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THE POWER OF THREE<sup>3</sup>

**PHARMCO-AAPER**

AND COMMERCIAL ALCOHOLS

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

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**MATERIAL SAFETY DATA SHEETS**

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Phthalic Anhydride

**1. Product Identification**

**Synonyms:** 1,3 Isobenzofurandione; 1,3 Dixophthalan; 1,2 Benzenedicarboxylic acid anhydride; Phthalic acid anhydride; 1, 2-Benzenedicarboxylic anhydride; 1,3-Phthalandion;

**CAS No.:** 85-44-9

**Molecular Weight:** 148.12

**Chemical Formula:** C<sub>8</sub>H<sub>4</sub>O<sub>3</sub>

**2. Composition/Information on Ingredients**

Ingredient	CAS No	Percent	Hazardous
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Phthalic Anhydride	85-44-9	99 - 100%	Yes
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**3. Hazards Identification**

**Emergency Overview**

**DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION.**

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**Health Rating:** 2 - Moderate

**Flammability Rating:** 1 - Slight

**Reactivity Rating:** 2 - Moderate

**Contact Rating:** 2 - Moderate (Corrosive)

**Lab Protective Equip:** GOGGLES; LAB COAT; PROPER GLOVES

**Storage Color Code:** White Stripe (Store Separately)

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**Potential Health Effects**

Contact with water causes formation of phthalic acid, which is responsible for the corrosive effects.

Corrosive effects may be delayed several hours.

**Inhalation:** Inhalation of vapor, fume or dust is a primary irritant. Coughing, choking, as well as headache and dizziness can occur. May cause allergic respiratory reaction.

**Ingestion:** Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach. Can cause sore throat, vomiting, diarrhea.

**Skin Contact:** Corrosive. Symptoms of redness, pain, and severe burn can occur. May cause allergic skin reactions.

**Eye Contact:** Conjunctival edema and corneal destruction can occur. Symptoms include pain, tearing, and photophobia.

**Chronic Exposure:** Chronic exposure by inhalation or skin contact can cause allergic sensitization. Causes liver and kidney effects in laboratory animals.

**Aggravation of Pre-existing Conditions:** Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance.

#### **4. First Aid Measures**

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:** If swallowed, **DO NOT INDUCE VOMITING**. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:** Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

#### **5. Fire Fighting Measures**

**Fire:** Flash point: 152C (306F)

Autoignition temperature: 570C (1058F)

Flammable limits in air % by volume: lel: 1.7; uel: 10.5

Combustible solid. Slight fire hazard when exposed to heat or flame.

**Explosion:** Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum explosive dust concentration: 0.015 ox/ft<sup>3</sup>. The ignition temperature for the dust cloud is 1202F (650C). Inerting air with CO<sub>2</sub> to below 14% oxygen will prevent dust explosions.

**Fire Extinguishing Media:** Water spray, dry chemical, alcohol foam, or carbon dioxide. Water or foam may cause frothing.

**Special Information:** In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full-facepiece operated in the pressure demand or other positive pressure mode.

#### **6. Accidental Release Measures**

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use nonsparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

#### **7. Handling and Storage**

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Reacts with moisture to form phthalic acid, which can corrode metals liberating hydrogen. Avoid dust formation and control ignition sources. Employ grounding, venting and explosion relief provisions in accord with accepted engineering practices in any process capable of generating dust and/or static electricity. Empty only into inert or non-flammable atmosphere. Emptying contents into a non-inert atmosphere where flammable vapors may be present could cause a flash fire or explosion due to electrostatic discharge. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

#### **8. Exposure Controls/Personal Protection**

**Airborne Exposure Limits: Phthalic anhydride:**

-OSHA Permissible Exposure Limit (PEL): 2 ppm (12 mg/m<sup>3</sup>) (TWA)

-ACGIH Threshold Limit Value (TLV): 1 ppm (6.1 mg/m<sup>3</sup>) (TWA), Sensitizer, A4 - Not Classifiable as a Human

Carcinogen.

**Ventilation System:** A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH-Approved):** If the exposure limit is exceeded, and engineering controls are not feasible, a full-facepiece respirator with an organic vapor cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

**Skin Protection:** Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Rubber and neoprene are recommended materials for personal protective equipment.

