

Section-1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Identification of the substance/preparation:**Commercial name:** Purified Terephthalic Acid (PTA)**Chemical name:** 1-4 Benzene Di carboxylic Acid**Synonyms:** Purified Terephthalic Acid**1.2 Use of the substance /preparation:** Used in Polyester Filament Yarn / Staple Fiber, Polyester Film, PET Resin, Unsaturated Polyester Resins manufacturing.**1.3 MANUFACTURER & SUPPLIER: Reliance Industries Limited****Emergency Coordination Centre contact details:**

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SSM: Site Shift Manager

Section 2 – HAZARD IDENTIFICATION
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2.1 Classification of the substance/preparation: Hazard class and category code.**GHS Category:**

Health	Environmental	Physical
Acute Toxicity Inhalation category: * Acute Toxicity Oral category: * Acute Toxicity Dermal category: * STOT - SE: Category 3 Respiratory tract irritation) STOT – RE: Category 1 Respiratory tract irritation Eye irritation: Category 2B * Not sufficient for Classification.	Aquatic Toxicity – Category- NA	Flammable – Category NA

NA: Not available.

GHS Category table for reference:

Study/hazard statement	Category 1	Category 2	Category 3	Category 4	Category 5
Acute Oral LD50	≤ 5 mg/kg Fatal if swallowed	> 5 ≤ 50 mg/kg Fatal if swallowed	> 50 ≤ 300 mg/kg Toxic if swallowed	> 300 ≤ 2000 mg/kg Harmful if swallowed	> 2000 ≤ 5000mg/kg May be harmful if swallowed
Acute Dermal LD50	≤ 50 mg/kg Fatal in contact with skin	> 50 ≤ 200 mg/kg Fatal in contact with skin	> 200 ≤ 1000 mg/kg Toxic in contact with skin	> 1000 ≤ 2000 mg/kg Harmful in contact with skin	> 2000 ≤ 5000 mg/kg May be harmful in contact with skin
Acute Inhalation Dust LC50 Gases LC50 Vapours LC50	≤ 0.05 mg/L ≤ 100 ppm/V ≤ 0.5 mg/L Fatal if inhaled	> 0.05 ≤ 0.5 mg/L > 100 ≤ 500 ppm/V > 0.5 ≤ 2.0 mg/L Fatal if inhaled	> 0.5 ≤ 1.0 mg/L > 500 ≤ 2500 ppm/V > 2.0 ≤ 10 mg/L Toxic if inhaled	> 1.0 ≤ 5 mg/L > 2500 ≤ 20000 ppm/V > 10 ≤ 20 mg/L Harmful if inhaled	See footnote below this table
Flammable liquids	Flash point < 23 degrees C and initial boiling point ≤ 35 degrees C. Extremely flammable liquid and vapour	Flash point < 23 degrees C and initial boiling point > 35 degrees C. Highly flammable liquid and vapour	Flash point ≥ 23 degrees C ≤ 60 degrees C. Flammable liquid and vapour	Flash point > 60 degrees C ≤ 93 degrees C. Combustible liquid	Not Applicable

Note: Gases concentration are expressed in parts per million per volume (ppmV).

NOTE 1: Category 5 is for mixtures which are of relatively low acute toxicity but which under certain circumstances may pose a hazard to vulnerable populations. These mixtures are anticipated to have an oral or dermal LD50 value in the range of 2000-5000 mg/kg bodyweight or equivalent dose for other routes of exposure. In light of animal welfare considerations, testing in animals in Category 5 ranges is discouraged and should only be considered when there is a strong likelihood that results of such testing would have a direct relevance for protecting human health.

NOTE 2: These values are designed to be used in the calculation of the ATE for classification of a mixture based on its ingredients and do not represent test results. The values are conservatively set at the lower end of the range of Categories 1 and 2, and at a point approximately 1/10th from the lower end of the range for Categories 3 – 5.

