

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

<b>Identification of the substance</b>	<b>Trichloroacetic acid (TCA) for biochemistry</b>
<b>CAS number</b>	76-03-9
<b>Article number</b>	1570

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

<b>Relevant identified uses</b>	General use
<b>Uses advised against</b>	Do not use for squirting or spraying. Do not use for products which come into direct contact with the skin.

#### 1.3 Details of the supplier of the safety data sheet

NeoFroxx GmbH  
Marie-Curie-Str. 3  
D-64683 Einhausen  
Germany

Telephone: +49 (6251) 989 24 - 0  
e-mail: info@neofroxx.com  
Website: neofroxx.com

**e-mail (competent person)** info@neofroxx.com (neoFroxx GmbH)

#### 1.4 Emergency telephone number

Poison centre			
Country	Name	Postal code/city	Telephone
United Kingdom	National Poisons Information Service		111

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification acc. to GHS

Section	Hazard class	Category	Hazard class and category	Hazard statement
3.2	skin corrosion/irritation	1A	Skin Corr. 1A	H314
3.8R	specific target organ toxicity - single exposure (respiratory tract irritation)	3	STOT SE 3	H335
4.1A	hazardous to the aquatic environment - acute hazard	1	Aquatic Acute 1	H400
4.1C	hazardous to the aquatic environment - chronic hazard	1	Aquatic Chronic 1	H410

For full text of abbreviations: see SECTION 16.

#### The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis. Spillage and fire water can cause pollution of watercourses.

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### 2.2 Label elements

#### Labelling

- Signal word danger

- Pictograms

GHS05, GHS07, GHS09



- Hazard statements

H314 Causes severe skin burns and eye damage.  
H335 May cause respiratory irritation.  
H410 Very toxic to aquatic life with long lasting effects.

- Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.  
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.  
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/doctor.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

### 2.3 Other hazards

#### Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

#### Endocrine disrupting properties

Does not contain an endocrine disruptor (EDC) in a concentration of  $\geq 0,1\%$ .

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

**Name of substance** Trichloroacetic acid (TCA) for biochemistry

#### Identifiers

CAS No 76-03-9  
EC No 200-927-2  
Index No 607-004-00-7  
(GB CLP)

Specific Conc. Limits	M-Factors	ATE	Exposure route
STOT SE 3; H335: C $\geq 1$ %	-	-	

**Molecular formula** C<sub>2</sub>HCl<sub>3</sub>O<sub>2</sub>

**Molar mass** 163.4 g/mol

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

##### General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

##### Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

##### Following skin contact

Wash with plenty of soap and water.

##### Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

##### Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

#### 4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

#### 4.3 Indication of any immediate medical attention and special treatment needed

none

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

##### Suitable extinguishing media

Water, Foam, Alcohol resistant foam, ABC-powder

##### Unsuitable extinguishing media

Water jet

#### 5.2 Special hazards arising from the substance or mixture

##### Hazardous combustion products

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Hydrogen chloride (HCl)

#### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

### SECTION 6: Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

##### For non-emergency personnel

Remove persons to safety.

##### For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

### 6.3 Methods and material for containment and cleaning up

#### Advice on how to contain a spill

Covering of drains, Take up mechanically

#### Advice on how to clean up a spill

Take up mechanically.

#### Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

### 6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

#### Recommendations

- Measures to prevent fire as well as aerosol and dust generation  
Use local and general ventilation. Use only in well-ventilated areas. Ground/bond container and receiving equipment.
- Specific notes/details  
Dust deposits may accumulate on all deposition surfaces in a technical room. The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.
- Handling of incompatible substances or mixtures  
Do not mix with alkali.
- Keep away from  
Caustic solutions

#### Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Managing of associated risks

- Explosive atmospheres  
Removal of dust deposits.
- Packaging compatibilities  
Only packagings which are approved (e.g. acc. to ADR) may be used.

### 7.3 Specific end use(s)

See section 16 for a general overview.

