

Safety Data Sheet

according to Regulation (EC) No 1907/2006

TCEP*HCl

Revision date: 11.09.2018

Product code: LS-3405

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

TCEP*HCl

Further trade names

Tris-(2-carboxyethyl)phosphine hydrochloride salt

Tris-(2-carboxyethyl)phosphine HCl

3,3',3"-phosphanetriyltripropionic acid hydrochloride salt

3-[bis(2-carboxyethyl)phosphanyl]propanoic acid hydrochloride

CAS No: 51805-45-9

1.2. Relevant identified uses of the substance or mixture and uses advised against**Use of the substance/mixture**

Manufacture of the substance. Laboratory chemical

Uses advised against

Do not use for private purposes (household).

1.3. Details of the supplier of the safety data sheet

Company name:	Iris Biotech GmbH	
Street:	Adalbert-Zoellner-Straße 1	
Place:	D-95615 Marktredwitz, Germany	
Post-office box:	568	
	D-95605 Marktredwitz, Germany	
Telephone:	+49 9231 97121 0	Telefax: +49 9231 97121 99
e-mail:	info@iris-biotech.de	
Contact person:	Compliance Department	Telephone: +49 9231 97121 0
e-mail:	sds@iris-biotech.de	
Internet:	www.iris-biotech.de	
Responsible Department:	Only available during office hours.	

1.4. Emergency telephone number:

+49 (0)89 19240 (POISON CENTER Munich: 24 h)

Further Information

Emergency telephone: 24 h

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Regulation (EC) No 1272/2008**

Skin Corr. 1B; H314

Full text of hazard statements: see SECTION 16.

2.2. Label elements**Regulation (EC) No 1272/2008****Signal word:** Danger**Pictograms:****Hazard statements**

H314 Causes severe skin burns and eye damage.

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Precautionary statements

P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P363	Wash contaminated clothing before reuse.
P304+P340	IF INHALED: Remove person to fresh air and keep 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/doctor.
P501	Dispose of contents/container to an approved disposal site.

Additional advice on labelling

Warning - substance not yet tested completely.

2.3. Other hazards

No information available.

SECTION 3: Composition/information on ingredients
3.1. Substances
Chemical characterization

Tris-(2-carboxyethyl)phosphine hydrochloride salt

 Sum formula: C₉H₁₅O₆P*HCl

Molecular weight: 250,19*36,45 g/mol

Hazardous components

CAS No	Chemical name	Quantity
	EC No	Index No
	REACH No	
	Classification (Regulation (EC) No 1272/2008)	
51805-45-9	TCEP*HCl	<= 100 %
	Skin Corr. 1B; H314	

Full text of H and EUH statements: see section 16.

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
		Specific Conc. Limits, M-factors and ATE	
51805-45-9		TCEP*HCl	<= 100 %
	dermal: LD50 = 3000 mg/kg; oral: LD50 = 3500 mg/kg		

SECTION 4: First aid measures
4.1. Description of first aid measures
General information

First aider: Pay attention to self-protection! Remove affected person from the danger area and lay down. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

After inhalation

Provide fresh air. Medical treatment necessary. Remove casualty to fresh air and keep warm and at rest. In case of irregular breathing or respiratory arrest provide artificial respiration. In all cases of doubt, or when symptoms persist, seek medical advice.

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After contact with skin

Take off immediately all contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention. After contact with skin, wash immediately with plenty of water and soap.
In all cases of doubt, or when symptoms persist, seek medical advice.

After contact with eyes

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

After ingestion

Rinse mouth immediately and drink plenty of water. Do NOT induce vomiting. Adverse human health effects and symptoms: Gastric perforation. Call a physician immediately. Do not allow a neutralisation agent to be drunk. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person or a person with cramps.
In all cases of doubt, or when symptoms persist, seek medical advice.

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

No information available.

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

Treat symptomatically.

SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings. Water spray. alcohol resistant foam. Dry extinguishing powder. Carbon dioxide (CO₂). Sand.

Unsuitable extinguishing media

High power water jet.

5.2. Special hazards arising from the substance or mixture

Non-flammable. Thermal decomposition can lead to the escape of irritating gases and vapours.
In case of fire may be liberated: Carbon dioxide (CO₂). Carbon monoxide (CO). Phosphorus oxides. Hydrogen chloride (HCl).

