

**1. Identification of the substance/preparation and of the company/undertaking**

Identification of the product

Catalogue No.:

Product name : Phthalic Acid Anhydride; 1,2- Benzenedicarboxylic Acid Anhydride; Phthalandione (PA)

Manufacturer/supplier identification

Company: UPC Technology Corporation \* Taiwan, R.O.C \*  
Tel:++ (886)7-6413501; Fax:++(886)7-6421087

Emergency telephone No.: ++ (886)7-6413501

**2. Composition/information on ingredients**

Synonyms

2,5-Furanedione

CAS-No. : 85-44-9

Molar mass : 148.1

Molecular formula: C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O**3. Hazards identification**

Nfpa ratings (scale 0-4): health=2 fire=1 reactivity=0

*Ec classification (assigned):*

Xi irritant

R 36/37/38

EC classification may be inconsistent with independently-researched data.

*Emergency overview:*

Color: colorless or white

Physical form: crystals

Odor: irritating odor

Major health hazards: allergic reactions

Physical hazards: dust/air mixtures may ignite or explode.

*Potential health effects:*

Inhalation:

Short term exposure: irritation, allergic reactions, difficulty breathing, lung congestion

Long term exposure: wheezing, asthma, kidney damage, liver damage

Skin contact:

short term exposure: irritation (possibly severe), allergic reactions, rash

long term exposure: same as effects reported in short term exposure

Eye contact:

short term exposure: irritation, blurred vision

long term exposure: same as effects reported in short term exposure

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### Ingestion:

short term exposure: sore throat, low body temperature, diarrhea, stomach pain

long term exposure: no information is available

### Carcinogen status:

OSHA: N

NTP: N

IARC: N

## 4. First aid measures

### Inhalation:

Remove from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention.

### Skin contact:

Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). For burns, cover affected area securely with sterile, dry, loose-fitting dressing. Get medical attention immediately.

### Eye contact:

Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains. Continue irrigating with normal saline until ready to transport to hospital. Cover with sterile bandages. Get medical attention immediately.

### Ingestion:

Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. Give large amounts of water or milk. Allow vomiting to occur. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

Note to physician: Avoid gastric lavage or emesis.

## 5. Fire-fighting measures

### Fire and explosion hazards:

Slight fire hazard. Dust/air mixtures may ignite or explode.

### Extinguishing media:

regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

Fire fighting: Move container from fire area if it can be done without risk.

Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Water or foam may cause frothing.

Flash point: 306°F (152 °C)

Lower flammable limit: 1.7%

Upper flammable limit: 10.5%

Auto-ignition: 1058 °F (570°C)

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**6. Accidental release measures**

Occupational release:

Do not touch spilled material. Stop leak if possible without personal risk.  
Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Small dry spills: Move containers away from spill to a safe area. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

**7. Handling and storage**

Store and handle in accordance with all current regulations and standards.  
Protect from physical damage. Store in a cool, dry place. Store in a well-ventilated area.  
Store below 149°C. Keep separated from incompatible substances.

**8. Exposure controls/personal protection***Exposure limits:*

Phthalic anhydride:

- 2 ppm (12 mg/m<sup>3</sup>) OSHA TWA
- 1 ppm (6 mg/m<sup>3</sup>) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
- 1 ppm (6 mg/m<sup>3</sup>) ACGIH TWA
- 1 ppm (6 mg/m<sup>3</sup>) NIOSH recommended TWA 10 hour(s)
- 1 mg/m<sup>3</sup> DFG MAK 1 times/shift (total dust)
- 4 mg/m<sup>3</sup> UK OES TWA
- 12 mg/m<sup>3</sup> UK OES STEL

Measurement method: Particulate filter; Ammonium hydroxide; High-pressure liquid chromatography with ultraviolet detection; NIOSH II(3) # S179

Ventilation:

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Eye protection:

Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Clothing: Wear appropriate chemical resistant clothing.

Gloves: Wear appropriate chemical resistant gloves.

Respirator:

The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

30 mg/m<sup>3</sup>

Any dust and mist respirator.

60 mg/m<sup>3</sup>

Any dust and mist respirator.

Any air-purifying respirator with a full face-piece and a high-efficiency particulate filter.