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

##### Occupational exposure limit values (Workplace Exposure Limits)

this information is not available

##### Human health values

Relevant DNELs and other threshold levels				
Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	124.3 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	124.3 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	acute - systemic effects
DNEL	1.41 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
DNEL	1.41 mg/kg bw/day	human, dermal	worker (industry)	acute - systemic effects

##### Environmental values

Relevant PNECs and other threshold levels				
Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0.17 µg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0.017 µg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	100 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	0.143 µg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	0.014 µg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	20 µg/kg	terrestrial organisms	soil	short-term (single instance)

#### 8.2 Exposure controls

##### Appropriate engineering controls

General ventilation.

##### Individual protection measures (personal protective equipment)

##### Eye/face protection

Wear eye/face protection.

##### Skin protection

- Hand protection

Wear protective gloves.

- Type of material

FKM: fluoro-elastomer

- Material thickness

min. 0,7 mm

- Breakthrough times of the glove material

>30 minutes (permeation: level 2)

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### - Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

### Respiratory protection

P2 (filters at least 94 % of airborne particles, colour code: White).

### Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

<b>Physical state</b>	solid
<b>Colour</b>	not determined
<b>Odour</b>	stinging
<b>Melting point/freezing point</b>	54 °C
<b>Boiling point or initial boiling point and boiling range</b>	196 °C at 1,013 hPa
<b>Flammability</b>	this material is combustible, but will not ignite readily
<b>Lower and upper explosion limit</b>	not determined
<b>Flash point</b>	>113°C - closed cup
<b>Auto-ignition temperature</b>	not determined
<b>Decomposition temperature</b>	not relevant
<b>pH (value)</b>	1 (in aqueous solution: 81.7 g/l, 25 °C) (acid)
<b>Kinematic viscosity</b>	not relevant

### Solubility(ies)

Water solubility	81.7 g/l at 20 °C
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### Partition coefficient

Partition coefficient n-octanol/water (log value)	this information is not available
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Vapour pressure	not determined
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## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### Density and/or relative density

Density	1.63 g/cm <sup>3</sup> at 20 °C
Relative vapour density	information on this property is not available

Particle characteristics	no data available
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### 9.2 Other information

<b>Information with regard to physical hazard classes</b>	hazard classes acc. to GHS (physical hazards): not relevant
<b>Other safety characteristics</b>	there is no additional information

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".

### 10.2 Chemical stability

See below "Conditions to avoid".

### 10.3 Possibility of hazardous reactions

Danger of explosion with:  
silver salt  
Exothermic reaction with:  
lye  
alkali hydroxides  
amines  
Strong oxidizing agents  
sulfoxides  
dimethyl sulfoxide  
with  
copper.

### 10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

### Hints to prevent fire or explosion

The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

### 10.5 Incompatible materials

Oxidisers

### 10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

##### Classification acc. to GHS

##### Acute toxicity

Shall not be classified as acutely toxic.

##### Skin corrosion/irritation

Causes severe skin burns and eye damage.

##### Serious eye damage/eye irritation

Causes serious eye damage.

##### Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

##### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

##### Carcinogenicity

Shall not be classified as carcinogenic.

##### Reproductive toxicity

Shall not be classified as a reproductive toxicant.

##### Specific target organ toxicity - single exposure

May cause respiratory irritation.

##### Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

##### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

#### 11.2 Information on other hazards

There is no additional information.

### SECTION 12: Ecological information

#### 12.1 Toxicity

Very toxic to aquatic life with long lasting effects.

#### 12.2 Persistence and degradability

Data are not available.

#### 12.3 Bioaccumulative potential

Data are not available.

#### 12.4 Mobility in soil

Data are not available.

