

Safety data sheet

Page: 1/51

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

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

1.1. Product identifier

Triphenyl phosphine pellets

Chemical name: triphenylphosphine

CAS Number: 603-35-0

REACH registration number: 01-2119475464-32-0000

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

Relevant identified uses: Chemical used in synthesis and/or formulation of industrial products

Recommended use: Chemical

For the detailed identified uses of the product see appendix of the safety data sheet.

1.3. Details of the supplier of the safety data sheet

Company:

BTC Europe GmbH
Rheinpromenade 1
40789 Monheim, Germany

Contact address:

BTC Europe GmbH
Rheinpromenade 1
40789 Monheim, Germany
Branch:
BTC Europe GmbH
Industriestr. 20
91593 Burgbernheim

Telephone: +49 2173 3347-0

E-mail address: btc-productsafety@btc-europe.com

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

1.4. Emergency telephone number

International emergency number:

Telephone: +49 180 2273-112

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

According to Regulation (EC) No 1272/2008 [CLP]

Acute Tox. 4 (oral)

H302 Harmful if swallowed.

Eye Dam./Irrit. 1

H318 Causes serious eye damage.

Skin Sens. 1B

H317 May cause an allergic skin reaction.

STOT RE 1

H372 Causes damage to organs (Central nervous system, Peripheral nervous system) through prolonged or repeated exposure.

For the classifications not written out in full in this section the full text can be found in section 16.

2.2. Label elements

Globally Harmonized System, EU (GHS)

Pictogram:



Signal Word:

Danger

Hazard Statement:

H318

Causes serious eye damage.

H302

Harmful if swallowed.

H317

May cause an allergic skin reaction.

H372

Causes damage to organs (Central nervous system, Peripheral nervous system) through prolonged or repeated exposure.

Precautionary Statements (Prevention):

P280

Wear protective gloves and eye protection or face protection.

P260

Do not breathe dust/gas/mist/vapours.

Precautionary Statements (Response):

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

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 or physician.
 P303 + P352 IF ON SKIN (or hair): Wash with plenty of soap and water.

Precautionary Statements (Disposal):

P501 Dispose of contents and container to hazardous or special waste collection point.

According to Regulation (EC) No 1272/2008 [CLP]

Hazard determining component(s) for labelling: Triphenylphosphine

2.3. Other hazards

According to Regulation (EC) No 1272/2008 [CLP]

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Chemical nature

Triphenylphosphine

CAS Number: 603-35-0

EC-Number: 210-036-0

Hazardous ingredients (GHS)

according to Regulation (EC) No. 1272/2008

Triphenylphosphine

Content (W/W): >= 99.5 % - <= 100 %

CAS Number: 603-35-0

EC-Number: 210-036-0

Acute Tox. 4 (oral)

Eye Dam./Irrit. 1

Skin Sens. 1B

STOT RE (Central nervous system, Peripheral nervous system) 1

H318, H302, H317, H372

For the classifications not written out in full in this section, including the hazard classes and the hazard statements, the full text is listed in section 16.

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

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(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

3.2. Mixtures

Not applicable

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:

Keep patient calm, remove to fresh air, seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

On skin contact:

Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

On contact with eyes:

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:

Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

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

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

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

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media

Suitable extinguishing media:

water spray, dry powder, foam, carbon dioxide

Unsuitable extinguishing media for safety reasons:

water jet

Additional information:

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Avoid whirling up the material/product because of the danger of dust explosion.

5.2. Special hazards arising from the substance or mixture

phosphorus oxides, nitrogen oxides, carbon oxides

The substances/groups of substances mentioned can be released in case of fire.

5.3. Advice for fire-fighters

Special protective equipment:

Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:

Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Dust can form an explosive mixture with air. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6: Accidental Release Measures

Avoid the formation and build-up of dust - danger of dust explosion. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Water spray may be used to flush spills away from exposure.

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective clothing. Information regarding personal protective measures, see section 8. Ensure adequate ventilation. Avoid skin contact and inhalation of dust/aerosol.

6.2. Environmental precautions

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

6.3. Methods and material for containment and cleaning up

For large amounts: Sweep/shovel up. Collect waste in suitable containers, which can be labeled and sealed.

For residues: Sweep/shovel up.

Dispose of absorbed material in accordance with regulations. Avoid raising dust. Cleaning operations should be carried out only while wearing breathing apparatus. Wear suitable protective equipment. Ensure adequate ventilation.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Ensure thorough ventilation of stores and work areas. Product should be worked up in closed equipment as far as possible. Wear suitable protective clothing and eye/face protection.

