1. Identification

Product identifier: PHTHALIC ANHYDRIDE FLAKE

Other means of identification
- Product code: 1002
- Recommended use: Chemical intermediate
- Recommended restrictions: For industrial use only.

Manufacturer/Importer/Supplier/Distributor information

- Manufacturer: Stepan Company
- Address: 22 West Frontage Road Northfield, IL 60093 USA
- Telephone: General 1-847-446-7500
- Emergency phone number: Medical 1-800-228-5635
- Chemtrec 1-800-424-9300
- Chemtrec Int’l +1 703-527-3887

2. Hazard(s) identification

Physical hazards: Not classified.

Health hazards
- Acute toxicity, oral: Category 4
- Serious eye damage/eye irritation: Category 2A
- Sensitization, respiratory: Category 1
- Sensitization, skin: Category 1

Environmental hazards
- Hazardous to the aquatic environment, acute hazard: Category 3
- Hazardous to the aquatic environment, long-term hazard: Category 3

OSHA defined hazards: Combustible dust

Label elements

Signal word: Danger

Hazard statement
Harmful if swallowed. May cause an allergic skin reaction. Causes serious eye irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Harmful to aquatic life. May form combustible dust concentrations in air.

Precautionary statement

Prevention
Keep container tightly closed. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ground/bond container and receiving equipment. Wear eye/face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves. In case of inadequate ventilation wear respiratory protection. Prevent dust accumulation to minimize explosion hazard.

Response
If swallowed: Call a poison center/doctor if you feel unwell. If on skin: Wash with plenty of water. If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment (see this label). Rinse mouth. If skin irritation or rash occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. If experiencing respiratory symptoms: Call a poison center/doctor. Wash contaminated clothing before reuse.
3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phthalic anhydride</td>
<td></td>
<td>85-44-9</td>
<td>&gt;99.7</td>
</tr>
</tbody>
</table>

4. First-aid measures

**Inhalation**
If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

**Skin contact**
Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

**Eye contact**
Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

**Ingestion**
Rinse mouth. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

**Most important symptoms/effects, acute and delayed**
Dusts may irritate the respiratory tract, skin and eyes. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause an allergic skin reaction. Dermatitis. Rash. May cause allergic respiratory reaction.

**Indication of immediate medical attention and special treatment needed**
Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

**General information**
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

**Suitable extinguishing media**

**Unsuitable extinguishing media**
None known.

**Specific hazards arising from the chemical**
Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. During fire, gases hazardous to health may be formed.

**Special protective equipment and precautions for firefighters**
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions**
In case of fire and/or explosion do not breathe fumes. In the event of fire, cool tanks with water spray. Move containers from fire area if you can do so without risk.

**Specific methods**
Cool containers exposed to flames with water until well after the fire is out.

**General fire hazards**
May form combustible dust concentrations in air.

6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Use only non-sparking tools. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Collect spillage. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Large Spills: Wet down with water and dike for later disposal. Prevent product from entering drains. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Eliminate all sources of ignition. Minimize dust generation and accumulation. Combustible dust clouds may be created where operations produce fine material (dust). Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Handling and processing operations should be conducted in accordance with ‘best practices’ (e.g. NFPA-654). Do not taste or swallow. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Avoid contact with clothing. Provide adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and open flame. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

8. Exposure controls/personal protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phthalic anhydride (CAS 85-44-9)</td>
<td>PEL</td>
<td>12 mg/m³</td>
</tr>
<tr>
<td></td>
<td>2 ppm</td>
<td></td>
</tr>
</tbody>
</table>

US. ACGIH Threshold Limit Values Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phthalic anhydride (CAS 85-44-9)</td>
<td>TWA</td>
<td>1 ppm</td>
</tr>
</tbody>
</table>

US. NIOSH: Pocket Guide to Chemical Hazards Components

<table>
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<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phthalic anhydride (CAS 85-44-9)</td>
<td>TWA</td>
<td>6 mg/m³</td>
</tr>
<tr>
<td></td>
<td>1 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles). Wear a full-face respirator, if needed.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.
Wear appropriate chemical resistant clothing.

Respiratory protection
Do not breathe dust/fume/gas/mist/vapors/spray. In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance
Flakes.

Physical state
Solid.

Form
Solid.

Color
White.

Odor
Mild.

Odor threshold
Not available.

pH
Not available.

Melting point/freezing point
267.8 °F (131 °C) / 269.6 °F (132 °C)

Initial boiling point and boiling range
563 °F (295 °C)

Flash point
302.0 °F (150.0 °C) Pensky-Martens Closed Cup

Evaporation rate
Estimated slower than ethyl ether

Flammability (solid, gas)
Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)
Not available.

Flammability limit - upper (%)
10.4 % In Air

Explosive limit - lower (%)
Not available.

