

# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 13.07.2010

Revision: 13.07.2010

## 1 Identification of substance

### Product details

Trade name

**Tris(2-cyanoethyl)phosphine**

Stock number:

30165

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG  
Benzstrasse 3  
D-76185 Karlsruhe / GermanyE-mail: gcat@matthey.com  
www.alfa-chemcat.com

Informing department:

Product safety department.

Emergency information:

Giftnotruf Universität Mainz / Poison Information Center Mainz  
www.giftinfo.uni-mainz.de Telefon: +49(0)6131/19240

## 2 Hazards identification

Hazard designation:



T Toxic

Information pertaining to particular dangers for man and environment

R 23/25 Toxic by inhalation and if swallowed.  
R 36/37/38 Irritating to eyes, respiratory system and skin.

GHS label elements

**Danger**

H301 - Toxic if swallowed.

H330 - Fatal if inhaled.

### Warning

H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

H335 - May cause respiratory irritation.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P320 Specific treatment is urgent (see on this label).

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Prevention:

Response:

Storage:

Disposal:

## 3 Composition/information on ingredients

Chemical characterization:

Tris(2-cyanoethyl)phosphine (CAS# 4023-53-4), 100%

Designation: (CAS#)

## 4 First aid measures

General information

Instantly remove any clothing soiled by the product.  
Remove breathing apparatus only after soiled clothing has been completely removed.

After inhalation

In case of irregular breathing or respiratory arrest provide artificial respiration.  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.  
Seek immediate medical advice.

After skin contact

Instantly wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing

Do not induce vomiting; instantly call for medical help.  
Seek immediate medical advice.

## 5 Fire fighting measures

Suitable extinguishing agents  
Special hazards caused by the material, its products of combustion or flue gases:CO<sub>2</sub>, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

Protective equipment:

Can be released in case of fire:  
Carbon monoxide and carbon dioxide  
Phosphorus oxides  
Hydrogen cyanide (HCN)  
Nitrogen oxides (NO<sub>x</sub>)  
Wear self-contained breathing apparatus.  
Wear full protective suit.

## 6 Accidental release measures

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Measures for environmental protection:

Ensure adequate ventilation  
Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Dispose of contaminated material as waste according to item 13.

Additional information:

Ensure adequate ventilation.  
See Section 7 for information on safe handling  
See Section 8 for information on personal protection equipment.  
See Section 13 for information on disposal.

## 7 Handling and storage

Handling

Information for safe handling:

Handle under dry protective gas.  
Keep containers tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation/exhaustion at the workplace.  
Open and handle container with care.

Information about protection against explosions and fires:

No special measures required.

Storage

Requirements to be met by storerooms and containers:  
Information about storage in one common storage facility:

No special requirements.

Do not store together with oxidizing and acidic materials.  
Store away from water.  
Store away from air.

Further information about storage conditions:

Store under dry inert gas.  
Protect from humidity and keep away from water.  
Avoid contact with air / oxygen.  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.(Contd. on page 2)  
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Store in a locked cabinet or with access restricted to technical experts or their assistants.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with critical values that require monitoring at the workplace:**  
**Additional information:**Not required.  
No data**Personal protective equipment**  
**General protective and hygienic measures**

The usual precautionary measures should be adhered to in handling the chemicals.  
 Keep away from foodstuffs, beverages and food.  
 Instantly remove any soiled and impregnated garments.  
 Wash hands during breaks and at the end of the work.  
 Store protective clothing separately.  
 Avoid contact with the eyes and skin.  
 Use breathing protection with high concentrations.  
 Safety glasses  
 Face protection  
 Protective work clothing.