GHS Category table for reference: Continued

Study/hazard statement	Category 1	Category 2	Category 3
Eye Irritation	Effects on the cornea, iris or conjunctiva that are not expected to reverse or that have not fully reversed within 21 days. Causes severe eye damage.	2A: Effects on the cornea, iris or conjunctiva that fully reverse within 21 days. Causes severe eye irritation. 2B : Effects on the cornea, iris or conjunctiva that fully reverse within 7 days. Causes eye irritation.	Not applicable
Skin Irritation	Destruction of skin tissue, with sub categorization based on exposure of up to 3 minutes (A), 1 hour (B), or 4 hours (C). Causes severe skin burns and eye damage.	Mean value of $\geq 2.3 > 4.0$ for erythema / eschar or edema in at least 2 of 3 tested animals from gradings at 24, 48, and 72 hours (or on 3 consecutive days after onset if reactions are delayed); inflammation that persists to end of the (normally 14-day) observation period. Causes skin irritation.	Mean value of $\geq 1.5 < 2.3$ for erythema / eschar or edema in at least 2 of 3 tested animals from gradings at 24, 48, and 72 hours (or on 3 consecutive days after onset if reactions are delayed). Causes mild skin irritation.
Environment: Acute Toxicity Category	96 hr LC50 (fish) ≤ 1 mg/L 48 hr EC50 (crustacea) ≤ 1 mg/L, 72/96 hr ErC50 (aquatic plants) ≤ 1 mg/L Very toxic to aquatic life	96 hr LC50 (fish) > 1 ≤ 10 mg/L 48 hr EC50 (crustacea) > 1 ≤ 10 mg/L 72/96 hr ErC50 (aquatic plants) > 1 ≤ 10 mg/L Toxic to aquatic life	96 hr LC50 (fish) > 10 ≤ 100 mg/L 48 hr EC50 (crustacea) > 10 ≤ 100 mg/L 72/96 hr ErC50 (aquatic plants) > 10 ≤ 100 mg/L Harmful to aquatic life
Flammable Aerosol	Extremely flammable aerosol	Flammable aerosol	Not Applicable
Flammable solids	Using the burning rate test, substances or mixtures other than metal powders: (a) wetted zone does not stop fire and (b) burning time < 45 seconds or burning rate > 2.2 mm/second Using the burning rate test, metal powders that have burning time ≤ 5 minutes Flammable solid	Using the burning rate test, substances or mixtures other than metal powders: (a) wetted zone does not stop fire for at least 4 minutes and (b) burning time < 45 seconds or burning rate > 2.2 mm/second Using the burning rate test, metal powders that have burning time > 5 ≤ 10 minutes Flammable solid	Not Applicable
Flammable gases	Gases, which at 20 degrees C and a standard pressure of 101.3 kPA: (a) are ignitable when in a mixture of 13% or less by volume in air; or (b) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit. Extremely flammable gas	Gases, other than those of category 1, which, at 20 degrees C and a standard pressure of 101.3 kPA, have a flammable range while mixed in air. Flammable gas	Not Applicable

GHS Label: GHS07 : Irritant , GHS08 : Systemic Health Hazards**Signal Word: Danger****Details of statements:**

Hazard Statements	H335: May cause respiratory irritation (respiratory tract irritation) H372: Causes damage to organs (respiratory system) H319: Causes serious eye irritation. H315: Causes skin irritation. H335: May cause respiratory irritation
Precautionary Statement Prevention	P 102: Keep out of reach of children. P 103: Read label before use. P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat/sparks/open flames/hot surfaces* No smoking. P 233: Keep container tightly closed. P 240: Ground/bond container and receiving equipment. P 241: Use explosion-proof electrical/ventilating/lighting/ equipment. P 242: Use only non-sparking tools. P 243: Take precautionary measures against static discharge. P 260: Do not breathe dust/fume/gas/mist/vapours/spray*. P261: Avoid breathing dust/fume/gas/mist/vapours/spray. P 264: Wash thoroughly after handling. P 270: Do not eat, drink or smoke when using this product. P271: Use only outdoors or in a well-ventilated area. P 280: Wear protective gloves/protective clothing/eye protection/face protection*. P281: Use personal protective equipment as required.
Precautionary Statement Response	P312: Call a POISON CENTER/doctor/... / if you feel unwell. P314: Get medical advice/attention if you feel unwell. P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313: If eye irritation persists: Get medical advice/attention. P403+P233: Store in a well-ventilated place. Keep container tightly closed.
Precautionary Statement Storage	P405: Store locked up. P403+P233: Store in a well-ventilated place. Keep container tightly closed.
Precautionary Statement Disposal	Follow local regulation

Ref: <https://www.nite.go.jp/chem/english/ghs/14-mhlw-2064e.html>
<https://pubchem.ncbi.nlm.nih.gov/compound/Terephthalic-acid#section=Safety-and-Hazards>

2.2 Information pertaining to particular dangers for human:

Dust is irritating to eyes, skin and respiratory organs.