Explosive limit - upper (%)
Not available.

Vapor pressure
0.0003 hPa @ 20C

Vapor density
5.1 (air = 1)

Relative density
Not available.

Solubility(ies)

Solubility (water)
0.6 g/kg G in 100G water @ 25C

Auto-ignition temperature
1058 °F (570 °C)

Decomposition temperature
Not available.

Viscosity
Not available.

Other information

Molecular weight
148.11 g/mol

Partition coefficient (oil/water)
0.73

Specific gravity
1.53 @ 20C

10. Stability and reactivity

Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

Conditions to avoid
Keep away from heat, sparks and open flame. Avoid temperatures exceeding the flash point. Contact with incompatible materials. Minimize dust generation and accumulation.

Incompatible materials
Strong oxidizing agents.

Hazardous decomposition products
No hazardous decomposition products are known.
11. Toxicological information

Information on likely routes of exposure

**Inhalation**
- Prolonged inhalation may be harmful. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Skin contact**
- May cause an allergic skin reaction.

**Eye contact**
- Causes serious eye irritation.

**Ingestion**
- Harmful if swallowed.

**Symptoms related to the physical, chemical and toxicological characteristics**
- Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

**Acute toxicity**
- Harmful if swallowed. May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHTHALIC ANHYDRIDE FLAKE</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>&gt; 3160 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>1530 mg/kg</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation**
- Prolonged skin contact may cause temporary irritation.

**Serious eye damage/eye irritation**
- Causes serious eye irritation.

**Respiratory or skin sensitization**

**ACGIH sensitization**
- Phthalic anhydride (CAS 85-44-9)
- Dermal sensitization
- Respiratory sensitization

**Respiratory sensitization**
- May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Skin sensitization**
- May cause an allergic skin reaction.

**Germ cell mutagenicity**
- No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Carcinogenicity**
- This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

**IARC Monographs. Overall Evaluation of Carcinogenicity**
- Not listed.

**US. National Toxicology Program (NTP) Report on Carcinogens**
- Not listed.

- Not regulated.

**Reproductive toxicity**
- This product is not expected to cause reproductive or developmental effects.

**Specific target organ toxicity - single exposure**
- Not applicable.

**Specific target organ toxicity - repeated exposure**
- Not applicable.

**Aspiration hazard**
- Not applicable.

**Chronic effects**
- Prolonged inhalation may be harmful.

12. Ecological information

**Ecotoxicity**
- Harmful to aquatic life.
Product Test Results

<table>
<thead>
<tr>
<th>Species</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Algae EC50</td>
<td>60 - 350 mg/l, 72 hours</td>
</tr>
<tr>
<td>Daphnia EC50</td>
<td>640 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish LC50</td>
<td>&lt; 500 mg/l, 48 hours</td>
</tr>
</tbody>
</table>

Components Test Results

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<tr>
<td>Daphnia EC50</td>
<td>640 mg/l, 48 hours</td>
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</table>

Persistence and degradability: Readily biodegradable.
Bioaccumulative potential: Not available.
Mobility in soil: No data available.
Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions: Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazardous waste code: The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT: Not regulated as dangerous goods.
IATA: Not regulated as dangerous goods.
IMDG: Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.

15. Regulatory information

US federal regulations: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.


SARA 304 Emergency release notification: Not regulated.


SARA 302 Extremely hazardous substance: Not listed.
SARA 311/312 Hazardous chemical  No

SARA 313 (TRI reporting)  

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phthalic anhydride</td>
<td>85-44-9</td>
<td>&gt;99.7</td>
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</table>

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Phthalic anhydride (CAS 85-44-9)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)
Phthalic anhydride (CAS 85-44-9)

Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations

US - New Jersey Community RTK (EHS Survey): Reportable threshold
Phthalic anhydride (CAS 85-44-9)

US - New Jersey RTK - Substances: Listed substance
Phthalic anhydride (CAS 85-44-9)

US - Pennsylvania RTK - Hazardous Substances: Listed substance
Phthalic anhydride (CAS 85-44-9)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)
Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))
Phthalic anhydride (CAS 85-44-9)

US. Massachusetts RTK - Substance List
Phthalic anhydride (CAS 85-44-9)

US. Pennsylvania Worker and Community Right-to-Know Law
Phthalic anhydride (CAS 85-44-9)

US. Rhode Island RTK
Phthalic anhydride (CAS 85-44-9)

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory (NZioC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Taiwan Inventory (TCSI)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A “Yes” indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date  12-16-2014
Revision date  04-18-2017
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Material name: PHTHALIC ANHYDRIDE FLAKE
Material ID: 687
Product code: 1002
Version #: 03
Revision date: 04-18-2017
Print date: 04-18-2017