**Breathing equipment:****Eye protection:****Body protection:****9 Physical and chemical properties:****General Information**

**Form:** Crystalline  
**Colour:** White  
**Smell:** Not determined

**Change in condition**  
**Melting point/Melting range:** 97-98°C  
**Boiling point/Boiling range:** 235°C ((0.9mm Hg))  
**Sublimation temperature / start:** Not determined

**Flash point:** Not applicable**Ignition temperature:** Not determined**Decomposition temperature:** Not determined**Danger of explosion:** Product is not explosive.**Critical values for explosion:**

**Lower:** Not determined  
**Upper:** Not determined

**Steam pressure:** Not determined**Density:** Not determined

**Solubility in / Miscibility with**  
**Water:** Insoluble

**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.

**Materials to be avoided:**

Acids  
 Oxidizing agents  
 Water/moisture  
 Air

**Dangerous reactions:**

No dangerous reactions known

**Dangerous products of decomposition:**

Carbon monoxide and carbon dioxide  
 Phosphorus oxides (e.g. P<sub>2</sub>O<sub>5</sub>)  
 Hydrogen cyanide (prussic acid)  
 Nitrogen oxides (NO<sub>x</sub>)

**11 Toxicological information****Acute toxicity:****Primary irritant effect:**

Irritant for skin and mucous membranes.

**on the skin:**

Irritant effect.

**on the eye:**

No sensitizing effect known.

**Sensitization:****Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.  
 No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**12 Ecological information:****Additional ecological information:****General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water.  
 Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.  
 Do not allow material to be released to the environment without proper governmental permits.

**13 Disposal considerations****Product:****Recommendation**

Consult state, local or national regulations for proper disposal.  
 Hand over to disposers of hazardous waste.  
 Must be specially treated under adherence to official regulations.

**Uncleaned packagings:****Recommendation:**

Disposal must be made according to official regulations.

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## 14 Transport information

### Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)



**ADR/RID-GGVS/E Class:** 6.1 (T2) Toxic substances.  
**Kemler Number:** 60  
**UN-Number:** 3464  
**Packaging group:** II  
**Label:** 6.1  
**Designation of goods:** 3464 ORGANOPHOSPHORUS COMPOUND, TOXIC, SOLID, N.O.S. (Tris(2-cyanoethyl)phosphine)  
**Limited quantities (LQ)** LQ18  
**Transport category** 2  
**Tunnel restriction code** D/E

### Maritime transport IMDG/GGVSea:



**IMDG/GGVSea Class:** 6.1  
**UN Number:** 3464  
**Label:** 6.1  
**Packaging group:** II  
**Marine pollutant:** No  
**Correct technical name:** ORGANOPHOSPHORUS COMPOUND, TOXIC, SOLID, N.O.S. (Tris(2-cyanoethyl)phosphine)

### Air transport ICAO-TI and IATA-DGR:



**ICAO/IATA Class:** 6.1  
**UN/ID Number:** 3464  
**Label:** 6.1  
**Packaging group:** II  
**Correct technical name:** ORGANOPHOSPHORUS COMPOUND, TOXIC, SOLID, N.O.S. (Tris(2-cyanoethyl)phosphine)

### UN "Model Regulation":

UN3464, ORGANOPHOSPHORUS COMPOUND, TOXIC, SOLID, N.O.S., 6.1, II

## 15 Regulatory information

### Designation according to EC guidelines:

### Code letter and hazard designation of product:



T Toxic

### Risk phrases:

23/25 Toxic by inhalation and if swallowed.  
 36/37/38 Irritating to eyes, respiratory system and skin.

### Safety phrases:

4 Keep away from living quarters.  
 9 Keep container in a well-ventilated place.  
 20 When using do not eat or drink.  
 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 28 After contact with skin, wash immediately with plenty of water.  
 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### National regulations

### Information about limitation of use:

Employment restrictions concerning young persons must be observed.  
 For use only by technically qualified individuals.

### Water hazard class:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

## 16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing data specification sheet:** Health, Safety and Environmental Department.

**Contact:** Zachariah Holt

**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)  
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
 IMDG: International Maritime Code for Dangerous Goods  
 IATA: International Air Transport Association  
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
 ICAO: International Civil Aviation Organization  
 ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
 CAS: Chemical Abstracts Service (division of the American Chemical Society)