SAFETY DATA SHEET

Terephthalic Acid

1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

PRODUCT IDENTIFIER:
Terephthalic Acid

ADDITIONAL IDENTIFICATION:

1,4-Benzenedicarboxylic Acid	PGTPA
KP-12	PTA
TPA	

RECOMMENDED USE AND USE RESTRICTIONS:
A monomer used in the manufacturing of plastics. See attached "Medical Caution Bulletin No. 1", at end of SDS for use restrictions.

MANUFACTURER / SUPPLIER:
Alpek Polyester Pernambuco S.A.
Rodovia PE 60, KM 10
Zona Industrial 3B
Suape, CEP 55590-000
Ipojuca, Pernambuco - Brasil
www.AlpekPolyester.com

EMERGENCY PHONE NUMBERS:

Product Information:	+(55)-8133114500
Transport Emergency: CHEMTREC Brazil (Rio De Janeiro)	+(55)-2139581449

2. HAZARDS IDENTIFICATION

CLASSIFICATION ACCORDING TO REGULATION (EC) NO. 1272/2008 (CLP): Non-hazardous.

OTHER HAZARDS:

COMBUSTIBLE DUST - WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.

3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENTS:

Material	**CAS Number**	**%**
Terephthalic Acid	100-21-0	>99.8
Acetic Acid	64-19-7	0.15

4. FIRST AID MEASURES

DESCRIPTION OF NECESSARY MEASURES:

INHALATION: If large amounts are inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT: Flush skin with water after excessive contact. Wash contaminated clothing before reuse.

EYE CONTACT: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a physician.

INGESTION: If swallowed, immediately give 2 glasses of water and induce vomiting. Never give anything by mouth to an unconscious person. Call a physician.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:
None expected during normal industrial or commercial handling.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT:
None expected during normal industrial or commercial handling.

5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:
Water, Water Spray, Foam, Carbon Dioxide (CO_2), or Dry Chemical.

SPECIFIC HAZARDS ARISING FROM CHEMICAL:
HAZARDOUS COMBUSTION PRODUCTS: Carbon dioxide and carbon monoxide.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS:
Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment. Dust forms explosive mixture with air. High-voltage static electricity buildup is possible when significant quantities of dust are present in the air. This can be a potential source of ignition.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS / PROTECTIVE EQUIPMENT / EMERGENCY PROCEDURES
Review Section 5. FIRE FIGHTING MEASURES and Section 7. PRECAUTIONS FOR SAFE HANDLING before proceeding with clean-up. Use appropriate Personal Protective Equipment during clean-up.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:
Remove source of heat, sparks, flame, impact, friction or electricity. Recover undamaged and minimally contaminated material for reuse and reclamation.

Dust Deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Non-sparking tools should be used.

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING:
- Avoid breathing dust and avoid contact with eyes, skin, or clothing.
- Vapor space above TPA may contain acetic acid in concentrations above its exposure limits.
- Wash thoroughly after handling.
- Keep away from heat, sparks and flames.
- Close container after each use.
- Avoid dust generation and prevent dust accumulations to minimize explosion hazard. Physical operations, such as grinding, can create dust and a potential dust explosion hazard. Under these conditions, follow National Fire Protection Association (NFPA) Codes and Standards for handling combustible dusts.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATABILITIES:
Do not mix with strong oxidants. Store in a well-ventilated place. Keep container tightly closed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

	Acetic Acid	Terephthalic Acid	Particulates Not Otherwise Regulated (PNOR)
PEL (OSHA):	10 ppm	-	15 mg/m³ Total dust 5 mg/m³ Respirable fraction
TLV (ACGIH):	10 ppm 15 ppm (STEL)	10 mg/m³	-

*All exposure limits presented are 8-hour time weighted average (TWA) limits unless otherwise noted.

APPROPRIATE ENGINEERING CONTROLS:

- Keep container tightly closed.
- Use sufficient ventilation to keep employee exposure below recommended exposure limits.
- Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).
- Use static controls. Static charges can build up and ignite dust or solvent laden atmospheres. Design precautions into processes that can create dust, such as pneumatic conveying systems, grinding and other physical operations. There is the potential for a dust explosion hazard.

INDIVIDUAL PROTECTION MEASURES / PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Wear safety glasses. Wear coverall chemical splash goggles and face shield when the possibility exists for eye or face contact from airborne material.

RESPIRATORY PROTECTION: Where airborne concentrations are expected to exceed exposure limits, a NIOSH approved respirator should be selected based on the form and concentration of the contaminant in air and in accordance with the OSHA Respiratory Protection Standard (29 CFR 1910.134).

PROTECTIVE CLOTHING: Wear impervious clothing, such as gloves, apron, boots, or whole bodysuit made from butyl rubber, as appropriate.

RECOMMENDED DECONTAMINATION FACILTIES: Eyewash station, washing facilities.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White, powder	**Flammability Limits (Upper/Lower):**	No data available
Odor:	Vinegar	**Vapor Pressure:**	<0.01 mm Hg @ 20 °C
Odor Threshold:	No data available	**Vapor Density:**	No data available
pH:	Not Applicable	**Specific Gravity:**	1.51
Melting Point:	>300 °C	**Solubility in Water:**	Negligible
Initial Boiling Point and Boiling Range:	Sublimes above 300 °C	**Partition coefficient (n-octanol/water):**	No data available
Flash Point:	260 °C; Method - OC	**Auto-Ignition Temperature:**	No data available
Evaporation Rate:	No data available	**Decomposition Temperature:**	300 °C
Flammability:	No data available	**Viscosity:**	No data available

10. STABILITY AND REACTIVITY

REACTIVITY:
None known.

