

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

1.1 Product identifier

Trade name ***Tri-n-butylphosphine***

Stock number: A12649, L08097

CAS Number:
998-40-3

EC number:
213-651-2

1.2 Relevant identified uses of the substance or mixture and uses advised against. No further relevant information available.

Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Thermo Fisher (Kandel) GmbH
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com

Informing department: Product safety Tel + +049 (0) 7275 988687-0


1.4 Emergency telephone number:

Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240


SECTION 2: Hazards identification

2.1 Classification of the substance or mixture


Classification according to Regulation (EC) No 1272/2008

 GHS02 flame

Pyr. Liq. 1 H250 Catches fire spontaneously if exposed to air.
Self-heat. 2 H252 Self-heating in large quantities; may catch fire.

 GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

 GHS09 environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.

 GHS07

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H312 Harmful in contact with skin.

Other hazards that do not result in classification No information known.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 The substance is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS02 GHS05 GHS07 GHS09

Signal word Danger

Hazard statements

H250 Catches fire spontaneously if exposed to air.
H252 Self-heating in large quantities; may catch fire.
H302+H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/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.
P405 Store locked up.
P422 Store contents under inert gas.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances

CAS# Designation:

998-40-3 Tri-n-butylphosphine

Concentration: ≤100%

Identification number(s):

EC number: 213-651-2

SECTION 4: First aid measures

4.1 Description of first aid measures

General information Instantly remove any clothing soiled by the product.

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
Seek immediate medical advice.

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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 Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed

Causes severe skin burns.
Harmful if swallowed.
Harmful in contact with skin.

4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.

For safety reasons unsuitable extinguishing agents Water.

5.2 Special hazards arising from the substance or mixture

Spontaneously flammable in air.
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Phosphorus oxides

5.3 Advice for firefighters

Protective equipment:

Wear self-contained breathing apparatus.
Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

6.2 Environmental precautions: Do not allow material to be released to the environment without proper governmental permits.

6.3 Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralising agent.

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

Prevention of secondary hazards: Keep away from ignition sources.

6.4 Reference to other sections

See Section 7 for information on safe handling
See section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions 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.
Information about protection against explosions and fires: Substance/product is auto-flammable.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Requirements to be met by storerooms and containers: No special requirements.

Information about storage in one common storage facility:

Store away from air.
Store away from water.
Store away from oxidising agents.

Further information about storage conditions:

Store under dry inert gas.
This product is moisture sensitive.
This product is air sensitive.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Protect from humidity and keep away from water.
Store in a locked cabinet or with access restricted to technical experts or their assistants.
7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/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.

8.1 Control parameters

Components with critical values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: No data

8.2 Exposure controls

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.
Do not inhale dust / smoke / mist.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.

Breathing equipment: Use breathing protection with high concentrations.

Recommended filter device for short term use:

Use a respirator with multi-purpose combination (US) or type ABEK (EN 14387) as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).

Protection of hands:

Check protective gloves prior to each use for their proper condition.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Material of gloves Nitrile rubber, NBR

Penetration time of glove material (in minutes) 480

Glove thickness: 0.11 mm

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Eye protection:

Tightly sealed safety glasses.
Full face protection
Safety glasses with side shields / NIOSH (US) or EN 166(EU)
Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance:

Form: Liquid
Odour: Unpleasant
Odour threshold: Not determined.

pH-value: Not determined.

Change in condition

Melting point/freezing point: -65 °C
Initial boiling point and boiling range: 240 °C
Sublimation temperature / start: Not determined
Inflammability (solid, gaseous): Not determined.
Ignition temperature: Not determined
Decomposition temperature: Not determined
Self-inflammability: Spontaneously flammable in air.

Explosive properties: Not determined.

Critical values for explosion:

Lower: Not determined
Upper: Not determined

Steam pressure at 150 °C: 65 hPa

Density at 20 °C: 0,82 g/cm³

Relative density: Not determined.

Vapour density: Not determined.

Evaporation rate: Not determined.

