

## PROPERTIES & USES

### **Physical Properties:**

Molecular Formula :  $C_6H_5(COOH)_2$

Molecular weight: 166.14

Melting Point: 300°C (sublimation)

Freezing Point: 427°C

Triple Point: 427°C

Density: 1510 g/lit at 25°C

Heat of Formation: -816KJ/mol at 25°C

Heat of Sublimation: 142KJ/mol

Heat of Combustion: 3223 KJ/mol

Ionisation Constants:

50% aqueous methanaol

pK<sub>1</sub> - 4.39

pK<sub>2</sub> - 6.08

Molar Magnetic susceptibility:  $83.51 \times 10^{-6}$  ml/mol

### **Solubility of Terephthalic Acid g/100g Solvent:**

Solvent	25°C	120°C	160°C	200°C	240°C
Methanol	0.1		2.9	15	
Water	0.0019	0.08	0.38	1.7	9.0
Acetic Acid	0.035	0.3	0.75	1.8	4.5
Formic Acid	0.5				
Sulphuric Acid	2				
Dimethyl formamide	6.7				
Dimethyl Sulfoxide	20				

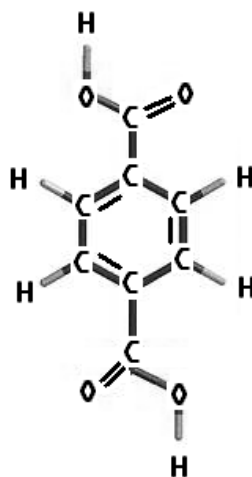
### Vapour Pressure of Terephthalic Acid:

Temp (°C)	Pressure (kPa)
303	1.3
353	13.3
370	26.7
387	53.3
404	101.3

### Specifications of Polymer grade Terephthalic acid:

Property	Specification	Test Method
Acid Number	675±2 mgKOH/g	Filtration
Ash	15 ppm(max)	Pyrolysis
Total Significant metals (Mo,Cr,Ni,Co,Fe,Ti,Mg)	10 ppm (max)	Atomic Absorption
4-formyl benzoic acid	25 ppm (max)	Polarography
Moisture wt%	0.5 (max)	Karl fischer
5% dimethyl formamide solution color (ALPHA)	10 (max)	Colorimetry

The Structure of Terephthalic Acid:



### Uses:

- Polyester fibers based on PTA provide easy fabric care, both alone and in blends with natural and other synthetic fibers. Polyester films are used widely in audio and video recording tapes, data storage tapes, photographic films, labels and other sheet material requiring both dimensional stability and toughness.
- PTA derivative, polyethylene terephthalate, (PET) has become the primary container resin for applications such as carbonated beverage bottles, while other polyterephthalates provide dimensional stability, good heat resistance and durability for engineering applications.
- Terephthalic acid is also used in the paint as a carrier.
- It is used in the pharmaceutical industry as a raw material for certain drugs.
- In addition to these end uses, Terephthalic acid based polyesters and polyamides are also used in hot melt adhesives..
- PTA is an important raw material for lower molecular weight saturated polyesters for powder and water-soluble coatings.