Any powered, air-purifying respirator with a dust and mist filter.

Any supplied-air respirator.

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Any self-contained breathing apparatus with a full face-piece.

Escape –

Any air-purifying respirator with a full face-piece and a high-efficiency particulate filter.

Any appropriate escape-type, self-contained breathing apparatus.

For Unknown Concentrations or Immediately Dangerous to Life or Health –

Any supplied-air respirator with full face-piece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full face-piece.

### 9. Physical and chemical properties

Form :	solid
Color :	colorless or white
Odor :	irritating odor
molecular weight:	148.12
molecular formula:	C <sub>6</sub> H <sub>4</sub> (CO) <sub>2</sub> O
Boiling point	not applicable
Melting point	270 °F (132 °C)
sublimation point:	563 °F (295°C)
Vapor pressure	0.001 mmHg @ 30°C
Vapor density (air=1) :	5.1
Specific gravity (water=1)	1.527@4°C
Water solubility :	0.62% @ 20°C
PH value	not available
Volatility :	not available
Odor threshold :	0.32-0.72 mg/m <sup>3</sup>
Evaporation rate :	
Soluble :	alcohol, carbon disulfide
Slightly soluble :	ether

### 10. Stability and reactivity

Reactivity: Stable at normal temperatures and pressure.

Conditions to avoid:

Avoid heat, flames, sparks and other sources of ignition. Dangerous gases may accumulate in confined spaces. May ignite or explode on contact with combustible materials.

Incompatibilities:

bases, metal oxides, metals, oxidizing materials, combustible materials

Phthalic anhydride:

Bases (strong): Incompatible.

Copper(i) oxide: Violent explosion when heated.

Metals: May corrode in the presence of moisture.

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Nitric acid: Forms explosive compounds.

Oxidizers (strong): Fire and explosion hazard.

Plastics, rubber, coatings: May be attacked.

Sodium nitrite: Violent explosion when heated

Hazardous decomposition:

Thermal decomposition products: oxides of carbon

Polymerization: Will not polymerize.

### 11. Toxicological information

*Phthalic anhydride* :

Irritation data:

500 mg/24 hour(s) skin-rabbit mild; 50 mg/24 hour(s) eyes-rabbit

Toxicity data:

1530 mg/kg oral-rat LD50; >210 mg/m<sup>3</sup>/1 hour(s) inhalation-rat LC50; 1500 mg/kg oral-mouse LD50; 800 mg/kg oral-cat LD50; >10 gm/kg skin-rabbit LD50; 100 mg/kg intraperitoneal-guinea pig LD50; 100 mg/m<sup>3</sup>/2 hour(s)-2 week(s) intermittent inhalation-rat TCLo; 6 gm/kg/42 day(s) intermittent oral-guinea pig TDLo

Local effects:

Irritant: inhalation, skin, eye

Acute toxicity level:

Moderately Toxic: ingestion

Target organs: immune system (sensitizer)

Medical conditions aggravated by exposure:

allergies, respiratory disorders

Mutagenic data: DNA damage - rat liver 3 mmol/L

Reproductive effects data:

1 mg/m<sup>3</sup> inhalation-rat TCLo 45 day(s) male; 203 mg/kg intraperitoneal-mouse TDLo 8-10 day(s) pregnant female continuous

*Health effects:*

Inhalation:

Acute exposure:

Phthalic anhydride:

Signs of irritation have occurred at 25 effects may include sore throat, coughing, labored breathing, sneezing, mg/m<sup>3</sup>. Other burning sensation in the nose and throat, and nasal bleeding. When in contact with moist surfaces phthalic acid may be formed and cause more severe irritating effects. Delayed pulmonary edema may occur. Sensitization reactions may occur in previously exposed individuals.

Chronic exposure:

Phthalic anhydride: Prolonged or repeated exposure may cause mucous membrane irritation. Autonomic nervous system dysfunction has been reported in workers. Cats repeatedly exposed to 3700 mg/m<sup>3</sup> became drowsy, lost appetite and vomited, and showed signs of liver and kidney damage. Workers involved in the production of phthalic anhydride and phthalic acid experienced atrophy of the nasal mucosa, nasal discharge, coughing, hoarseness, bronchitis, wheezing, and bronchial asthma.

