SAFETY DATA SHEET - SDS

PURIFIED TEREPTHALIC ACID – PTA


SECTION I - IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

IDENTIFICATION OF THE SUBSTANCE  PURIFIED TEREPTHALIC ACID – PTA

IDENTIFICATION OF THE PRODUCT (CHEMICAL NAME) : 1-4 benzene dicarboxylic acid

CAS #: 100-21-0

REACH #: 01-2119485970-27-0041

MAIN APPLICATIONS OF THE PRODUCT : Main raw material for the manufacturing of PET polymer (poly ethylene terephthalate)

DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

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Emergency number: + 55 (81) 3366 7777
SECTION II – HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE IN ACCORDANCE WITH REGULATION (CE) N. 1272/2008:

<table>
<thead>
<tr>
<th>HAZARD CLASS</th>
<th>CLASS CODE AND HAZARD CATEGORY</th>
<th>HAZARD STATEMENT</th>
<th>HAZARD WARNING</th>
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<tbody>
<tr>
<td>Not classified</td>
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CLASSIFICATION IN ACCORDANCE WITH DIRECTIVE 67/548/CEE:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Hazard symbol</th>
<th>Risk phrases</th>
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</thead>
<tbody>
<tr>
<td>Not classified</td>
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</table>

MAIN ADVERSE EFFECTS

PHYSICO-CHEMICAL EFFECTS: No adverse physico-chemical effects are expected under normal conditions of use.

HEALTH EFFECTS INGESTION: Not known.

INHALATION EXPOSURE: Slight irritant.

CONTACT WITH SKIN: May cause irritation to skin.

CONTACT WITH EYES: May cause irritation to eyes.

SENSITIZATION: The substance might cause allergic skin reactions.

ENVIRONMENTAL EFFECTS: No adverse environmental effects are expected under normal condition of use.

LABELLING IN ACCORDANCE WITH REGULATION N. 1272/2008/EC:

PICTOGRAM(S) | WARNING | HAZARD STATEMENTS
--- | --- | ---
Not foreseen | Not foreseen | Not foreseen

OTHER HAZARDS (WHICH DO NOT RESULTS IN THE CLASSIFICATION):

PHYSICO-CHEMICAL HAZARDS: The substance is organic, it may form explosive mixtures with air under certain conditions (e.g. temperature, pressure, particle size of dusts, humidity, concentration of combustive agents).

SECTION III - COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME OF THE COMPONENT</th>
<th>PURIFIED TEREPTHALIC ACID – PTA</th>
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</thead>
<tbody>
<tr>
<td>CONCENTRATION</td>
<td>99.9 %</td>
</tr>
<tr>
<td>STRUCTURAL FORMULA</td>
<td><img src="image" alt="Structural Formula" /></td>
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</table>
CHEMICAL FORMULA: C8H6O4

MOLECULAR WEIGHT: 166.1308 [g/mol]

SUBSTANCE WITH COMMUNITY OEL: NO

CAS NAME: Terephthalic acid

CAS NUMBER: 100-21-0

IUPAC NAME: Terephthalic acid

EC NUMBER: 202-830-0

IMPURITY/IES (IF CLASSIFIED): There are no impurities. Pure substance.

ADDITIVE/IES (IF CLASSIFIED): There are no additives

SECTION IV - FIRST AID MEASURES

DESCRIPTION OF THE FIRST AID MEASURES:

EYE CONTACT: Wash immediately with large amounts of water or normal saline. Keep eyelids open with the finger. Get medical advice and show him the label.

SKIN CONTACT: Remove contaminated clothes and shoes immediately. Wash affected area with large amount of water until no evidence of substance remains (15-20 minutes). Get medical advice if adverse symptoms will appear.

INGESTION: If swallowed wash mouth with water provided person is conscious. Get medical advice immediately and show container or label.

INHALATION: Avoid breathing dusts that may be generated by handling the product. Remove the person from the exposed area to fresh air immediately. Get medical advice if adverse symptoms will appear.

MOST IMPORTANT SYMPTOMS AND EFFECTS (ACUTE AND DELAYED):

skin reactions.

**INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:**

MEDICAL MONITORING Not foreseen

ANTIDOTES, IF KNOWN Unknown

CONTRAINDICATIONS Unknown

IMMEDIATE TREATMENT AT WORKPLACE Not foreseen

### SECTION V - FIRE FIGHTING MEASURES

**APPROPRIATED EXTINGUISHING MEANS:**

Powdery material - Flammable Group 'A'.
The material can form flammable dust clouds in the air.
Combustion will produce toxic and irritant vapours.
Use dry chemical, foam or water fog.

