

## 1. Identification

<b>Product identifier</b>	<b>TRICHLOROACETIC ACID, REAGENT (ACS)</b>	
<b>Other means of identification</b>		
Product code	390	
Synonym(s)	TCA	
Recommended use	professional, scientific and technical activities: other professional, scientific and technical activities	
Recommended restrictions	None known.	
<b>Manufacturer/Importer/Supplier/Distributor information</b>		
Company name	GFS Chemicals, Inc.	
Address	P.O. Box 245 Powell OH 43065 US	
Telephone	Phone	740-881-5501
	Toll Free	800-858-9682
	Fax	740-881-5989
Website	www.gfschemicals.com	
E-mail	service@gfschemicals.com	
Emergency phone number	Emergency Assistance	Chemtrec 800-424-9300

## 2. Hazard(s) identification

<b>Physical hazards</b>	Not classified.	
<b>Health hazards</b>	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
	Germ cell mutagenicity	Category 2
	Reproductive toxicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
<b>OSHA hazard(s)</b>	Not classified.	
<b>Label elements</b>		



<b>Signal word</b>	Danger
<b>Hazard statement</b>	Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation. Suspected of causing genetic defects. Suspected of damaging fertility or the unborn child. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.
<b>Precautionary statement</b>	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.

<b>Disposal</b>	Dispose of contents/container to an approved waste disposal plant.
<b>Hazard(s) not otherwise classified (HNOC)</b>	Not classified.
<b>Environmental hazards</b>	Hazardous to the aquatic environment, acute hazard Category 1
	Hazardous to the aquatic environment, long-term hazard Category 1
<b>Supplemental information</b>	
<b>Precautionary statement</b>	
<b>Prevention</b>	Avoid release to the environment.
<b>Response</b>	Collect spillage.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.

### 3. Composition/information on ingredients

#### Substances

<b>Hazardous components</b>			
<b>Chemical name</b>	<b>Common name and synonyms</b>	<b>CAS number</b>	<b>%</b>
TRICHLOROACETIC ACID	TCA	76-03-9	100

\*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

### 4. First-aid measures

<b>Inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician or poison control center immediately.
<b>Skin contact</b>	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. For minor skin contact, avoid spreading material on unaffected skin.
<b>Eye contact</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
<b>Ingestion</b>	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
<b>Most important symptoms/effects, acute and delayed</b>	Corrosive effects. Irritation of eyes and mucous membranes. May cause temporary blindness and severe eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
<b>Indication of immediate medical attention and special treatment needed</b>	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Provide general supportive measures and treat symptomatically.
<b>General information</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention. Wash contaminated clothing before reuse.

### 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Use extinguishing agent suitable for type of surrounding fire. Water.
<b>Unsuitable extinguishing media</b>	None known.
<b>Specific hazards arising from the chemical</b>	Irritating, corrosive and/or toxic gases or fumes will be released during a fire.
<b>Special protective equipment and precautions for firefighters</b>	Wear suitable protective equipment.
<b>Fire-fighting equipment/instructions</b>	Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Water runoff can cause environmental damage.
<b>Specific methods</b>	Cool containers exposed to flames with water until well after the fire is out.

### 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak. Keep upwind. Keep out of low areas. Ensure adequate ventilation. Wear appropriate personal protective equipment.
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**Methods and materials for containment and cleaning up**

Refer to attached safety data sheets and/or instructions for use. Should not be released into the environment. This product is miscible in water. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Prevent entry into waterways, sewers, basements or confined areas. Stop leak if you can do so without risk. Collect spillage. Sweep up or gather material and place in appropriate container for disposal. After removal flush contaminated area thoroughly with water. This material and its container must be disposed of as hazardous waste. Avoid dust formation. Following product recovery, flush area with water. Clean up in accordance with all applicable regulations. Small Dry Spills: With clean shovel place material into clean, dry container and cover loosely; move containers from spill area. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. For waste disposal, see section 13 of the MSDS.

**Environmental precautions**

Contact local authorities in case of spillage to drain/aquatic environment. Avoid discharge into drains, water courses or onto the ground. Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**7. Handling and storage****Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not taste or swallow. Avoid contact during pregnancy/while nursing. Do not get this material on clothing. Use personal protective equipment as required. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

**Conditions for safe storage, including any incompatibilities**

Store locked up. Keep container tightly closed. Keep out of the reach of children. Store in a cool, dry place out of direct sunlight.

**8. Exposure controls/personal protection****Occupational exposure limits****US. ACGIH Threshold Limit Values**

Material	Type	Value
TRICHLOROACETIC ACID (CAS 76-03-9)	TWA	1 ppm

**US. NIOSH: Pocket Guide to Chemical Hazards**

Material	Type	Value
TRICHLOROACETIC ACID (CAS 76-03-9)	TWA	7 mg/m <sup>3</sup>
		1 ppm

**Biological limit values**

No biological exposure limits noted for the ingredient(s).