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### Skin contact:

#### Acute exposure:

##### Phthalic anhydride:

May cause irritation. Severe irritation with erythema and burns may occur if contact is intensive or skin is moist. Contact with molten phthalic anhydride can cause thermal burns. Sensitization dermatitis with occasional urticarial and eczematous responses may occur in previously exposed individuals.

#### Chronic exposure:

##### Phthalic anhydride:

Repeated or prolonged contact may cause a skin rash which may be allergic.

### Eye contact:

#### Acute exposure:

##### Phthalic anhydride:

Irritation has been reported at 30 mg/m<sup>3</sup>. Other effects may include redness, pain, and blurred vision. Irritating effects are reported to be more severe on moist surfaces due to the formation of phthalic acid.

#### Chronic exposure:

##### Phthalic anhydride:

Repeated or prolonged exposure to irritants may cause conjunctivitis.

### Ingestion:

#### Acute exposure:

##### Phthalic anhydride:

May cause sore throat, abdominal pain and diarrhea. In animals, lethal doses produced

#### Chronic exposure:

Phthalic anhydride: No data available.

## 12. Ecological information

Ecotoxicity data :

Fish toxicity:

32000 ug/L 60 hour(s) LOEC (Growth) Rainbow trout, donaldson trout (*Oncorhynchus mykiss*)

Fate and transport:

Bioconcentration:

3169 ug/L 48 day(s) BCF (Residue) Green algae (*Oedogonium cardiacum*) 0.50 ug/L

## 13. Disposal considerations

Subject to disposal regulations:

U.S. EPA 40 CFR 262. Hazardous Waste generally count as special waste. The disposal

Number(s): U190. Dispose in accordance with all applicable companies

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### 14. Transport information

U.S. DOT 49 CFR 172.101 shipping name-un number:  
Phthalic anhydride (>0.05% maleic anhydride)-UN2214

U.S. DOT 49 CFR 172.101 hazard class or division: 8

U.S. DOT 49 CFR 172.101 packing group: III

U.S. DOT 49 CFR 172.101 and subpart e labeling requirements: Corrosive

U.S. DOT 49 CFR 172.101 packaging authorizations:

Exceptions: 49 cfr 173.154

Non-bulk packaging: 49 cfr 173.213

Bulk packaging: 49 cfr 173.240

U.S. DOT 49 CFR 172.101 quantity limitations:

Passenger aircraft or railcar: 25 kg

Cargo aircraft only: 100 kg

Land transport adr/rid:

Substance name: Phthalic anhydride

UN number: UN2214

Adr/rid class: 8

Item number: 31(°C)

Warning sign/label: 8

Hazard id number: 80

Air transport IATA/ICAO:

Correct technical name: Phthalic anhydride with more than 0.05% of maleic anhydride

UN/ID number: UN2214

IATA/ICAO class: 8

Packaging group: III

Label: Corrosive

Maritime transport imdg:

Correct technical name: Phthalic anhydride with more than 0.05% maleic anhydride, solid

UN/ID number: UN2214

Imdg class: 8

Packaging group: III

EmS No.: 8-05

MFAG Table No.: 700

Marine pollutant: N

### 15. Regulatory information

U.S. regulations:

TSCA inventory status: Y

TSCA 12(b) export notification: not listed.

Cercla section 103 (40CFR302.4): Y

Phthalic anhydride: 5000 LBS RQ

SARA section 302 (40CFR355.30): N

SARA section 304 (40CFR355.40): N

SARA section 313 (40CFR372.65): Y

Phthalic anhydride

SARA hazard categories, sara sections 311/312 (40CFR370.21):

Acute: Y

Chronic: Y

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Fire: N  
Reactive: N  
Sudden release: N  
OSHA process safety (29CFR1910.119): N

State regulations:

California Proposition 65: N

European regulations:

EC number (eines): 201-607-5

EC risk and safety phrases:

R 36/37/38 Irritating to eyes, respiratory system and skin.

S 2 Keep out of reach of children.

Concentration limits:

C  $\geq$  5% Xi R 36/37/38

German regulations:

water hazard class (WGK): 0 (Official German Classification)

## 16. Disposal considerations

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.