**NOT APPROPRIATED EXTINGUISHING MEANS:**

Do not use water jet.

**COMBUSTION SUBSTANCES:**

Toxic and irritating vapours.

**SPECIAL PROCEDURES**

There is no relevant information

**FIREFIGHTERS’ PROTECTION:**

Autonomous breathing equipments and appropriated protective clothes should be used when extinguishing fire.

### SECTION VI - ACCIDENTAL RELEASE MEASURES

**PERSONAL PRECAUTIONS:**

Wear waterproof boots, rubber gloves, wide vision goggles, respiratory protection and all waterproof clothes (Tyvek coveralls).

**ENVIRONMENTAL PRECAUTIONS:**

Do not throw water. Collect spillage, transfer to a suitable container and remove the contaminated soil to another container independent. The final disposal of this product should be monitored as well, following the law

**CLEANING METHODS:**

Collect the spilled material and transfer it into suitable containers for disposal as waste or reprocessing material. Caution, because spills may be slippery.
## SECTION VII - HANDLING AND STORAGE

### PRECAUTIONS FOR SAFE HANDLING:

#### RECOMMENDATIONS FOR HANDLING
- Handle away from sparks and flames - sources of ignition
- Handle in a well ventilated place
- Avoid contact with incompatible materials
- Wear suitable Personal Protection Equipment (see section 8)
- Keep the substance away from drains, surface or ground waters

#### RECOMMENDATIONS FOR PERSONAL HYGIENE
- Do not eat, drink and smoke in the working areas
- Wash hands after handling the substance
- Remove contaminated clothing and protective equipment before entering eating areas

### CONDITION FOR SAFE STORAGE INCLUDING ANY INCOMPATIBILITIES:

The substance is organic, it may form explosive mixtures with air under certain conditions

### RISK MANAGEMENT MEASURES RELATED TO:

#### POTENTIAL IGNITION SOURCES
As with all dry powders it is advisable to ground mechanical equipment in contact with dry material to dissipate the potential build up of static electricity

#### WEATHER CONDITIONS
Do not expose to high temperatures and heat sources

#### AMBIENT PRESSURE
It is not expected any procedure of restriction

#### TEMPERATURE
Store in original container tightly closed in a cool (15 - 25°C), dry place

#### SUNLIGHT
Do not expose to the direct light of the sun

#### HUMIDITY
Do not store in a damp place

#### VIBRATION
It is not expected any procedure of restriction

The adoption of the Risk Management procedure related to the physical and chemical properties is also based on the local Risk Assessment done by the employer in its workplace conditions (use of the substance), particularly when a standardized exposure scenario is not available.

### MATERIAL TO KEEP THE INTEGRITY OF THE SUBSTANCE:

#### STABILISERS
Use of stabilisers is not expected

#### ANTIOXIDANTS
Use of antioxidants is not expected

### OTHER ADVICE:

#### VENTILATION REQUIREMENTS
Requested on the base of the storage of the substance

#### SPECIFIC DESIGN OF STORAGE ROOMS
Not requested on the base of the classification
### SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

**CONTROL PARAMETERS:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NATIONAL/EUROPEAN OCCUPATIONAL EXPOSURE LIMITS</td>
<td>Not established</td>
</tr>
<tr>
<td>OTHER NATIONAL/EUROPEAN OCCUPATIONAL EXPOSURE LIMITS</td>
<td>Not established</td>
</tr>
<tr>
<td>NATIONAL/EUROPEAN BIOLOGICAL LIMITS (BEI)</td>
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</tr>
<tr>
<td>OTHER NATIONAL/EUROPEAN BIOLOGICAL LIMITS (BEI)</td>
<td>Not established</td>
</tr>
</tbody>
</table>

**RECOMMENDED MONITORING PROCEDURES**

The measurements of the substance/s in the workplace must be carried out in accordance with standardized methods described by EN guidance.

**DNEL VALUES**

**DNELs for workers**
- Dermal: 67 mg/kg bw/d. (Exposure pattern: long-term, systemic effects.)
- Inhalation: 23 mg/m³ (Exposure pattern: long-term, systemic effects.)

**DNELs for general population**
- Dermal: 33 mg/kg bw/d. (Exposure pattern: long-term, systemic effects.)
- Inhalation: 5.8 mg/m³ (Exposure pattern: long-term, systemic effects.)
- Oral: 3.3 mg/kg bw/d (Exposure pattern: long-term, systemic effects.)