Protection against fire and explosion:

Avoid dust formation. Dust can form an explosive mixture with air. Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

7.2. Conditions for safe storage, including any incompatibilities

Segregate from strong oxidizing agents.

Further information on storage conditions: Containers should be stored tightly sealed in a dry place.

Storage stability:

Storage duration: 24 Months

From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

7.3. Specific end use(s)

See exposure scenario(s) in the attachment to this safety data sheet.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

| No substance specific occupational exposure limits known.

PNEC

freshwater:

No hazard identified.

marine water:

No hazard identified.

intermittent release:

No hazard identified.

STP:

No hazard identified.

sediment (freshwater):

No hazard identified.

sediment (marine water):

No hazard identified.

soil:

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

No hazard identified.

DNEL

worker:

Long-term exposure - systemic and local effects, Inhalation: 0.5 mg/m³

8.2. Exposure controls

Personal protective equipment

Respiratory protection:

Suitable respiratory protection for lower concentrations or short-term effect: Particle filter with medium efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P2 or FFP2)

Hand protection:

Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):

butyl rubber (butyl) - 0.7 mm coating thickness

chloroprene rubber (CR) - 0.5 mm coating thickness

Suitable materials for short-term contact (recommended: At least protective index 2, corresponding > 30 minutes of permeation time according to EN 374)

nitrile rubber (NBR) - 0.4 mm coating thickness

Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:

Tightly fitting safety goggles (splash goggles) (e.g. EN 166)

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Avoid inhalation of dusts. Avoid contact with the skin, eyes and clothing. Consider the risk management measures as outlined in the exposure scenario. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. Store work clothing separately.

Environmental exposure controls

Do not discharge product into the environment without control.

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form:	solid	
Colour:	white to slightly yellow	
Odour:	faint specific odour	
Odour threshold:	Not determined since harmful by inhalation.	
pH value:	not applicable, The substance does not dissociate.	
melting range:	81.3 - 81.6 °C	(DIN EN ISO 3146)
Boiling range:	195 - 205 °C (7 mbar)	
Boiling point:	377.74 °C (1,013.25 hPa)	(other)
Flash point:	180 °C	(DIN 51584)
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	not highly flammable	(Directive 84/449/EEC, A.10)
Lower explosion limit:	For solids not relevant for classification and labelling.	
Upper explosion limit:	For solids not relevant for classification and labelling.	
Ignition temperature:	425 °C	(DIN 51794)
Vapour pressure:	0.0000012 hPa (20 °C)	(OECD Guideline 104)
	0.0000029 hPa (25 °C)	(OECD Guideline 104)
	0.00017 hPa (50 °C)	(OECD Guideline 104)
Density:	1.105 g/cm ³ (20 °C)	(other)
Relative density:	Literature data. 1.105 (20 °C)	(other)
Relative vapour density (air):	Literature data. not applicable	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Solubility in water:	< 0.165 mg/l (20 °C)	(Directive 92/69/EEC, A.6)
Partitioning coefficient n-octanol/water (log Kow):	5.021 (25 °C)	(calculated)
Self ignition:	The substance / product decomposes therefore not determined. Based on its structural properties the product is not classified as self-igniting.	Test type: Spontaneous self-ignition at room-temperature.
	The value has not be determined because of the low risk of self-ignition in consequence of the low melting point.	Test type: Self-ignition at high temperatures.
Thermal decomposition:	170 °C, > 100 J/g, (DSC (DIN 51007)) It is not a self-decompositionable substance.	
Viscosity, dynamic:	not applicable, the product is a solid	
Viscosity, kinematic:	not applicable, the product is a solid	
Explosion hazard:	Based on the chemical structure there is no indication of explosive properties.	
Fire promoting properties:	Based on its structural properties the product is not classified as oxidizing.	

9.2. Other information

Self heating ability:	It is not a substance capable of spontaneous heating.	
SADT:	Not a substance/mixture liable to self-decomposition according to GHS.	
Bulk density:	500 - 600 kg/m ³	
pK _A :	The substance does not dissociate.	
Adsorption/water - soil:	KOC: 338844; log KOC: 5.53	(calculated)
Adsorption/water - soil:	KOC: 1949; log KOC: 3.29	(calculated)
Surface tension:	Based on chemical structure, surface activity is not to be expected.	
Grain size distribution	854.0 µm	(D50, Volumetric Distribution, ISO 13320-1;; particle size by laser diffraction)
	particles < 100 µm	9.2 %
	particles < 10 µm	0.2 %

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

particles < 4 µm

The substance / product is marketed or used in a non solid or granular form.

