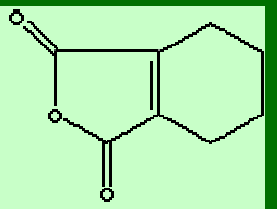
TETRAHYDROPHTHALIC ANHYDRIDE



PRODUCT IDENTIFICATION	
CAS NO.	2426-02-0
EINECS NO.	219-374-3
FORMULA	$C_8H_8O_3$
MOL WT.	152.15
H.S. CODE	
TOXICITY	
SYNONYMS	Cyclohexene-1,2-dicarboxylic Anhydride; THPA D1; 1-Cyclohexene-1,2-Dicarboxylic Anhydride; 1,2-Cyclohexenedicarboxylic Anhydride; 4,5,6,7-Tetrahydro-1,3-Isobenzofurandione; Anhidrido 3,4,5,6-tetrahidroftalico (Spanish); Anhydride 3,4,5,6-tétrahydrophtalique; 3,4,5,6-Tetrahydrophthalsaeureanhydrid;
DERIVATION	

PHYSICAL AND CHEMICAL PROPERTIES	
PHYSICAL STATE	white to light yellow powder
MELTING POINT	65 - 68 C
BOILING POINT	
SPECIFIC GRAVITY	1.147
SOLUBILITY IN WATER	
AUTOIGNITION	
VAPOR DENSITY	
pH	
REFRACTIVE INDEX	
NFPA RATINGS	Health: 3; Flammability: 0; Reactivity: 0
FLASH POINT	158 C
STABILITY	Stable (Shelf life: 12 months from production date)

APPLICATIONS

It is mainly used as a hardener component for epoxy resins. It is used as an intermediate for polyesters, plasticizers, adhesives, pesticides.

SALES SPECIFICATION	
APPEARANCE	White to Light Yellow Powder
PURITY	99.5% min
ANHYDRIDE CONTENT	94.0% min (G.C)
ACID CONTENT	2.0% max

TRANSPORTATION	
PACKING	25kgs in bag
HAZARD CLASS	8 (Packing Group: III)
UN NO.	2698

OTHER INFORMATION

Hazard Symbols: XI, Risk Phrases: 34-36/37, Safety Phrases: 25

GENERAL DESCRIPTION OF ANHYDRIDE

Phthalic anhydride, the anhydride form of phthalic acid , is produced by the oxidation of orthoxylene and naphthalene. Its wide application is based on the ortho related carboxylic acid groups as their dehydration is highly reactive with broad processing conditions to produce various downstream products. It is used to make simple esters widely used as plasticizers. It is used as in making unsaturated polyester resins, alkyd resins, polyester polyols, dyes and pigments, halogenated anhydrides, polyetherimide resins, isatoic anhydride and insect repellents.

Anhydride is a compound formed by the abstraction of a molecule of water, H_2O, from a substance. The term acid anhydride is restricted sometime to the anhydride formed especially from an acid by dehydration or one that revert to the original substance upon hydration. In case of bimolecular, it can be composed of two molecules of the corresponding acid. The term mixed anhydride is an acid anhydride composed of two different acids. Examples are adenosine triphosphate or an aminoacyl adenylate. The anhydrides of bases are oxides.

Anhydrides of inorganic acids are usually oxides of nonmetallic elements. Carbon dioxide (CO_2) is the anhydride of carbonic acid, dinitrogen pentoxide (N_2O_5) is the anhydride of nitric acid, sodium oxide is an anhydride of sodium hydroxide, phosphorus pentoxide (P_2O_5) is the anhydride of phosphoric acid, and sulfur trioxide (SO_3) is the anhydride of sulfuric acid. An acid anhydride forms an acid; a base anhydride forms a base. Sulfur trioxide (acid anhydride) reacts with water to form sulfuric acid (an acid product). Calcium oxide (an base anhydride) reacts with water to form calcium hydroxide (a base product).

Organic anhydrides contain the carbonyl group (CO). Organic anhydrides are formed by the condensation of original acids. Lactone, an internal cyclic monoester, is an anhydride derived from the hydroxyl and carboxyl radicals. In organic chemistry, most anhydride compounds are derived from corresponding carboxylic acids. Carboxylic anhydrides, general formula $(RCO)_2O$, are the dehydration product of two carboxylic acid molecules. The name of carboxylic anhydride is given first from the original acid, followed by the separate word "anhydride". $[CH_3(CH_2)_2CO]_2O$ is butanoic anhydride, $CH_3COOCOCH_2CH_3$ is ethanoic propanoic anhydride (or acetic propionic anhydride). Anhydrides are more reactive than the parent acids. Anhydrides are typically not target molecules, but rather they are used as intermediates for the synthesis of other organic members such as esters and amides for the industrial applications include dyes, pharmaceuticals, pesticides, plastics, fibers, curing agents, plasticizers and many others. The reactivity of carboxylic acid derivatives are in order of acyl halides > anhydrides >> esters ¡Ö acids >> amides. Anhydrides react with alcohols to form esters; acetic anhydride $[(CH_3CO)_2O]$ reacts with ethanol (C_2H_5OH) to form ethyl acetate ($CH_3COOC_2H_5$) used as a common solvent. Anhydrides also react with ammonia and primary or secondary amines to form amides. Anhydrides react with water to form their corresponding acids.