2.3 Information pertaining to particular dangers for the environment: NA

2.4 Other adverse effects: Terephthalic acid dust, when finely divided and suspended in air, is readily ignitable and produces explosions with high rates of pressure rise.

Hazard ratings:

NFPA HAZARD CODES	RATINGS SYSTEM
HEALTH: 1	0 = No Hazard
FLAMMABILITY: 1	1 = Slight Hazard
INSTABILITY: 0	2 = Moderate Hazard
	3 = Serious Hazard
	4 = Severe Hazard

<https://pubchem.ncbi.nlm.nih.gov/compound/Terephthalic-acid#section=Hazard-Classes-and-Categories>

Route of entry:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	Yes	Yes	Yes (Dust)	Yes

Ref: <https://pubchem.ncbi.nlm.nih.gov/compound/7489>

Section 3 – COMPOSITION & INFORMATION ON INGREDIENTS

Ingredients / Hazardous	CAS No.	EC No.	Percentage
Purified Terephthalic Acid	100-21-0	202-830-0	99.9% (wt.) min.

Section 4 – FIRST AID MEASURES

4.1 General advice

IMMEDIATE MEDICAL ATTENTION IS REQUIRED AFTER INHALATION OR AFTER SWALLOWING.

In case of health troubles or doubts, seek medical advice immediately and show this (Material) Safety Data Sheet.

4.2 Inhalation

Remove the person from the exposed area to fresh air immediately. Seek medical advice immediately if adverse symptoms will appear.

4.3 Skin contact

Remove contaminated clothes and shoes immediately. Place contaminated clothes in bag. Wash affected area with large amount of water until no evidence of substance remains (15-20 minutes). Seek medical advice immediately.

4.4 Eye contact

Remove contact lenses if used and irrigate exposed eyes with large amount water for at least 15 minutes. Keep eyelids open with the finger. Seek medical advice.

4.5 Swallowing

If swallowed wash mouth with water provided person is conscious. Do not induce vomiting. If vomiting occurs, lean patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Seek medical advice immediately.

4.6 Acute and Delayed Effects

Ingestion: Not known.

Inhalation exposure: Slight irritant.

Contact with skin: Redness.

Contact with eyes: Burning sensation, Redness of conjunctivae.

Sensitization: Substance may cause allergic reactions

Section 5 – FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media

Foam, Dry Chemical Powder and CO₂.

Fine spray of water can be used to cool containers and adjacent area to prevent escalations.

5.2 Extinguishing media to be avoided: NA

5.3 Caution about specific danger in case of fire and fire-fighting procedures

Dust may travel considerable far distances and cause subsequent ignition. Avoid contamination with oxidizing agents. Prevent, by any means available, spillage from entering drains or water channels.

Combustion products include: Carbon monoxide (CO), Carbon dioxide (CO₂), other pyrolysis products typical of burning organic material. May emit irritant fumes.

5.4 Special protective equipment for fire fighters

Wear Full protective 3-layer IFR clothing and Self-contained Breathing apparatus.

Section 6 – ACCIDENTAL RELEASE MEASURES

6.1 Person-related safety precautions

Isolate hazard area. Evacuate all unauthorized personnel not participating in rescue operations from the area. Avoid entry into danger area.

6.2 Precautions for protection of the environment

Prevent from further spill of substance.

6.3 Recommended methods for cleaning and disposal

Sweep up and place in clean, covered steel drums for disposal. Caution: avoid creating dust clouds during cleanup activity. Never use compressed air to clean up terephthalic acid due to the risk of explosion. Dispose off under valid legal waste regulations. Bury on an authorized landfill site or incinerate under approved controlled conditions.