Molar mass: 262.29 g/mol

Other Information:

If necessary, information on other physical and chemical parameters is indicated in this section.

SECTION 10: Stability and Reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals: Corrosive effects to metal are not anticipated.

Formation of flammable gases: Remarks: Forms no flammable gases in the presence of water.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

The product may contain explosive fine dust or such dust may be produced by abrasion during transport or product transfer.

10.4. Conditions to avoid

Temperature: > 370 °C

Avoid dust formation.

10.5. Incompatible materials

Substances to avoid:
strong oxidizing agents

10.6. Hazardous decomposition products

Hazardous decomposition products:

No hazardous decomposition products if stored and handled as prescribed/indicated.

Possible thermal decomposition products:
carbon oxides, phosphorus oxides

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Acute toxicity

Assessment of acute toxicity:

Of moderate toxicity after single ingestion. Virtually nontoxic after a single skin contact. Virtually nontoxic by inhalation.

Experimental/calculated data:

LD50 rat (oral): > 6,400 mg/kg (BASF-Test)

An aqueous solution was tested.

LD50 rat (oral): approx. 700 mg/kg (BASF-Test)

The substance was tested in olive oil.

LC50 rat (by inhalation): 12.5 mg/l (12500 mg/m³) 4 h

An aerosol was tested.

LD50 rabbit (dermal): > 4,000 mg/kg (Limit test)

No mortality was observed.

Irritation

Assessment of irritating effects:

Not irritating to the skin. May cause severe damage to the eyes.

Experimental/calculated data:

Skin corrosion/irritation rabbit: non-irritant (BASF-Test)

Serious eye damage/irritation rabbit: irreversible damage (BASF-Test)

Respiratory/Skin sensitization

Assessment of sensitization:

Caused skin sensitization in animal studies.

Experimental/calculated data:

Guinea pig maximization test guinea pig: skin sensitizing (Directive 84/449/EEC, B.6)

Germ cell mutagenicity

Assessment of mutagenicity:

No mutagenic effect was found in various tests with bacteria and mammalian cell culture. The substance was not mutagenic in a test with mammals.

Carcinogenicity

Assessment of carcinogenicity:

No data available. The chemical structure does not suggest a specific alert for such an effect.

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Reproductive toxicity

Assessment of reproduction toxicity:

Repeated oral uptake of the substance did not cause damage to the reproductive organs.

Developmental toxicity

Assessment of teratogenicity:

No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Specific target organ toxicity (single exposure)

Assessment of STOT single:

Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

Repeated exposure may affect certain organs. Damages the central nerve system. Damages the peripheral nerve system.

Aspiration hazard

not applicable

Other relevant toxicity information

neurotoxic effect.

SECTION 12: Ecological Information

12.1. Toxicity

Assessment of aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

No toxic effects occur within the range of solubility.

Toxicity to fish:

LC50 (96 h) > 10,000 mg/l, *Leuciscus idus* (DIN 38412 Part 15, static)

The details of the toxic effect relate to the nominal concentration.

Aquatic invertebrates:

EC50 (48 h) > 5 mg/l, *Daphnia magna* (OECD Guideline 202, part 1, static)

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Limit concentration test only (LIMIT test). The product has low solubility in the test medium. An eluate has been tested. The details of the toxic effect relate to the nominal concentration.

Aquatic plants:

EC50 (72 h) > 5 mg/l (growth rate), *Desmodesmus subspicatus* (OECD Guideline 201, static)

Limit concentration test only (LIMIT test). The product has low solubility in the test medium. A saturated solution has been tested. The details of the toxic effect relate to the nominal concentration.

Microorganisms/Effect on activated sludge:

EC50 (30 min) > 10,000 mg/l, *Pseudomonas putida* (DIN 38412 Part 27 (draft), aquatic)

The details of the toxic effect relate to the nominal concentration.

Chronic toxicity to fish:

Study scientifically not justified.

Chronic toxicity to aquatic invertebrates:

Study scientifically not justified.

Assessment of terrestrial toxicity:

No data available.

Study scientifically not justified.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H₂O):

Not readily biodegradable (by OECD criteria). Poorly biodegradable.

Elimination information:

< 20 % (28 d) (OECD Guideline 301 F) (aerobic, activated sludge, domestic)

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Assessment of stability in water:

According to structural properties, hydrolysis is not expected/probable.

12.3. Bioaccumulative potential

Assessment bioaccumulation potential:

No significant accumulation in organisms is expected as a result of the distribution coefficient of n-octanol/water (log Pow).

