# Safety Data Sheet

According to UK REACH

## STARCOAT PMMA CATALYST

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

**1.1 Product identifier**

**Trade name:** STARCOAT PMMA CATALYST

**1.2 Relevant identified uses of the substance or mixture and uses advised against** (See Section 16)

**Sector of Use**

SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites.

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen).

**Application of the substance / the mixture** Polymerisation catalyst.

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

**Supplier:**

Axter Ltd, Harbour Landing, Fox's Marina,
The Strand, Wherstead, Ipswich IP2 8NJ
Tel: +44 (0) 1473 724056
Email: info@axterltd.co.uk
Website: www.axter.co.uk

**1.4 Emergency telephone:**

Axter Ltd - +44 (0) 1473 724056
(this line is open from 8.00 am to 5.30 pm, Monday to Friday).
In the event of a medical enquiry involving this product, members of the public should contact:
NHS 111
a doctor or
a local hospital accident and emergency department.
The NPIS (National Poisons Information Service) helpline is available for enquiries from medical professionals only.
Tel: 0344 892 0111

## Section 2: Hazards identification

**2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008**

| | |
|---|---|
| Org. Perox. D | H242 Heating may cause a fire. |
| Eye Irrit. 2 | H319 Causes serious eye irritation. |
| Skin Sens. 1 | H317 May cause an allergic skin reaction. |
| Aquatic Chronic 1 | H410 Very toxic to aquatic life with long lasting effects. |

**2.2 Label elements**

**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the GB CLP regulation.

**Hazard pictograms**

GHS02 GHS07 GHS09

**Signal word** Danger

**Hazard-determining components of labelling:**

Dibenzoyl peroxide

**Hazard statements**

| | |
|---|---|
| H242 | Heating may cause a fire. |
| H319 | Causes serious eye irritation. |
| H317 | May cause an allergic skin reaction. |
| H410 | Very toxic to aquatic life with long lasting effects. |

**Precautionary statements**

| | |
|---|---|
| P210 | Keep away from heat/ sparks/ open flames/ hot surfaces and other ignition sources.<br>No smoking. |
| P234 | Keep in original container. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves, protective clothing, eye protection, face protection. |
| P403 | Store in a well-ventilated place. |
| 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.

**Determination of endocrine-disrupting properties**

The mixture does not contain any substances included in the list established according to Article 59(1) of UK REACH for having endocrine-disrupting properties, or identified as having endocrine-disrupting properties according to the criteria set out in Delegated Regulation (EU) 2017/2100 or Delegated Regulation (EU) 2018/605 in a concentration equal to or greater than 0.1%.

## Section 3: Composition/information on ingredients

### 3.2 Mixtures

**Description:** Mixture: consisting of the following components.

| Dangerous components: | | |
|---|---|---|
| CAS: 94-36-0<br>EINECS: 202-327-6<br>Reg no.: 01-2119511472-50 | Dibenzoyl peroxide<br>Org. Perox. B, H241<br>Aquatic Acute 1, H400 (M=1)<br>Eye Irrit. 2, H319;<br>Skin Sens. 1, H317 | ≥40 - ≤60% |
| CAS: 94-49-5<br>EINECS: 201-545-9<br>Reg no.: 01-2120759933-41 | Ethylene glycol dibenzoate<br>Aquatic Chronic 2, H411 | ≥40 - ≤60% |

**Additional information**

According to UK REACH Regulation (EC) 1907/2006, this substance/mixture contains nanoforms. Particle size distribution: The structure of synthetic amorphous silica (SAS) can be characterized by the constituent particles, which are covalently bound into aggregates. Due to the covalent bonding, there are no phase boundaries between the constituent particles; they have lost their physical identity and therefore can only be considered primary structures. Aggregates combine further loosely to form agglomerates. Agglomerates are the particles present in the product when it is marketed. Size of primary structures: Primary structures can only be measured with TEM. The size of SAS is in the range of 2.5 - 50 nm (d50, by numbers). As explained above, they do not occur as isolated particles. For the wording of the listed hazard phrases refer to section 16.

## Section 4: First aid measures

### 4.1 Description of first aid measures

**General information:**

Immediately remove any clothing soiled by the product.
If symptoms persist or if in any doubt, seek medical advice.

**After inhalation:**

Supply fresh air.
Seek medical treatment.