5.3. Advice for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit.

Additional information

Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water. Usual measures for fire prevention.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures****General advice**

Provide adequate ventilation. Avoid dust formation. Do not breathe dust. Avoid contact with skin, eyes and clothes. Use personal protection equipment. Provide adequate ventilation. Avoid breathing dust/fume/gas/mist/vapours/spray.
Wear personal protection equipment.
In case of fire: Evacuate area.

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

6.3. Methods and material for containment and cleaning up**Other information**

Take up mechanically. Treat the recovered material as prescribed in the section on waste disposal. Take up mechanically, placing in appropriate containers for disposal. Avoid dust formation.
Clear contaminated areas thoroughly.

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6.4. Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13 Treat the recovered material as prescribed in the section on waste disposal.

SECTION 7: Handling and storage**7.1. Precautions for safe handling****Advice on safe handling**

If handled uncovered, arrangements with local exhaust ventilation have to be used. Avoid dust formation. Do not breathe dust. Provide adequate ventilation.

Avoid dust formation. Avoid breathing dust/fume/gas/mist/vapours/spray.

Avoid contact with skin, eyes and clothes.

Advice on protection against fire and explosion

Usual measures for fire prevention.

Advice on general occupational hygiene

Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme.

Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink. Avoid contact with skin, eyes and clothes. Provide adequate ventilation. When using do not eat, drink or smoke. Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities**Requirements for storage rooms and vessels**

Keep container tightly closed. Keep locked up. Store in a place accessible by authorized persons only. Provide adequate ventilation as well as local exhaust at critical locations. Keep container tightly closed in a cool, well-ventilated place.

Handle and store contents under inert gas. Protect from moisture.

storage temperature: +2°C - +8°C

Hints on joint storage

No special measures are necessary.

7.3. Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****Additional advice on limit values**

To date, no national critical limit values exist.

8.2. Exposure controls**Appropriate engineering controls**

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe dust. The receiver of our product is singularly responsible for adhering to existing laws and regulations.

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

Suitable eye protection: goggles. Wear eye/face protection.

Hand protection

When handling with chemical substances, protective gloves must be worn with the CE-label including the four

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control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. Wear suitable gloves.

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Skin protection

Wear suitable protective clothing. Wear suitable protective clothing.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.

Environmental exposure controls

Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Physical state:	solid
Colour:	white / light beige
Odour:	odourless

Changes in the physical state

Melting point/freezing point:	176 - 180 °C
Boiling point or initial boiling point and boiling range:	not determined
Sublimation point:	not determined
Softening point:	not determined
Flash point:	not applicable

Flammability

Solid/liquid:	not determined
Gas:	not applicable
Lower explosion limits:	not determined
Upper explosion limits:	not determined

Self-ignition temperature

Solid:	not determined
Gas:	not applicable
Decomposition temperature:	not determined
pH-Value:	not determined
Water solubility:	easily soluble.

Solubility in other solvents

not determined	
Partition coefficient n-octanol/water:	not determined
Vapour pressure:	not determined
Density:	not determined
Relative vapour density:	not determined

9.2. Other information**Information with regard to physical hazard classes**

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Sustaining combustion: No data available

 Oxidizing properties
 Not oxidising.

Other safety characteristics

Solid content: not determined

Evaporation rate: not determined

Further Information
SECTION 10: Stability and reactivity
10.1. Reactivity

No data available

10.2. Chemical stability

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

10.3. Possibility of hazardous reactions

No data available

10.4. Conditions to avoid

 Protect from moisture.
 Keep away from heat.

10.5. Incompatible materials

Oxidizing agents, strong.

10.6. Hazardous decomposition products

Thermal decomposition can lead to the escape of irritating gases and vapours.

 In case of fire may be liberated: Carbon dioxide (CO₂). Carbon monoxide (CO). Phosphorus oxides. Hydrogen chloride (HCl).

SECTION 11: Toxicological information
11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008
Toxicokinetics, metabolism and distribution

No data available

Acute toxicity

Based on available data, the classification criteria are not met.