Bioaccumulation potential:

Study scientifically not justified.

12.4. Mobility in soil

Assessment transport between environmental compartments:

Volatility: The substance will not evaporate into the atmosphere from the water surface.

Adsorption in soil: Adsorption to solid soil phase is expected.

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative).

12.6. Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

12.7. Additional information

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Must be disposed of or incinerated in accordance with local regulations.

The UK Environmental Protection (Duty of Care) Regulations (EP) and amendments should be noted (United Kingdom).

This product and any uncleaned containers must be disposed of as hazardous waste in accordance with the 2005 Hazardous Waste Regulations and amendments (United Kingdom)

Contaminated packaging:

Uncontaminated packaging can be re-used.

Packs that cannot be cleaned should be disposed of in the same manner as the contents.

SECTION 14: Transport Information

Land transport

ADR

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for	None known

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

user

RID

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Inland waterway transport

ADN

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

Transport in inland waterway vessel

Not evaluated

Sea transport

IMDG

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Air transport

IATA/ICAO

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

14.1. UN number

See corresponding entries for "UN number" for the respective regulations in the tables above.

14.2. UN proper shipping name

See corresponding entries for "UN proper shipping name" for the respective regulations in the tables above.

14.3. Transport hazard class(es)

See corresponding entries for "Transport hazard class(es)" for the respective regulations in the tables above.

14.4. Packing group

See corresponding entries for "Packing group" for the respective regulations in the tables above.

14.5. Environmental hazards

See corresponding entries for "Environmental hazards" for the respective regulations in the tables above.

14.6. Special precautions for user

See corresponding entries for "Special precautions for user" for the respective regulations in the tables above.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Regulation:	Not evaluated
Shipment approved:	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship Type:	Not evaluated

SECTION 15: Regulatory Information

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

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU):
Listed in above regulation: no

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

The data should be considered when making any assessment under the Control of Substances Hazardous to Health Regulations (COSHH), and related guidance, for example, 'COSHH Essentials' (United Kingdom).

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

15.2. Chemical Safety Assessment

Chemical Safety Assessment performed

SECTION 16: Other Information

Any other intended applications should be discussed with the manufacturer. Corresponding occupational protection measurements must be followed.

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

Acute Tox.	Acute toxicity
Eye Dam./Irrit.	Serious eye damage/eye irritation
Skin Sens.	Skin sensitization
STOT RE	Specific target organ toxicity — repeated exposure
H318	Causes serious eye damage.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H372	Causes damage to organs (Central nervous system, Peripheral nervous system) through prolonged or repeated exposure.

Abbreviations

ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN = The European Agreement concerning the International Carriage of Dangerous Goods by Inland waterways. ATE = Acute Toxicity Estimates. CAO = Cargo Aircraft Only. CAS = Chemical Abstract Service. CLP = Classification, Labelling and Packaging of substances and mixtures. DIN = German national organization for standardization. DNEL = Derived No Effect Level. EC50 = Effective concentration median for 50% of the population. EC = European Community. EN = European Standards. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IBC-Code = Intermediate Bulk Container code. IMDG = International Maritime Dangerous Goods Code. ISO = International Organization for Standardization. STEL = Short-Term Exposure Limit. LC50 = Lethal concentration median for 50% of the population. LD50 = Lethal dose median for 50% of the population. TLV = Threshold Limit Value. MARPOL = The International Convention for the Prevention of Pollution from Ships. NEN = Dutch Norm. NOEC = No Observed Effect Concentration. OEL = Occupational Exposure Limit. OECD = Organization for Economic Cooperation and Development. PBT = Persistent, Bioaccumulative and Toxic. PNEC = Predicted No Effect Level. PPM = Parts per million. RID = The European Agreement concerning the International Carriage of Dangerous Goods by Rail. TWA = Time Weight Average. UN-number = UN number at transport. vPvB = very Persistent and very Bioaccumulative.