**After contact with skin:**

Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.

**After eye contact:**

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

**After swallowing:**

Do not induce vomiting; call for medical help immediately.

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

Allergic reactions

Symptoms/ effects after eye contact: irritation of the eyes.

Prolonged skin contact may cause redness and irritation.

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

Keep patient warm and quiet. Treat the symptoms.

## Section 5: Firefighting measures

**5.1 Extinguishing media**

**Suitable extinguishing agents:**

Alcohol resistant foam

Extinguishing powder

Carbon dioxide (CO2)

Sand

Water mist

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

Accelerates combustion.
PLEASE NOTE that there may be re-ignition.
Exposure to the decomposition products may cause a health hazard.
In case of fire, the following can be released:
Carbon dioxide (CO2)
Oxygen
A mixture of benzoic acid, biphenyl, phenylbenzoate
A small amount of benzene

**5.3 Advice for firefighters**

**Protective equipment:**

Wear self-contained respiratory protective device.

Wear fully protective suit.

**Additional information**

Collect contaminated fire fighting water separately. It must not enter the sewage system.
Cool endangered receptacles with water spray.

## Section 6: Accidental release measures

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

Avoid formation of dust.

Avoid inhalation of dust.

Ensure adequate ventilation.

Keep away from ignition sources.

Wear protective clothing.

Remove persons from danger area.

**6.2 Environmental precautions:**

Do not allow product to enter sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to enter sewers/ surface or ground water.

**6.3 Methods and material for containment and cleaning up:**
Protect drains. Collect material in sealable plastic containers and take to landfill. Waste must NOT be sealed.

**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 disposal information.

## Section 7: Handling and storage

**7.1 Precautions for safe handling**
Keep away from heat, sparks and open flame.
Keep away from heat and direct sunlight.
Handle with care. Avoid jolting, friction and impact.
Use only in well ventilated areas.
Provide suction extractors if dust is formed.
Open and handle receptacle with care.

**Information about fire - and explosion protection:**
Use explosion-proof apparatus / fittings and spark-proof tools.
Keep ignition sources away - Do not smoke.

**Handling:**
Use only suitable tool material (polyethylene, polypropylene, stainless steel).

**7.2 Conditions for safe storage, including any incompatibilities**
**Storage:**
**Requirements to be met by storerooms and receptacles:**
Store only in the original receptacle.
Store between $5^0$C and $25^0$C.
Store in a cool, dry place in tightly closed receptacles.

**Information about storage in one common storage facility:**
Avoid contact with ignition points. Avoid any contact with oxidizing agents, of strongly alkaline and strongly acidic materials. Always store the product in containers of the same material as the original container. Keep the recommendations on the label. Store the product away from heat sources and direct sunlight.

**Further information about storage conditions:**
Store in a cool place.
Keep container tightly sealed.

**Storage class:**
Hazard group OP II (Organic peroxides, BGV B4).

## Section 8: Exposure controls/personal protection

**8.1 Control parameters**

| Ingredients with limit values that require monitoring at the workplace: | |
|---|---|
| **CAS: 94-36-0 Dibenzoyl peroxide** | |
| WEL | Long-term value: 5 mg/m³ |

| DNELs: 94-36-0 Dibenzoyl peroxide | |
|---|---|
| Workers inhalation long term systemic effects | 11.75 mg/m³ |
| Workers skin contact long term systemic effects | 6.60 mg/kg |
| Consumers inhalation long term systemic effects | 2.90 mg/m³ |
| Consumers skin contact long term systemic effects | 3.30 mg/kg |
| Consumers ingestion long term systemic effects | 1.65 mg/kg |
| **CAS: 94-49-5 Ethylene glycol dibenzoate** | |
| DNEL: Inhalation (human) | 10.6 mg/m³ |
| **PNECs** | |
| **94-36-0 Dibenzoyl peroxide** | |
| Fresh water | 0.000602 mg/l |
| Marine water | 0.000060 mg/l |
| Intermittent water | 0.000602 mg/l |
| Sewage treatment plant | 0.35 mg/l |
| Fresh water sediment | 0.338 mg/l |
| Soil | 0.0758 mg/l |
| Secondary poisoning | 6.67 mg/l |
| **94-49-5 Ethylene glycol dibenzoate** | |
| Fresh water | 0.0073 mg/l |
| Marine water | 0.00073 mg/l |
| Fresh water sediment | 2.23 mg/kg |
| Marine water sediment | 0.223 mg/kg |
| Sewage treatment plant | 128 mg/l |
| Soil | 0.44 mg/kg |

**Additional information:** The lists valid during the making were used as basis.

## 8.2 Exposure controls

**Engineering measures**

No further data; see section 7.