CHEMICAL STABILITY:
Stable at normal conditions. Polymerization will not occur.

POSSIBILITY OF HAZARDOUS REACTIONS:
None known.

CONDITIONS TO AVOID:
Temperatures above 300 °C. Decomposes with heat.

INCOMPATIBILE MATERIALS:
Incompatible with strong oxidants.

HAZARDOUS DECOMPOSITION PRODUCTS:
Not known.

11. TOXICOLOGICAL INFORMATION

INFORMATION ON LIKELY ROUTES OF EXPOSURE:
Dust may be inhaled, and come in contact with skin and eyes.

SYMPTOMS RELATED TO PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS:
- Eye contact may cause slight irritation, with discomfort, tearing, or blurring of vision.
- Inhalation may cause irritation of mucosal surfaces.

ACUTE, DELAYED, AND CHRONIC EFFECTS FROM SHORT AND LONG-TERM EXPOSURE:
- High or prolonged oral exposure may result in kidney changes, blood in the urine or bladder stones.
- Based on animal studies, high or prolonged oral exposure may result in kidney changes, blood in the urine or bladder stones.
- The compound is a slight eye irritant, but is neither a skin irritant nor a skin sensitizer in animals.
- Toxic effects described in animals from exposure by ingestion include bladder hemorrhage and stomach ulceration. Toxicity described for repeated doses include bladder calculi (stones), blood in the urine, and decreased weight gain.
- Animal testing indicates that this compound does not have reproductive effects. Limited information from reproduction studies does not indicate that terephthalic acid is a unique hazard to the conceptus.
- Toxicity described in animals administered the compound orally in the diet include bladder stones and alterations of the urinary tract with tumors and squamous cell carcinomas, decreased growth rate and altered relative organ weights.

NUMERICAL MEASURES OF TOXICITY
- Oral LD_{50}: 18,800 mg/kg in rats
- Terephthalic acid is a carcinogen in rats when administered in large oral doses (>1,000 mg/kg/day). The compound does not produce genetic damage in bacterial cell cultures.

CARCINOGENICITY INFORMATION:
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

- Solid with low volatility.
- The substance is essentially insoluble in water. It has low toxicity to aquatic organisms:
  - LC_{50} (rainbow trout) (96 hour) (semi-static) 798-1640 mg/l
  - EC_{50} (Daphnia magna) (48 hour) > 980mg/l

PERSISTENCE AND DEGRADABILITY:

- The substance is substantially biodegradable.
- There is evidence 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.

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORTATION INFORMATION

SHIPPING 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.

15. REGULATORY INFORMATION

- Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (Official Journal L 183, 29/06/1989 P. 0001 - 0008) and following amendment and National reinforcements.
- Council Directive 89/686/EEC of 21 December 1989 on the approximation of the laws of the Member States relating to the personal protective equipment.
- Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) Official Journal L 131, 05/05/1998 P. 0011 - 0023

16. ADDITIONAL INFORMATION

The data in this Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

SDS Revision Date: September 1, 2023

End of SDS

MEDICAL CAUTION BULLETIN NO. 1

DO NOT USE MATERIALS PRODUCED BY ALPEK POLYESTER BUSINESSES IN MEDICAL APPLICATIONS INVOLVING **PERMANENT, BRIEF, OR TEMPORARY IMPLANTATION** IN THE HUMAN BODY OR PERMANENT CONTACT WITH INTERNAL BODY FLUIDS OR TISSUES, UNLESS THE MATERIAL HAS BEEN PROVIDED DIRECTLY FROM AN ALPEK POLYESTER BUSINESS UNDER A CONTRACT WHICH EXPRESSLY ACKNOWLEDGES THE CONTEMPLATED USE.

ALPEK POLYESTER MAKES NO REPRESENTATION, PROMISE, EXPRESS WARRANTY OR IMPLIED WARRANTY CONCERNING THE SUITABILITY OF THESE MATERIALS FOR USE IN THE HUMAN BODY OR IN CONTACT WITH INTERNAL BODY FLUIDS OR TISSUES.

THE CONTENT OF ALPEK POLYESTER MATERIAL IS NOT CERTIFIED FOR IMPLANTS.
Alpek Polyester materials are not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. Alpek Polyester has not performed clinical testing of these materials for implantation. Alpek Polyester will not provide to customers making implantable devices any notice concerning its materials, as specified under 21 CFR section 820.50, or any other information necessary for medical device use of the materials under any other statue or FDA regulation. Alpek Polyester has neither sought, nor received, approval from the FDA for the use of these materials in implantation in the human body or in contact with internal body fluids or tissues.

ALL IMPLANTABLE MEDICAL DEVICES CARRY A RISK OF FAILURE AND ADVERSE CONSEQUENCES.
The medical judgment of a physician, a medical device seller and the FDA should be relied upon for identification of both harmful consequences and life-saving benefits from an implantation device comprised of specific materials. These benefits and risks can be found in published medical cases performing clinical medical studies of an implantable medical device. Alpek Polyester does not support the use of its products in these applications and cannot weigh the benefits against the risk defined in these articles. Alpek Polyester cannot offer a medical judgment on the safety or efficacy of the use of its materials in such devices.

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Do not use a trademark or licensed trademark from Alpek Polyester or any of its businesses as the descriptive name of an implantable medical device (e.g. do not call it the "Delcron®" prosthesis, or do not call it a "Laser+® device").

End of Bulletin