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
51805-45-9	TCEP*HCl				
	oral	LD50 mg/kg 3500	Rat		
	dermal	LD50 mg/kg 3000	Rat		

Irritation and corrosivity

Causes severe skin burns and eye damage.

Causes serious eye damage.

Sensitising effects

Based on available data, the classification criteria are not met.

Carcinogenic/mutagenic/toxic effects for reproduction

Based on available data, the classification criteria are not met.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

Specific effects in experiment on an animal

No data available

Additional information on tests

Classification according to Regulation (EC) No 1272/2008 [CLP]: Health hazard properties

Practical experience

No data available

11.2. Information on other hazards**Other information**

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Further information

RTECS: No data available

Warning - substance not yet tested completely.

SECTION 12: Ecological information**12.1. Toxicity**

No data available

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6. Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to non-target organisms.

12.7. Other adverse effects

No information available.

Further information

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

Warning - substance not yet tested completely.

SECTION 13: Disposal considerations**13.1. Waste treatment methods****Disposal recommendations**

Dispose of waste according to applicable legislation. Dispose of waste according to applicable legislation.

Consult the appropriate local waste disposal expert about waste disposal.

Handle contaminated packages in the same way as the substance itself.

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Contaminated packaging

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information**Land transport (ADR/RID)**

14.1. UN number or ID number:	UN3261
14.2. UN proper shipping name:	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (Tris-(2-carboxyethyl)phosphine hydrochloride salt)
14.3. Transport hazard class(es):	8
14.4. Packing group:	II
Hazard label:	8



Classification code:	C4
Special Provisions:	274
Limited quantity:	1 kg
Transport category:	2
Hazard No:	80
Tunnel restriction code:	E

Other applicable information (land transport)

E2

Inland waterways transport (ADN)

14.1. UN number or ID number:	UN3261
14.2. UN proper shipping name:	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (Tris-(2-carboxyethyl)phosphine hydrochloride salt)
14.3. Transport hazard class(es):	8
14.4. Packing group:	II
Hazard label:	8



Classification code:	C4
Special Provisions:	274
Limited quantity:	1 kg

Other applicable information (inland waterways transport)

E2

Marine transport (IMDG)

14.1. UN number or ID number:	UN3261
14.2. UN proper shipping name:	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (Tris-(2-carboxyethyl)phosphine hydrochloride salt)
14.3. Transport hazard class(es):	8
14.4. Packing group:	II
Hazard label:	8



Marine pollutant:	NO
Special Provisions:	274
Limited quantity:	1 kg

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EmS: F-A, S-B

Other applicable information (marine transport)

E2

Air transport (ICAO-TI/IATA-DGR)**14.1. UN number or ID number:**

UN3261

14.2. UN proper shipping name:

CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (Tris-(2-carboxyethyl)phosphine hydrochloride salt)

14.3. Transport hazard class(es):

8

14.4. Packing group:

II

Hazard label:

8



Special Provisions:

A3 A803

Limited quantity Passenger:

5 kg

IATA-packing instructions - Passenger:

859

IATA-max. quantity - Passenger:

15 kg

IATA-packing instructions - Cargo:

863

IATA-max. quantity - Cargo:

50 kg

Other applicable information (air transport)

E2

: Y844

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

14.6. Special precautions for user

Warning: strongly corrosive.

14.7. Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Restrictions on use (REACH, annex XVII):

Entry 75

Information according to 2012/18/EU
(SEVESO III):

Not subject to 2012/18/EU (SEVESO III)

Additional information

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

National regulatory information

Employment restrictions:

Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC).

Water hazard class (D):

2 - obviously hazardous to water

15.2. Chemical safety assessment

For this substance a chemical safety assessment has not been carried out.

SECTION 16: Other information**Abbreviations and acronyms**

ADR: Accord européen sur le transport des marchandises dangereuses par Route

(European Agreement concerning the International Carriage of Dangerous Goods by Road)

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IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%

Relevant H and EUH statements (number and full text)

H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.

Further Information

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The receiver of our product is singularly responsible for adhering to existing laws and regulations. Warning - substance not yet tested completely.

The product is intended for research, analysis and scientific education.

The receiver of our product is singularly responsible for adhering to existing laws and regulations.

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.