Section 7 – HANDLING AND STORAGE

7.1 Information for safe handling

Take precautionary measures against static discharges. Wear recommended personal protective equipment and observe instructions to prevent possible contact of substance with skin and eyes and inhalation. Avoid spill to environment. Dust explosion may take place, avoid dust generation. Use inert gas for conveying system.

7.2 Information for storage

Store in cool, indoor well-ventilated place with effective exhaust and in relatively dark conditions, away from heat, direct sunlight and all sources of ignition. Store in tightly sealed FIBCs / Bags / Silos and protect them from damage. Blanket Silos with nitrogen before filling (due to explosion hazard from dust). Maintain good housekeeping standards by using industrial grade vacuum cleaners to prevent PTA powder accumulation and eliminate risk of dust explosion. Do not store more than two bags in a stack. Recommended shelf life 6 months subject to storage as prescribed. Beyond expiry of 6 months, product to be re-analysed and used in blending after consultation with Reliance Industries Limited.

7.3 Information for specific use
 Not applicable.

Section 8 – EXPOSURE CONTROL & PERSONAL PROTECTION

8.1 Occupational Exposure Limits:

Material	Source	Type	ppm	mg/m3	Notation
Purified Terephthalic Acid	ACGIH	TWA	NA	10	
	ACGIH	STEL	NA		
	ACGIH	SKIN_DES TWA	NA		
	NIOSH	IDLH	NA		
	OSHA	TWA	NA		
	OSHA	STEL	NA		

NA: Data not available,

8.2 Occupational exposure controls

Collective protection measures: General and local ventilation, effective exhaust.
 Individual protection measures: Personal protective equipment (PPE) for the protection of eyes, hands and skin corresponding with the performed labour has to be kept at disposition for the employees. In the case of continuous use of this equipment during constant work, safety breaks have to be scheduled, if the PPE-character requires this. All PPE have to be kept in disposable state and the damaged or contaminated equipment has to be replaced immediately.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

HANDS	EYES	BODY	RESPIRATORY
			

Respiratory protection: If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-face piece respirator, airline hood, or full-face piece self-contained breathing apparatus.

Eye protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eyewash fountain and quick-drench facilities in work area.

Hand protection: Wear gloves of impervious material.

Body protection: Wear impervious protective clothing, including boots, gloves, apron or coveralls, as appropriate, to prevent skin contact

Hygiene Measures: Wash hands, forearms and face thoroughly after handling. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

8.3 Environmental exposure controls

Proceed in accordance with valid air and water legislative regulations.

Engineering measures: Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended limits. The engineering controls also need to keep vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White Crystalline Powder
Odour	Odorless
Solubility in water	Insoluble
Relative Density (H ₂ O=1) @ 20°C	1.51
Melting Point °C	300°C (Sublimes)
Relative Vapour Density (Air=1)	NA
Flash point °C	260°C (open cup)
Auto ignition °C	650.5 °C (Dust)
Vapour pressure	0.5 mm Hg @ 120 °C
Octanol/water partition coefficient log Kow	2.00
% volatile	None
Lower Explosive Limit	0.04 oz/cu. ft (Dust)

Ref: <https://pubchem.ncbi.nlm.nih.gov/compound/7489> and Licensor Data

Section 10 – CHEMICAL STABILITY AND REACTIVITY INFORMATION

10.1 Conditions to avoid

Heat or fire, Dust generation.

10.2 Material to avoid

May react with strong oxidizers such as chlorine or permanganates and may form explosive compounds when exposed to nitric acid.

10.3 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes. Compounds of carbon, hydrogen, and oxygen, including carbon monoxide and other toxic gases. The exact composition will depend on the causes and conditions of decomposition.

10.4 Polymerization: NA.

Section 11 – TOXICOLOGICAL INFORMATION

11.1 Acute effects

Acute toxicity data:

Parameter	Route	Species	Values	Exposure period
LD50	Oral	Rat	1960 mg/kg	Not applicable
LD50	Dermal	Rat	>2000 mg/kg	Not applicable
LD50	Inhalation	Rat	>2.02 mg/L	2 Hr

Data reference: Ref: <https://pubchem.ncbi.nlm.nih.gov/compound/7489>

11.2 Repeated dose toxicity

Chronic effects cause irritation by dust

11.3 Sensitisation

Dust may cause skin & eye irritation.