**Appropriate engineering controls**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.

**Individual protection measures, such as personal protective equipment****Eye/face protection**

Face-shield.

**Skin protection****Hand protection**

Wear protective gloves.

**Other**

Wear appropriate chemical resistant clothing. It may provide little or no thermal protection. Wear protective gloves.

**Respiratory protection**

If permissible levels are exceeded use NIOSH mechanical filter / organic vapor cartridge or an air-supplied respirator. In case of insufficient ventilation, wear suitable respiratory equipment.

**Thermal hazards**

Not available.

**General hygiene considerations**

When using, do not eat, drink or smoke. Do not get in eyes. Do not get this material in contact with skin. Do not get this material on clothing. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

**9. Physical and chemical properties****Appearance**

Flakes.

**Physical state**

Solid.

**Form**

Solid.

**Color**

White.

**Odor**

Characteristic.

<b>Odor threshold</b>	Not available.
<b>pH</b>	1.2 0.1 molar aqueous solution
<b>Melting point/freezing point</b>	135.5 °F (57.5 °C)
<b>Initial boiling point and boiling range</b>	383.9 °F (195.5 °C)
<b>Flash point</b>	235.40 °F (113.00 °C) Tag Closed Cup
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not available.
<b>Flammability limit - upper (%)</b>	Not available.
<b>Explosive limit - lower (%)</b>	Not available.
<b>Explosive limit - upper (%)</b>	Not available.
<b>Vapor pressure</b>	0.021331 kPa at 25 °C
<b>Vapor density</b>	5.64
<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	81 g/l at 25 C Miscible
<b>Partition coefficient (n-octanol/water)</b>	1.6
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Decomp by heating with caustic alkalies into chloroform and alkali carbonate. Decomp products are chloroform, hydrochloric acid, carbon dioxide and carbon monoxide. When heated to decomp, emits toxic fumes of hydrogen chloride and disodium oxide.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Density</b>	1.61 g/cm3 estimated
<b>Flammability class</b>	Combustible IIIB estimated
<b>Flash point class</b>	Combustible IIIB
<b>Molecular formula</b>	C2-H-Cl3-O2
<b>Molecular weight</b>	163.40 g/mol
<b>Specific gravity</b>	1.6126 at 64 °C

## 10. Stability and reactivity

<b>Reactivity</b>	Not available.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.
<b>Conditions to avoid</b>	Avoid temperatures exceeding the flash point. Reacts violently with strong alkaline substances. This product may react with reducing agents. Do not mix with other chemicals.
<b>Incompatible materials</b>	Incompatible with bases. Aluminum. Strong oxidizing agents. This product may react with reducing agents. Decomposes slowly on exposure to water.
<b>Hazardous decomposition products</b>	Chlorine. Hydrogen chloride. Nitrogen oxides (NOx). The aqueous solution decomposes when heated forming chloroform. Trichloroacetic acid decomposes above 200 °C forming HCl, CO and Phosgene.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Ingestion</b>	Causes digestive tract burns. Harmful if swallowed.
<b>Inhalation</b>	May cause irritation to the respiratory system.
<b>Skin contact</b>	Causes severe skin burns.
<b>Eye contact</b>	Causes severe eye burns. Causes serious eye damage.

**Symptoms related to the physical, chemical and toxicological characteristics**

Burning pain and severe corrosive skin damage. Permanent eye damage including blindness could result.

**Information on toxicological effects****Acute toxicity**

Causes severe skin burns and eye damage. Harmful if swallowed.

**Product****Species****Test Results**

TRICHLOROACETIC ACID (CAS 76-03-9)

**Acute***Dermal*

LD50

Rat

> 2000 mg/kg

*Oral*

LD50

Dog

1590 mg/kg

Mouse

5640 mg/kg

4970 mg/kg

4.97 g/kg

Rat

3200 - 5000 mg/kg

3320 mg/kg

400 mg/kg

3.32 g/kg

*Other*

LD50

Mouse

270 mg/kg

\* Estimates for product may be based on additional component data not shown.

**Skin corrosion/irritation**

Causes severe skin burns and eye damage.

**Serious eye damage/eye irritation**

Causes severe eye burns. Causes serious eye damage.

**Respiratory sensitization**

Due to lack of data the classification is not possible.

**Skin sensitization**

Due to lack of data the classification is not possible.

**Germ cell mutagenicity**

Suspected of causing genetic defects.

**Carcinogenicity**

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

TRICHLOROACETIC ACID (CAS 76-03-9)

3 Not classifiable as to carcinogenicity to humans.

**Reproductive toxicity**

Suspected of damaging fertility or the unborn child.