**PNEC VALUES**

**PNEC water**
- PNEC fresh water (mg/l): 0.38 mg/L.
- PNEC marine water (mg/l): 0.038 mg/L.
- PNEC aqua, intermittent releases (mg/l): 1.9 mg/L.

**PNEC sediment**
- PNEC fresh water: 0.52 mg/kg sediment dw.
- PNEC marine water: 0.052 mg/kg sediment dw.

**PNEC soil**
- PNEC: 0.71 mg/kg soil dw.

**PNEC for sewage treatment plant**
- PNEC STP: 50 mg/L.
### APPROPRIATE ENGINEERING CONTROLS

The adoption of the most appropriate engineering controls is also based on the local Risk Assessment done by the employer in its workplace conditions (use of the substance), particularly when a standardized exposure scenario is not available.

#### Individual protection measures, such as Personal Protective Equipment (PPE):

If the results of the risk evaluation done in accordance with Directive 98/24/EEC showed that the collective and general risk management measures are not sufficient to reduce the risks and, if the exposure to the substance cannot be reduce by other containment means, appropriate PPE must be adopted in compliance with technical EN guidance indication.

### EYE AND FACE PROTECTION

Safety goggles as for EN 166; facial shield

### SKIN PROTECTION

Gloves resistant to chemical agents as for the EN 374, parts 1, 2 e 3 and the European Directive 89/89/CEE.

- The gloves material must be waterproof and stable against the substance content.
- Select the glove material on the basis of the type of the material, typical or minimal breakdown times, permeability ranges, and thickness.
- Material: nitrile (nitrilic rubber), hypoallergenic
- Thickness: not inferior to 0.12 mm

### HANDS PROTECTION

Select the protective equipment based on the activity of use and possible exposure. Wear gauntlets, boots, bodysuit and other devices in accordance with EN 14605 in case of sketches or EN 13982 in case of powders.

### OTHER, BODY PROTECTION

When the risk evaluation foresees the need to use respirator devices with assisted ventilation, use a powder filter like P1, P2 and P3. Use only devices approved by the Competent Authorities such as NIOSH (USA) and CEN (EU).

For your information powders are divide in three categories:

- 2a (inert powder with TLV = 10 mg/m³),
- 2b (hazards powders with TLV = 0.1-10 mg/m³ (excluding asbestos),
- 2c (toxic powders with TLV < 0.1 mg/m³ (asbestos, carcinogens, bacteria, viruses, enzymes, spores, etc).

- Cat. 2a: P1 filter, Cat. 2b: P2 filter, Cat.2c: P3 filter.

### RESPIRATORY PROTECTION

Not foreseen in the standard use.

Assess possible Personal Protection Equipment on the basis of specific uses of the substance.

### THERMAL HAZARDS

Environmental controls are not needed.

### SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>PHYSICAL STATE</th>
<th>Free flowing powder.</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLOUR</td>
<td>White</td>
</tr>
<tr>
<td>ODOUR</td>
<td>Inodorous</td>
</tr>
</tbody>
</table>
### pH:
There is no relevant information

### BOILING POINT:
There is no relevant information

### MELTING POINT:
425°C in sealed tube

### FLASH POINT:
There is no relevant information

### AUTOIGNITION TEMPERATURE:
There is no relevant information
- Lower flammable limit: 40% v/v
- Maximum pressure increase rate: 45500kPa/s.
- Explosion maximum pressure: 790kPa.

### VAPOUR PRESSURE:
0.00000003 Pa at 10 °C

### DENSITY:
1.5 g/ml

### SOLUBILITY IN WATER:
Insoluble (15mg/l at 10 °C)

### VOLATILE MATERIAL (%):
There is no relevant information

### VOLATILE ORGANIC COMPOUNDS:
There is no relevant information
- Distribution coefficient: log P n-octane/water: 1.2 -2
- Powder flammable class: A
- Minimum ignition temperature (°C): 500
- Minimum ignition energy (mJ): 50
- Maximum density (g/ml): 1.12
- Temperature of Sublimation: > 300 °C

### SECTION X – STABILITY AND REACTIVITY

**CHEMICAL STABILITY:**
Stable product

**POLYMERISATION RISK:**
There is no relevant information

**CONDITIONS TO AVOID:**
Keep away from strong oxidant agents

**INCOMPATIBLE MATERIALS OR SUBSTANCES:**
There is no relevant information

**HAZARDOUS DECOMPOSITION PRODUCTS:**
The incomplete combustion may produce carbon monoxide and other harmful products.

### SECTION XI – TOXICOLOGICAL INFORMATION

**EYE CONTACT:**
Low irritation to rabbit eyes. It may cause physical abrasion in contact with eyes. Permanent damage is unlikely.
SKIN CONTACT: Skin contact: non-irritating after repeated application on rats’ skin. It is unlikely to cause irritation to human skin. It may cause physical abrasion in contact with the skin. It is unlikely to be hazardous by skin absorption.