**Personal protective equipment:**

**General protective and hygienic measures**

Keep away from foodstuffs, beverages and food.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.

**Respiratory protection**

Filter A.

**Hand protection:**

**Material of gloves**

Synthetic rubber gloves

Neoprene gloves

Recommended thickness of the material: ≥ 0.5 mm

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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Penetration time of glove material**

Value for the permeation: Level ≤ 8h

The exact break through time must be found out from the manufacturer of the protective gloves and must be observed.

**Eye protection**

Tightly sealed goggles.

**Body protection**

Protective work clothing

**Environmental exposure controls**

**Dibenzoylperoxide:**

PNEC freshwater: 0.02 µg/l

PNEC seawater: 0.002 µg/l

PNEC sediment-freshwater: 0.013 mg/kg

PNEC sediment-seawater: 0.001 mg/kg

PNEC soil: 0.002 mg/kg (soil)

PNEC STP: 0.35 mg/l

**Ethylene glycol dibenzoate:**

PNEC freshwater: 7300 mg/m$^3$

PNEC intermittent releases: 0.730 mg/m$^3$

PNEC sediment fresh water: 2230 mg/kg

PNEC sediment see-water: 0.223 mg/kg

PNEC soil: 0.440 mg/kg (soil)

PNEC STP: 128000 mg/l

## Section 9: Physical and chemical properties

### 9.1 Physical and chemical properties

| | |
|---|---|
| Physical state | Solid |
| Colour | White |
| Odour | Mild |
| Odour threshold | Not determined |
| Melting point/freezing point | Undetermined |
| Boiling point or initial boiling point and boiling range | Undetermined |
| Flammability | May cause fire |

**Lower and upper explosion limit**

| | |
|---|---|
| Lower | Not determined |
| Upper | Not determined |
| **Flash point** | Not applicable |
| Auto-ignition temperature | Not determined |
| Decomposition temperature | 55°C |
| pH at 20 °C | ≈ 7 |

**Viscosity**

| | |
|---|---|
| Kinematic viscosity | Not applicable |
| Dynamic | Not applicable |

**Solubility**

| | |
|---|---|
| Water | Insoluble. |
| Partition coefficient n-octanol/water (log value) | Not determined |
| Vapour pressure at 20 °C | <1 hPa (CAS: 94-36-0 Dibenzoyl peroxide) |

**Density and/or relative density**

| | |
|---|---|
| Density at 20 °C | 0.56-0.58 g/cm$^3$ |
| Relative density | Not determined |
| Bulk density | 560-580 kg/m$^3$ |
| Vapour density | Not applicable |

**9.2 Other information**

| | |
|---|---|
| Active oxygen content | 3.3% |
| Organic peroxides | 48-55% |

**Appearance**

| | |
|---|---|
| Form | Powder |
| Ignition temperature | Product is not self-igniting. |
| Explosive properties | Product does not present an explosion hazard.<br>Extreme risk of explosion by shock, friction, fire or other sources of ignition. |
| Solvent content | |
| Solids content | 100.0 % |

**Change in condition**

| | |
|---|---|
| Softening point/range | |
| Oxidising properties | Not determined |
| Evaporation rate | Not applicable |

**Information with regard to physical hazard classes**

| | |
|---|---|
| Explosives | Void |
| Flammable gases | Void |
| Aerosols | Void |
| Oxidising gases | Void |
| Gases under pressure: | Void |
| Flammable liquids | Void |
| Flammable solids | Void |
| Self-reactive substances and mixtures | Void |
| Pyrophoric liquids | Void |

| | |
|---|---|
| Pyrophoric solids | Void |
| Self-heating substances and mixtures | Void |
| Substances and mixtures, which emit flammable gases in contact with water | Void |
| Oxidising liquids | Void |
| Oxidising solids | Void |
| Organic peroxides | Heating may cause a fire. |
| Corrosive to metals | Void |
| Desensitised explosives | Void |

## Section 10: Stability and reactivity

**10.1 Reactivity**

Sensitive to exothermic decomposition.