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

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Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Annex: Exposure Scenarios

Index

1. Formulation, (handling as solid)

SU3; ERC2; PROC1, PROC2, PROC3, PROC5, PROC14

2. Charging and discharging of substances and mixtures, (handling as solid)

SU3; ERC2; PROC8a, PROC8b, PROC9

3. Use in the production of masterbatches, Use in the production of compounds

SU3; ERC3; PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15, PROC24

4. Use in laboratories

SU3; ERC4; PROC15

5. Use as an intermediate, (handling as solid)

SU3; ERC6a; PROC1, PROC2, PROC3

6. Use as a Process chemical, (handling as solid)

SU3; ERC6d; PROC1, PROC2, PROC3

7. Use in Coatings, Use in Paints

SU3; ERC6b; PROC7, PROC10

8. Production of plastic articles

SU3; ERC5; PROC6, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC24

1. Short title of exposure scenario

Formulation, (handling as solid)

SU3; ERC2; PROC1, PROC2, PROC3, PROC5, PROC14

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ESVOC SpERC 4.10a.v1: ESVOC SpERC 4.10a.v1 As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	
Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: industrial

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 100\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Assumes activities are at ambient temperature.	
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 100\%$

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance	0.00012 Pa

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

during use	
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.35 mg/m ³
Risk Characterization Ratio (RCR)	0.7
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

2. Short title of exposure scenario

Charging and discharging of substances and mixtures, (handling as solid)
SU3; ERC2; PROC8a, PROC8b, PROC9

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC2: Formulation of preparations As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 100\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.35 mg/m ³
Risk Characterization Ratio (RCR)	0.7
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 100\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	
Contributing exposure scenario	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

3. Short title of exposure scenario

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Use in the production of masterbatches, Use in the production of compounds
SU3; ERC3; PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15, PROC24

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC3: Formulation in materials As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	
Contributing exposure scenario	
Use descriptors covered	PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 100\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.35 mg/m ³
Risk Characterization Ratio (RCR)	0.7
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.35 mg/m ³
Risk Characterization Ratio (RCR)	0.7
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Contributing exposure scenario	
Use descriptors covered	PROC24: High (mechanical) energy work-up of substances bound in materials and/or articles Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 100\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.3 mg/m ³
Risk Characterization Ratio (RCR)	0.6
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

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Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

4. Short title of exposure scenario

Use in laboratories

SU3; ERC4; PROC15

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	
Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 100\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Assumes activities are at ambient temperature.	
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

5. Short title of exposure scenario

Use as an intermediate, (handling as solid)

SU3; ERC6a; PROC1, PROC2, PROC3

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	
Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

6. Short title of exposure scenario

Use as a Process chemical, (handling as solid)
SU3; ERC6d; PROC1, PROC2, PROC3

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	
Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - <= 100 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

7. Short title of exposure scenario

Use in Coatings, Use in Paints
SU3; ERC6b; PROC7, PROC10

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6b: Industrial use of reactive processing aids As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	
Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 5\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Assumes activities are at ambient temperature.	
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Advanced REACH Tool v1.5
	Worker - inhalation, long-term - systemic
Exposure estimate	0.11 mg/m ³
Risk Characterization Ratio (RCR)	0.22
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $\leq 100\%$

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.15 mg/m ³
Risk Characterization Ratio (RCR)	0.3
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

8. Short title of exposure scenario

Production of plastic articles

SU3; ERC5; PROC6, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC24

Control of exposure and risk management measures

Contributing exposure scenario

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Use descriptors covered	ERC5: Industrial use resulting in inclusion into or onto a matrix As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
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Operational conditions

Contributing exposure scenario	
Use descriptors covered	PROC6: Calendering operations Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $< 1\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.

Risk Management Measures

Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	

Exposure estimate and reference to its source

Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $< 1\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

For scaling see: <http://www.ecetoc.org/tra>

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $< 1\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $< 1\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	
Contributing exposure scenario	
Use descriptors covered	PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation. Use domain: industrial

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $< 1\%$
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	
Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: $\geq 0\%$ - $< 1\%$

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.01 mg/m ³
Risk Characterization Ratio (RCR)	0.02
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC24: High (mechanical) energy work-up of substances bound in materials and/or articles Use domain: industrial
Operational conditions	
Concentration of the substance	Triphenylphosphine Content: >= 0 % - < 1 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.00012 Pa

BTC Europe Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 25.08.2020

Version: 11.0

Date previous version: 11.09.2019

Previous version: 10.0

Product: **Triphenyl phosphine pellets**

(ID no. 30060669/SDS_GEN_GB/EN)

Date of print 30.04.2021

Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
	Assumes activities are at ambient temperature.
Risk Management Measures	
Clean up contamination as soon as they occur. Clean equipment and the work area every day. Ensure minimization of manual phases Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Segregate the activity from other operations. Avoid skin contact. Wash off any skin contamination immediately.	
Personal measures have to be applied in case of potential exposure only.	
Use suitable eye protection.	
Wear chemically resistant gloves in combination with specific activity training	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m ³
Risk Characterization Ratio (RCR)	0.2
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	