INHALATION: High dust concentrations may be irritating to the upper respiratory tract.

INGESTION: Low oral toxicity.

CHRONIC EFFECTS IN HUMANS: Inhalation studies in animals have shown that repeated exposures produce no significant effects. Terephthalic acid when administrated in high levels to rats has been associated to bladder tumors. No effect was observed below a level of 1% in the diet. Additional research demonstrated that the tumors are directly related to bladder stone formation, once it is caused by urine super saturation in rats fed with high doses of terephthalic acid. This effect is unlikely to happen in humans because of the access and levels used are inadequate for the foreseeable use conditions. There is no mutagenic evidence or clastogenic potential.

SECTION XII - ECOLOGICAL INFORMATION

ECOTOXICITY: Solid with low volatility. The substance is essentially insoluble in water. It has low toxicity to aquatic organisms:
- LC50 (rainbow trout) (96 hour) (semi-static) 798-1640 mg/l
- EC50 (Daphnia magna) (48 hour) > 980mg/l

PERSISTENCE AND DEGRADABILITY: The substance is substantially biodegradable. There are evidences of fast degradability in water.
- Ready biodegradation: > 70%.
- Inherent biodegradation: > 90%.

MOBILITY: There is no relevant information

BIOACCUMULATION: The substance has low bioaccumulation potential.

OTHER HARMFUL EFFECTS: There is no relevant information
SECTION XIII - DISPOSAL CONSIDERATION

METHODS OF TREATMENT AND DISPOSAL OF PRODUCT, WASTE AND PACKAGING USED

Bury in a permitted landfill or incinerate under approved controlled conditions. Disposal should be in accordance with local, state or country laws.

SECTION XIV - TRANSPORT INFORMATION

Not classified for transport in agreement with regulation RID/ADR, IMO/IMDG, ICAO/IATA.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code: not applicable.

SECTION XV - REGULATORY INFORMATION

All other information on regulation are reported if not provided in other sections/subsection of the Safety Data Sheet.

SAFETY, HEALTH AND ENVIRONMENTAL REGULATION/LEGISLATION SPECIFIC FOR THE SUBSTANCE


SECTION XVI – OTHER INFORMATION

BIBLIOGRAPHIC SOURCES:

ACRONYMS
- ACGIH: American Conference of Governmental Industrial Hygienists
- ADR: Agreement concerning the carriage of dangerous goods by Road
- BCF: Bioaccumulative factor
- BEI: Biological Exposure Indices (Indici di esposizione biologica)
- CAS: Chemical Abstract Service (division of the American Chemical Society
- CLP: Classification, Labelling and Packaging
- CMR: Carcinogens, Mutagens, Toxic for reproduction substances
- EINECS: European Inventory of existing Commercial Substances
- EPA: US Environmental Protection Agency
- GHS: Globally Harmonised System
- IARC: International Agency for Research on Cancer
- IATA: International Air Transport Association Code
- IMDG: International Maritime Dangerous Goods Code
- IUPAC: International Union of Pure and Applied Chemistry
- LOEL: Lowest Observed Effect Level
- N.A.: Not Applicable
- N.A.: Not Available
- NOAEL: No Observed Adverse Effect Level
- NTP: National Toxicology Program
- OEL: Occupational Exposure Limit
- OSHA: Occupational Safety and Health Administration
- PPE: Personal protective Equipment
- PBT: Persistent, Bioaccumulative and Toxic substances
- RID: Regulation concerning the International carriage of Dangerous goods by rail
- TLV/TWA: Threshold Limit Value/Threshold Weighted Average
- vPvB: very Persistent, very Bioaccumulative

THE INFORMATION CONTAINED HEREIN IS INTENDED TO DESCRIBE THE PRODUCT FROM THE STANDPOINT OF SAFETY REQUIREMENTS AS THE MANUFACTURER’S MSDS.