Decomposition is initiated by heat, contact with impurities (e.g. acids, heavy metal compounds, amines), friction or impact.

**10.2 Chemical stability at heat rapid decomposition**
**Thermal decomposition / conditions to be avoided:**

To avoid thermal decomposition do not overheat.

**10.3 Possibility of hazardous reactions**

Risk of dust explosion if enriched with fine dust in the presence of air.

Forms explosive gas mixture with air.

**10.4 Conditions to avoid**

Keep away from heat and direct sunlight.

Danger of dust explosion.

**10.5 Incompatible materials:**

Reacts with reducing agents.

Reacts with heavy metals.

Acids, bases and amines.

**10.6 Hazardous decomposition products:**

Carbon monoxide and carbon dioxide

Benzoic acid

SADT: 55°C

## Section 11: Toxicological information

**11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
**Acute toxicity**

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

| LD/LC50 values relevant for classification: | | |
|---|---|---|
| **94-36-0 Dibenzoyl peroxide** | | |
| Oral | LD50 | > 5000 mg/kg (rat) |
| Inhalation | LC50 | > 24.3 mg/l (rat) |

| CAS: 94-49-5 Ethylene glycol dibenzoate | | |
|---|---|---|
| Oral | LD50<br>LC50 / 96h | > 2,000 mg/kg (rat)<br>> 0.434 mg/l (fish) |

**Primary irritant effect:**

Skin corrosion/ irritation: May cause skin irritation
Serious eye damage/ irritation: Causes serious eye irritation
Respiratory or skin sensitisation: May cause an allergic skin reaction

### 11.2 Endocrine disrupting properties

None of the ingredients is listed.

## Section 12: Ecological information

### 12.1 Toxicity

| Aquatic toxicity<br>94-36-0 dibenzoyl peroxide | |
|---|---|
| LC50 / 96h<br>EC50 / 48h | 0.06 mg/l (fish)<br>0.11 mg/l (daphnia magna) |
| **CAS: 94-49-5 Ethylene glycol dibenzoate** | |
| EC50 / 48h | > 2.4 mg/l (daphnia magna) |

### 12.2 Persistence and degradability

Easily biodegradable.

### 12.3 Bioaccumulative potential

Dibenzoyl peroxide: Log Kow = 3.2

### 12.4 Mobility in soil

Dibenzoyl peroxide: Log Koc: 6310 (20°C)

### 12.5 Results of PBT and vPvB assessment

**PBT:** Not applicable
**vPvB:** Not applicable

### 12.6 Endocrine disrupting properties

The product does not contain substances with endocrine disrupting properties.

### 12.7 Other adverse effects

**Remark**

Highly toxic to aquatic organisms, with long-term effects.

**Additional ecological information**

**General notes:**

Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.

## Section 13: Disposal considerations

### 13.1 Waste treatment methods

**Recommendation**

Prevent seepage into sewage system, work-pits and cellars.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Must not be disposed together with household waste. Do not allow product to reach sewage system.

**Unclean packaging**
**Recommendation**
15 01 10.

## Section 14: Transport information

**14.1 UN number or ID number**

| | |
|---|---|
| **ADR** | UN3106 |
| **RID** | UN3106 |
| **ADN** | UN3106 |
| **IMDG** | UN3106 |

**14.2 UN proper shipping name**

| | |
|---|---|
| **ADR** | UN3106 ORGANIC PEROXIDE TYPE D, SOLID (dibenzoyl peroxide) |
| **RID** | UN3106 ORGANIC PEROXIDE TYPE D, SOLID (dibenzoyl peroxide) |
| **ADN** | UN3106 ORGANIC PEROXIDE TYPE D, SOLID (dibenzoyl peroxide) |
| **IMDG** | ORGANIC PEROXIDE TYPE D, SOLID (dibenzoyl peroxide) |
| **IATA** | ORGANIC PEROXIDE TYPE D, SOLID (dibenzoyl peroxide) |