**Specific target organ toxicity - single exposure**

Respiratory tract irritation.

**Specific target organ toxicity - repeated exposure**

Due to lack of data the classification is not possible.

**Aspiration hazard**

Due to lack of data the classification is not possible.

**Chronic effects**

Hazardous by WHMIS criteria. Prolonged inhalation may be harmful.

**12. Ecological information****Ecotoxicity**

Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected. Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

**Product****Species****Test Results**

TRICHLOROACETIC ACID (CAS 76-03-9)

**Aquatic**

Crustacea

EC50

Water flea (Daphnia magna)

146 mg/l, 48 hours

Fish

LC50

Trout family (Salmonidae)

1050 mg/l, 96 hours

\* Estimates for product may be based on additional component data not shown.

**Persistence and degradability**

No data is available on the degradability of this product.

**Bioaccumulative potential**

Not available.

**Partition coefficient n-octanol / water (log Kow)**

1.645

<b>Mobility in soil</b>	Not available.
<b>Other adverse effects</b>	Not available.

### 13. Disposal considerations

<b>Disposal instructions</b>	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Local disposal regulations</b>	Not available.
<b>Hazardous waste code</b>	D002: Waste Corrosive material [pH ≤2 or ≥12.5, or corrosive to steel]
<b>Waste from residues / unused products</b>	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
<b>Contaminated packaging</b>	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

### 14. Transport information

#### DOT

<b>UN number</b>	UN1839
<b>UN proper shipping name</b>	Trichloroacetic acid, MARINE POLLUTANT
<b>Transport hazard class(es)</b>	8
<b>Subsidiary class(es)</b>	Not available.
<b>Packing group</b>	II
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.
<b>Labels required</b>	8
<b>Special provisions</b>	A7, IB8, IP2, IP4, N34, T3, TP33
<b>Packaging exceptions</b>	154
<b>Packaging non bulk</b>	212
<b>Packaging bulk</b>	240

#### IATA

<b>UN number</b>	UN1839
<b>UN proper shipping name</b>	Trichloroacetic acid
<b>Transport hazard class(es)</b>	8
<b>Subsidiary class(es)</b>	-
<b>Packaging group</b>	II
<b>Environmental hazards</b>	No
<b>Labels required</b>	Not available.
<b>ERG Code</b>	8L
<b>Special precautions for user</b>	Not available.

#### IMDG

<b>UN number</b>	UN1839
<b>UN proper shipping name</b>	TRICHLOROACETIC ACID, SOLID, MARINE POLLUTANT
<b>Transport hazard class(es)</b>	8
<b>Subsidiary class(es)</b>	-
<b>Packaging group</b>	II
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	Yes
<b>Labels required</b>	Not available.
<b>EmS</b>	F-A, S-B
<b>Special precautions for user</b>	Not available.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** No information available.

**General information** DOT Regulated Marine Pollutant. IMDG Regulated Marine Pollutant.

DOT



IATA; IMDG



Marine pollutant



## 15. Regulatory information

### US federal regulations

CERCLA/SARA Hazardous Substances - Not applicable.

All components are on the U.S. EPA TSCA Inventory List.

### TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

### US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not on regulatory list.

### CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

#### Hazard categories

Immediate Hazard - Yes  
Delayed Hazard - Yes  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No

#### SARA 302 Extremely hazardous substance

No

#### SARA 311/312 Hazardous chemical

No

### Other federal regulations

#### Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

#### Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

#### Safe Drinking Water Act (SDWA)

0.02 mg/l  
0.060 mg/l

#### Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

**Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))**

Not regulated.

**DEA Exempt Chemical Mixtures Code Number**

Not regulated.

**Food and Drug Administration (FDA)**

Not regulated.

**US state regulations**

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

**US. Massachusetts RTK - Substance List**

TRICHLOROACETIC ACID (CAS 76-03-9)

**US. New Jersey Worker and Community Right-to-Know Act**

Not regulated.

**US. Pennsylvania RTK - Hazardous Substances**

TRICHLOROACETIC ACID (CAS 76-03-9)

**US. Rhode Island RTK**

TRICHLOROACETIC ACID (CAS 76-03-9)

**US. California Proposition 65****US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Not listed.

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

**16. Other information, including date of preparation or last revision****Issue date** August-08-2013**Version #** 01**Further information** Not available.**Disclaimer**

The information in the sheet was written based on the best knowledge and experience currently available. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Revision Information**

Product and Company Identification: Synonyms  
Hazards Identification: US Hazard Categories  
Composition / Information on Ingredients: Disclosure Overrides  
Physical & Chemical Properties: Multiple Properties  
Transport Information: Proper Shipping Name/Packing Group  
Regulatory Information: Hazard Symbol - Labeling