Solubility in / Miscibility with

Water: Not miscible or difficult to mix

Partition coefficient: n-octanol/water: Not determined.

Viscosity:

dynamic: Not determined.

kinematic: Not determined.

9.2 Other information No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity Catches fire spontaneously if exposed to air.

10.2 Chemical stability Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions

Reacts with strong oxidising agents

Spontaneously flammable in air.

10.4 Conditions to avoid No further relevant information available.

10.5 Incompatible materials:

Air

Oxidising agents

Water/moisture

10.6 Hazardous decomposition products:

Carbon monoxide and carbon dioxide

Phosphorus oxides (e.g. P₂O₅)

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Harmful in contact with skin.

Harmful in contact with skin.

Harmful if swallowed.

Danger by skin resorption.

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

Harmful if swallowed or in contact with skin.

LD/LC50 values that are relevant for classification:

Oral	LD50	750 mg/kg (rat)
Dermal	LD50	2000 mg/kg (rabbit)

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity: No further relevant information available.

12.2 Persistence and degradability No further relevant information available.

12.3 Bioaccumulative potential No further relevant information available.

12.4 Mobility in soil No further relevant information available.

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DE

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Additional ecological information:

General notes:

Do not allow product to reach ground water, water bodies or sewage system.
Do not allow material to be released to the environment without proper governmental permits.
Water hazard class 1 (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.
Also poisonous for fish and plankton in water bodies.
Toxic to aquatic life.
May cause long lasting harmful effects to aquatic life.
Avoid transfer into the environment.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Other adverse effects No further relevant information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recommendation

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

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

UN-Number

ADR, IMDG, IATA

UN3254

14.2 UN proper shipping name

**ADR
IMDG, IATA**

3254 TRIBUTYLPHOSPHANE
TRIBUTYLPHOSPHANE

14.3 Transport hazard class(es)

ADR



**Class
Label
IMDG, IATA**

4.2 (S1) Substances liable to spontaneous combustion.
4.2



**Class
Label**

4.2 Substances liable to spontaneous combustion.
4.2

Packing group

ADR, IMDG, IATA

I

14.5 Environmental hazards:

Environmentally hazardous substance, liquid

14.6 Special precautions for user

Kemler Number:

EMS Number:

Stowage Category

Segregation Code

Warning: Substances liable to spontaneous combustion.

333

F-A,S-M

D

SG40 Stow "separated from" ammonium compounds other than mixtures of ammonium persulphates and/or potassium persulphates and/or sodium persulphates.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code Not applicable.

Transport/Additional information:

ADR

Excepted quantities (EQ):

Limited quantities (LQ)

Excepted quantities (EQ)

E0

0

Code: E0

Not permitted as Excepted Quantity

0

B/E

Transport category

Tunnel restriction code

IMDG

Limited quantities (LQ)

Excepted quantities (EQ)

0

Code: E0

Not permitted as Excepted Quantity

UN "Model Regulation":

UN 3254 TRIBUTYLPHOSPHANE, 4.2, I

SECTION 15: Regulatory information

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

Australian Inventory of Chemical Substances Substance is listed.

Standard for the Uniform Scheduling of Medicines and Poisons Substance is not listed.

Directive 2012/18/EU

Named dangerous substances - ANNEX I Substance is not listed.

Seveso category

P7 PYROPHORIC LIQUIDS AND SOLIDS

E2 Hazardous to the Aquatic Environment

Qualifying quantity (tonnes) for the application of lower-tier requirements 50 t

Qualifying quantity (tonnes) for the application of upper-tier requirements 200 t

REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3, 40

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.

Other regulations, limitations and prohibitive regulations

ELINCS (European List of Notified Chemical Substances) Substance is not listed.

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Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 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 Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

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)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety and Health Administration (USA)

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

Pyr. Liq. 1: Pyrophoric liquids – Category 1

Self-heat. 2: Self-heating substances and mixtures – Category 2

Acute Tox. 4: Acute toxicity – Category 4

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2