#### 12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

#### 12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (EDC) in a concentration of  $\geq 0,1\%$ .



## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

#### Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

#### Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

## SECTION 14: Transport information

### 14.1 UN number or ID number

ADR/RID	UN 1839
IMDG-Code	UN 1839
ICAO-TI	UN 1839

### 14.2 UN proper shipping name

ADR/RID	TRICHLOROACETIC ACID
IMDG-Code	TRICHLOROACETIC ACID, SOLID
ICAO-TI	Trichloroacetic acid

### 14.3 Transport hazard class(es)

ADR/RID	8
IMDG-Code	8
ICAO-TI	8

### 14.4 Packing group

ADR/RID	II
IMDG-Code	II
ICAO-TI	II

### 14.5 Environmental hazards

hazardous to the aquatic environment

### 14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

### 14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

### Information for each of the UN Model Regulations

**Trichloroacetic acid (TCA) for biochemistry**

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

**Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) - Additional information**

Classification code C4  
Danger label(s) 8, fish and tree



Environmental hazards YES (hazardous to the aquatic environment)  
Excepted quantities (EQ) E2  
Limited quantities (LQ) 1 kg  
Transport category (TC) 2  
Tunnel restriction code (TRC) E  
Hazard identification No 80  
Emergency Action Code 2X

**Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) - Additional information**

Classification code C4  
Danger label(s) 8, fish and tree



Environmental hazards YES (hazardous to water)  
Excepted quantities (EQ) E2  
Limited quantities (LQ) 1 kg  
Transport category (TC) 2  
Hazard identification No 80

**International Maritime Dangerous Goods Code (IMDG) - Additional information**

Marine pollutant YES (hazardous to the aquatic environment)  
Danger label(s) 8, fish and tree



Excepted quantities (EQ) E2  
Limited quantities (LQ) 1 kg  
EmS F-A, S-B  
Stowage category A  
Segregation group 1 - Acids

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Environmental hazards YES (hazardous to the aquatic environment)

Danger label(s) 8



Excepted quantities (EQ) E2

Limited quantities (LQ) 5 kg

### SECTION 15: Regulatory information

#### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

##### Relevant provisions of the European Union (EU)

##### Deco-Paint Directive

VOC content	100 %
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##### Industrial Emissions Directive (IED)

VOC content	100 %
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##### Water Framework Directive (WFD)

List of pollutants (WFD)			
Name of substance	CAS No	Listed in	Remarks
Trichloroacetic acid (TCA) for biochemistry		a)	
Trichloroacetic acid (TCA) for biochemistry		a)	

##### Legend

A) Indicative list of the main pollutants

##### Regulation on persistent organic pollutants (POP)

Not listed.

##### National regulations (GB)

##### List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list

not listed

##### Restrictions according to GB REACH, Annex 17

Dangerous substances with restrictions (GB REACH, Annex 17)			
Name of substance	Name acc. to inventory	CAS No	No
Trichloroacetic acid (TCA) for biochemistry	this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC		3

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

### National inventories

Country	Inventory	Status
EU	REACH Reg.	substance is listed

Legend

REACH Reg. REACH registered substances

### 15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance.

## SECTION 16: Other information

### Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
14.2	IMDG-Code: TRICHLOROACETIC ACID	IMDG-Code: TRICHLOROACETIC ACID, SOLID	yes
15.1		National inventories: change in the listing (table)	yes

### Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ATE	Acute Toxicity Estimate
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GB CLP	The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/720 (as amended)
GB REACH	The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended)
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code

## Trichloroacetic acid (TCA) for biochemistry

Version number: GHS 2.0  
Replaces version of: 2023-02-23 (GHS 1)

Revision: 2023-06-20

Abbr.	Descriptions of used abbreviations
IMDG-Code	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative

### Key literature references and sources for data

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

### List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H314	Causes severe skin burns and eye damage.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

### Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product. The information is intended to give you guidelines for the safe handling of the product mentioned in this safety data sheet during storage, processing, transport and disposal. The information is not transferable to other products. Insofar as the product is mixed, blended or processed with other materials or is subjected to processing, the information in this safety data sheet cannot be transferred to the new material produced in this way, unless expressly stated otherwise.