**Eye Protection:** Use chemical safety goggles and/or full-faceshield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## 9. Physical and Chemical Properties

**Appearance:** Thin white flakes.

**Odor:** Characteristic choking odor.

**Solubility:** 0.62 g/100 g water @ 20C (68F) reacts slowly.

**Specific Gravity:** 1.53 @ 20C

**pH:** No information found.

**% Volatiles by volume @ 21C (70F):** 0

**Boiling Point:** 295C (563F)

**Melting Point:** 132C (270F)

**Vapor Density (Air=1):** 6.6

**Vapor Pressure (mm Hg):** 0.0002 @ 20C (68F)

**Evaporation Rate (BuAc=1):** No information found.

## 10. Stability and Reactivity

**Stability:** Stable under ordinary conditions of use and storage. Heat will contribute to instability. When molten

it should be covered with inert gas.

**Hazardous Decomposition Products:** Carbon dioxide and carbon monoxide may form when heated to decomposition. Slowly reacts with water to form phthalic acid.

**Hazardous Polymerization:** Will plasticize some organics and form resins. Will not undergo autopolymerization.

**Incompatibilities:** Strong oxidizers. Nitric acid, sodium nitrite, copper oxide.

**Conditions to Avoid:** Heat, flame, ignition sources, dusting, moisture and incompatibles.

## 11. Toxicological Information

**Toxicological Data:** Phthalic anhydride: Oral rat LD50: 4020 mg/kg; inhalation rat LC50: > 210 mg/m<sup>3</sup>/1-

hour; skin rabbit LD50: > 10 gm/kg. Irritation data: Skin rabbit, Standard Draize, 500 mg/24H mild; Eye rabbit, Standard Draize, 100 mg severe. Investigated as a tumorigen, mutagen, reproductive effector.

**Reproductive Toxicity:** Has shown teratogenic effects in laboratory animals.

-----\Cancer Lists\-----

---NTP Carcinogen---

Ingredient Known Anticipated IARC Category

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Phthalic Anhydride (85-44-9) No No None

### 12. Ecological Information

**Environmental Fate:** When released to moist soil or water, this material is expected to hydrolyze. When released into water, this material is not expected to evaporate significantly. When released into the water, this material is expected to have a half-life of less than 1 day. This material has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to have a half-life of greater than 30 days.

**Environmental Toxicity:** No information found.

### 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

### 14. Transport Information

**Domestic (Land, D.O.T.)**

-----**Proper Shipping Name: PHTHALIC ANHYDRIDE**

**Hazard Class: 8**

**UN/NA: UN2214**

**Packing Group: III**

### 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient TSCA EC Japan Australia

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Phthalic Anhydride (85-44-9) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----

--Canada--

Ingredient Korea DSL NDSL Phil.

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Phthalic Anhydride (85-44-9) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----

-SARA 302- ----SARA 313-----

Ingredient RQ TPQ List Chemical Catg.

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Phthalic Anhydride (85-44-9) No No Yes No

-----\Federal, State & International Regulations - Part 2\-----

-RCRA- -TSCAIngredient

CERCLA 261.33 8(d)

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Phthalic Anhydride (85-44-9) 5000 U190 No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No

Reactivity: No (Pure / Solid)

**WHMIS:** This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal or greater than the reportable quantities (RQs) in 40 CFR 302.4. Components present in this product at a level which could require reporting under the statute are:

Chemical Name	CAS Number	RQ
Phthalic anhydride	85-44-9	5,000lb

**16. Other Information**

**NFPA Ratings:** Health: 3 Flammability: 1 Reactivity: 0

**Label Hazard Warning:** DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN

AIR. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION.

**Label Precautions:** Do not breathe dust.

Keep container closed.

Use only with adequate ventilation.

Do not get in eyes, on skin, or on clothing.

Wash thoroughly after handling.

Avoid dust cloud in presence of an ignition source.

**Label First Aid:** If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

**Product Use:** Laboratory Reagent.

The information contained herein is based on data considered to be accurate based on the material as packaged. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It is the user's obligation to determine the conditions of safe use of the product. While this MSDS is based on technical data judged to be reliable, PHARMCO-AAPER assumes not responsibility for the completeness or accuracy of the information contained herein.