**14.3 Transport hazard class(es)**

**ADR:**

| | |
|---|---|
| **Class** | 5.2 Organic peroxides |
| **Label** | 5.2 |

**RID:**

| | |
|---|---|
| **Class** | 5.2 Organic peroxides |
| **Label** | 5.2 |

**ADN:**

| | |
|---|---|
| **Class** | 5.2 Organic peroxides |
| **Label** | 5.2 |

**IMDG:**

| | |
|---|---|
| **Class** | 5.2 Organic peroxides |
| **Label** | 5.2 |

**IATA:**

| | |
|---|---|
| **Class** | 5.2 Organic peroxides |
| **Label** | 5.2 |

**14.4 Packing group**

| | |
|---|---|
| **ADR** | II |
| **RID** | II |
| **ADN** | II |
| **IMDG** | II |
| **IATA** | II |

| | | |
|---|---|---|
| **14.5** | **Environmental hazards:** | |
| | **Marine pollutant:** | Yes |
| **14.6** | **Special precautions for user** | Warning: Organic Peroxides |
| | **Hazard identification no.** | |
| | **(Kemler code)** | 5.2 |
| | **EMS Number:** | F-J, S-R |
| | **Segregation groups:** | (SGG16) Peroxides |
| **14.7** | **Marine transport in bulk according to IMO instruments** | Not applicable |
| | **Transport/Additional information** | |
| | **ADR** | |
| | **Limited Quantities (LQ)** | 500g |
| | **Excepted Quantities (LQ)** | Code: E0<br>Not permitted as Excepted Quantity |
| | **Tunnel restriction code** | D |
| | **RID** | |
| | **Limited Quantities (LQ)** | 500g |
| | **Excepted Quantities (LQ)** | Code: E0<br>Not permitted as Excepted Quantity |
| | **Tunnel restriction code** | D |
| | **ADN** | |
| | **Limited Quantities (LQ)** | 500g |
| | **Excepted Quantities (LQ)** | Code: E0<br>Not permitted as Excepted Quantity |
| | **Tunnel restriction code** | D |
| | **IMDG** | |
| | **Limited Quantities (LQ)** | 500g |
| | **Excepted Quantities (LQ)** | Code: E0<br>Not permitted as Excepted Quantity |
| | **UN "Model Regulation":** | UN 3106, ORGANIC PEROXIDE TYPE D, SOLID (DIBENZOYL PEROXIDE) 5.2, II |

## Section 15: Regulatory information

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

**Poisons Act**

**Regulated explosives precursors**

None of the ingredients is listed.

**Regulated poisons**

None of the ingredients is listed.

**Reportable explosives precursors**

None of the ingredients is listed.

**Reportable poisons**

None of the ingredients is listed.

**Directive 2012/18/EU**
**Named dangerous substances ANNEX I**
None of the ingredients is listed.
**Seveso Category**
P6b SELF-REACTIVE SUBSTANCES & MIXTURES & ORGANIC PEROXIDES
E1 Hazardous to the Aquatic Environment
**Qualifying quantity (tonnes) for the application of lower tier requirements** 50t
**Qualifying quantity (tonnes) for the application of upper tier requirements** 200 t

**National regulations:**

**Other regulation, limitation and prohibitive regulations**
**Substances of very high concern (SVHC) according to REACH, Article 57**
This product does not contain any SVHC's.

**15.2 Chemical safety assessment:**
A Chemical Safety Assessment has been carried out for dibenzoyl peroxide.
A Chemical Safety Assessment has not been carried out.

## Section 16: Other information

The information given in this Safety Data Sheet is given in good faith and based on our current knowledge. We reserve the right to update and modify this document as necessary. The information in this sheet does not constitute a risk assessment for the workplace. While every effort is made to ensure that the information is accurate and up to date, it is not intended to form part of a contract or to imply any additional liability, which is expressly excluded.

**Contact**
info@axterltd.co.uk

**Abbreviations and acronyms**
ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR - Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG - International Maritime Dangerous Goods

IATA - International Air Transport Association

GHS - Globally Harmonized System

EINECS - European Inventory of Existing Commercial Chemical Substances

ELINCS - European List of Notified Chemical Substances

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

DNEL - Derived No-Effect Level (UK REACH)

PNEC - Predicted No-Effect Concentration (UK REACH)

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

Org. Perox. B - Organic peroxides – Type B

Org. Perox. D - Organic peroxides – Type C/D

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

RID - Regulations concerning the International Carriage of Dangerous Goods by Rail

Skin Sens. 1: Skin sensitisation – Category 1

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

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

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