11.4 CMR effects (carcinogenicity, mutagenicity, toxicity for reproduction)

Not a carcinogen or a mutagen

11.5 Toxicokinetics, metabolism, distribution : NA

Section 12 – ECOLOGICAL INFORMATION

12.1 Ecotoxicity data:

Parameter	Route	Species	Values	Exposure period	Condition of bioassay
LC50	Inhalation	Tetra hymena pyriformis (Ciliate)	800 mg/L	24 hours	static, 30 deg C

Data reference: Ref: <https://pubchem.ncbi.nlm.nih.gov/compound/7489>

12.2 Mobility:

High mobility in soil.

12.3 Persistence and degradability: Substance is biodegradable

12.4 Bioaccumulative potential: Low

12.5 Results of PBT assessment Persistence and Degradation: NA

12.6 Other adverse effects

Environmental Fate: NA.

Section 13– DISPOSAL CONSIDERATION

Local Legislation: Disposal should be in accordance with applicable regional, national, and local laws and regulations. This product should not be dumped, spilled, rinsed or washed into sewers or public waterways.

13.1 Recommended disposal methods for the substance / preparation

Product reuse or disposal in accordance with valid waste legislative regulations. Bury on an authorized landfill site or incinerate under approved controlled conditions.

13.2 Recommended disposal methods for contaminated packaging

Product is transported in vehicles. Bury on an authorized landfill site or incinerate under approved controlled conditions.

13.3 Waste management measures that control exposure of humans and environment

Proceed in accordance with valid health, air and water legislative regulations.

13.4 Waste regulation

Follow local regulation.

Section 14– TRANSPORT INFORMATION

International Transport Regulation:

ADR/RID (Road/Rail), IMDG (Sea) and ICAO/IATA (Air)

The product is not regulated

14.1

Proper Shipping Name: Not classified

Hazard Class: Not classified

UN Number: Not classified

14.2 Special transport precautionary measures

Not applicable.

Section 15 – REGULATORY INFORMATION

(M)SDS format on a 16 Section based on guidance provided in:

Indian Regulation:

Manufacture, Storage and Import of Hazardous Chemicals Rule, 1989.
The Factories Act 1948

International Regulations:

European SDS Directive
ANSI MSDS Standard
ISO 11014-1 1994
WHMIS Requirements

United States

Hazard Communication Standard

Canada

Hazardous Products Act and Controlled Products Regulations

Europe

Dangerous Substance and Preparations Directives

Australia

National Model Regulations for the Control of Workplace Hazardous Substances

The Globally Harmonized System of Classification and Labeling of Chemicals endorsed by The UN Economic and Social Council

* Risk phrases: R36/37/38: Irritating to eyes, respiratory system and skin

*Safety phrases: S7: Keep container tightly closed; S33: Take precautionary measures against static discharges; S15: Keep away from heat; S23: Do not breathe gas/fumes/vapor/spray

*These standard risk and safety phrases for use when interpreting (Material) Safety data Sheets are derived from the European Union Regulation, CHIP Regulations - Chemicals (Hazard Information and Packaging for Supply). They are required to be used in (Materials) Safety Data Sheets to identify potential hazards and offer safe handling advice.

Section 16 – OTHER INFORMATION

Training instructions

Personnel handling the product has to be acquainted demonstrably with its hazardous properties, with health and environmental protection principles related to the product and first aid principles.

Tremcard details/Reference: Refer Section 14

Local bodies involved (Applicable only with in India): Local District Authority and Local Crisis Group

(M)SDS Revision Status:

Date of Revision	Revised Sections	Supersedes
Sep. 01, 2009	Format revised	Feb. 01, 2008
Sep. 01, 2011	Section 4 (4.3)	Sep. 01, 2009
Aug. 01, 2013	Section 2 NFPA Hazard statement	Sep. 01, 2011
July 27,2016	Section 1.3,2.1,2.4,11.1,12.1,12.2	Aug. 01, 2013
April 24, 2021	Section 1.3, 2.1, 2.4, 4, 5, 6.3, 7.2, 9, 10, 15	July 27,2016

This MSDS is issued by Patalganga, Hazira and Dahej Manufacturing Divisions, Reliance Industries Limited.

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End of (M) SDS