcinogen in animals.
LOCAL EFFECTS: Irritant
TARGET EFFECTS: CNS; anoxia
AT INCREASED RISK FROM EXPOSURE: Dichloromethane (Teratogenicity): Specific development abnormalities (musculoskeletal/urogenital): inl-mus TCLo: 1250 ppm/tH
Chemical Name: **RTECS Number:**
Dichloromethane PA8050000
Trichloroacetic Acid AJ7875000

According to 91/155 EC:

Inhalation of concentrated vapours as well as oral intake will lead to anaesthesia-like conditions and headache, dizziness, etc.

*Additional toxicological information:

The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version;

Product is suspected to cause injury to fetus. Product is suspected to cause cancer.

Harmful

Irritant

Section 12 - Ecological Information

ENVIRONMENTAL IMPACT RATING (0-4): No data available.
ACUTE AQUATIC TOXICITY: Dichloromethane:
 LC50 528 mg/L fish
 LC50 220 mg/L macrochirus
DEGRADABILITY: Biological degradable after adaptation.

MATERIAL SAFETY DATA SHEET**Trade Name: TCA Deblock Solution for DNA Synthesis**

LOG BIOCONCENTRATION FACTOR (BCF): No data available.

Section 13 - Disposal Information

Observe all Federal, State, and Local Regulations.

According to 91/155 EC:

Product:

Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packaging:

Recommendation: disposal must be made according to official regulations.

Recommended cleaning agent: Water, if necessary with cleaning agent

Before cleaning use up or empty container completely.

Section 14 - Transportation Information

Ship as regulated material. Transportation restrictions apply. The acute toxicity profile does warrant shipment as a hazardous material (DOT) or a dangerous good (IATA).

UN2922**Hazard Class 8****Subsidiary Risk 6.1****Label Requirements: Corrosive Liquid, Toxic, n.o.s. (Trichloroacetic acid, Dichloromethane)**

WARNING: THIS PRODUCT IS OR CONTAINS CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

According to 91/155 EC:

Land transport ADR/RID(cross-border)

- ADR/RID-GGVS/E Class: 8 Corrosive materials
- Number/Letter: 76c
- Kemler Number: 86
- UN-Number: 2922
- Label: 8+6.1
- Designation of goods: Corrosive liquid, toxic, n.o.s., trichloroacetic acid, dichloromethane

Maritime transport IMDG:

- IMDG Class: 8
- Page: 8149
- UN Number: 2922
- Packaging group: II
- EMS Number: 8-15
- MFAG: 760
- Correct technical name: Corrosive liquid, toxic, n.o.s.,

Air transport ICAO-TI and IATA-DGR:

- ICAO/IATA Class: 8
- UN/ID Number: 2922
- Correct technical name: Corrosive liquid, toxic, n.o.s.,

Section 15 - Regulatory Information**Europe:**

EINECS/ELINCS:

Dichloromethane
200-838-9Trichloroacetic acid
200-927-2

EC INDEX NO.

602-004-00-3

607-004-00-7

MATERIAL SAFETY DATA SHEET

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Classification:	Carcinogen Cat. 3, Xn; R:40	C; R:35
Canada:		
NDSL/DSL:	DSL	DSL
United States:		
TSCA STATUS:	Yes	Yes
CERCLA SECTION 103 (40 CFR 302.4):	1000 lbs.	No
SARA SECTION 302 (40 CFR 355.30):	No	No
SARA SECTION 304 (40 CFR 355.40):	No	No
SARA SECTION 313 (40 CFR 372.65):	Yes	No
OSHA PROCESS SAFETY (29 CFR 1910.119):	No	No
CALIFORNIA PROPOSITION 65	*	No
SARA ACUTE HAZARD (40 CFR 370.21)		
CHRONIC HAZARD:	Yes	No
FIRE HAZARD:	Yes	No
REACTIVITY HAZARD:	No	No
SUDDEN RELEASE HAZARD:	No	No

*WARNING: THIS PRODUCT IS OR CONTAINS CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Classification:
Carcinogen Category 3; R 40 "Possible risk of irreversible effects" Xi; R 36/38

Symbols: Xn Harmful

Risk Phrase: Mixture
R: 36/38
Irritating to eyes and skin.

R: 40
Possible risks of irreversible effects.

Safety Phrases: Mixture
S:23
Do not breathe fumes.

S: 24/25
Avoid contact with the skin and with the eyes.

S: 26
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S: 36/37
Wear suitable protective clothing and suitable gloves.

For Laboratory R&D Use Only.

According to 91/155 EC:
 National Regulations
 Classification according to VbF: A III
 Technical instructions (air):
 Class Share in %: I 50-100

MATERIAL SAFETY DATA SHEET

Trade Name: TCA Deblock Solution for DNA Synthesis

Section 16 - Other

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