MATERIAL SAFETY DATA SHEET
3,3’,4,4’-benzophenonetetracarboxylic dianhydride BTDA

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name: 3,3’,4,4’-benzophenonetetracarboxylic dianhydride BTDA
Use of the Substance / Preparation: Preliminary / intermediate product for organic syntheses
Company: Evonik Degussa Corporation
379 Interpace Parkway
Parsippany, NJ 07054
USA
Telephone: 973-541-8000
Telefax: 973-541-8040
US: CHEMTREC EMERGENCY NUMBER: 800-424-9300
CANADA: CANUTEC EMERGENCY NUMBER: 613-996-6666
Product Regulatory Services: 973-541-8060

2. HAZARDS IDENTIFICATION

*** EMERGENCY OVERVIEW ***

Form: flakes, powder, free-flowing  Color: amber  Odor: odourless

May cause eye, skin and respiratory tract irritation.

POTENTIAL HEALTH EFFECTS

Eye contact
Possibly irritating.
May cause tearing, reddening and/or swelling.

Skin Contact
Possibly irritating.

Inhalation
Possibly irritating.
Dust or fumes from hot processing may cause irritation.
May cause lung sensitization, an allergic reaction, which becomes evident on re-exposure to this material.
Ingestion
Low toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Information on ingredients / Hazardous components

3,3',4,4'-benzophenonetetracarboxylic dianhydride
CAS-No. 2421-28-5 Percent (Wt./ Wt.) 97 - 100 %

4,4'-carbonylbis (1,2-Isobenzenedicarboxylic acid)
CAS-No. 2479-49-4 Percent (Wt./ Wt.) 1 - 5 %

Other information
This material is classified as hazardous under OSHA regulations.

4. FIRST AID MEASURES

General advice
Remove contaminated or saturated clothing.

Inhalation
If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If unconscious, evaluate the need for artificial respiration. Get immediate medical attention.

Skin contact
Wash off with soap and water.
Wash contaminated clothing before re-use.

Eye contact
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes or until all material has been removed. Obtain medical attention.

Ingestion
If swallowed, rinse mouth with water, then drink large quantities of water to rinse throat and dilute stomach contents. Never give anything by mouth to an unconscious person.
Seek medical advice.

5. FIRE-FIGHTING MEASURES

Flash point Not applicable.
Lower explosion limit 17 % (V)
Upper explosion limit not determined

Suitable extinguishing media
Water spray, foam, CO2, dry powder.
6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**
Ensure adequate ventilation.
Wear personal protective equipment; see section 8.

**Environmental precautions**
Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, rivers, groundwater or soil.

**Methods for cleaning up**
Scrape up.
Avoid dust formation.
Do not use a vacuum cleaning device
Collect in suitable containers.
Neutralize residues with soda ash or bicarbonate, wash away with water, and collect for disposal.

7. HANDLING AND STORAGE

**Handling**

**Safe handling advice**
Ensure adequate ventilation.
Avoid contact with skin, eyes and clothing.
Avoid breathing vapors/dust/mist.
Follow all MSDS/label precautions even after container is emptied because it may retain product residues.
Avoid dust formation.
Wash thoroughly after handling.

**Storage**

**Requirements for storage areas and containers**
Keep containers tightly closed in a dry, cool and well-ventilated place.
Avoid humidity and heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Product occupational exposure guidelines**

- 3,3',4,4'-benzophenonetetracarboxylic dianhydride
  
  **CAS-No.** 2421-28-5  **EC-No.** 219-348-1
Engineering measures
Local exhaust and mechanical ventilation recommended.

Personal protective equipment

Respiratory protection
This material does not have established exposure limits. If dust exposure is a problem, wear a NIOSH-approved dust respirator.
A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Hand protection
Use impermeable gloves to minimize skin contact (neoprene or rubber).

Eye protection
Wear safety glasses with side shields. In case dusts are formed, wear close fitting protective goggles.

Skin and body protection
A safety shower and eye wash fountain should be readily available.
To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form: flakes, powder, free-flowing
Color: amber
Odor: odourless
physical state: solid

Safety data
Melting point/range: 220 - 230 °C
Boiling point/range: 380 - 400 °C
10. STABILITY AND REACTIVITY

Conditions to avoid
None known

Materials to avoid
alkali metals, alkali hydroxide, oxidants, ammonia, amines, reducing agents, alcohols, reacts slowly with water

Hazardous decomposition products
Emits irritating fumes upon heating at 227-289 deg. C (441-552 deg. F). Decomposes at temperatures >/= 300 deg. C (572 deg. F) to form carbon monoxide, carbon dioxide, and water.

Further information
Stable under normal conditions.

11. TOXICOLOGICAL INFORMATION

Product Acute oral toxicity
LD50 Rat: 12800 mg/kg
Test substance: (solid)

Product Acute inhalation toxicity
Heating this product at temperatures near or above 215 deg. C (419 deg. F) will generate Dianhydride. Fumes from the molten material are considered highly toxic, LC50 = 135 mg/m3 (6 hour, guinea pig - fumes generated from Dianhydride at 227-289 deg. C (528-548 deg. F)). Inhalation of dusts and fumes produced from heating of the product may cause upper respiratory irritation and sensitization.

Product Acute dermal toxicity
Rabbit: > 3160 mg/kg
Test substance: (solid)

Product Skin irritation
not irritating
Test substance: (solid)
<table>
<thead>
<tr>
<th>Product</th>
<th>Eye irritation</th>
<th>not irritating</th>
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<tbody>
<tr>
<td></td>
<td>Test substance: (solid)</td>
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<table>
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<tr>
<th>Product</th>
<th>Sensitization</th>
<th>guinea pig: May cause sensitization by inhalation.</th>
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<tr>
<td></td>
<td>Test substance: (solid)</td>
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<td>Allergic reactions are possible.</td>
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<tr>
<th>Product</th>
<th>General Toxicity Information</th>
<th>Inhalation of vapours may cause irritation of the respiratory system in very susceptible persons.</th>
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<td>Repeated or long continued exposure can lead to the following symptoms: nausea, daze, headache.</td>
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</table>

<table>
<thead>
<tr>
<th>Product</th>
<th>Human experience</th>
<th>If gas/fumes/aerosols occur for short periods:</th>
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<tr>
<td></td>
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<td>Vapour during processing may be irritating to the respiratory tract and to the eyes.</td>
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<td></td>
<td>Slight eye and mucous membrane irritations are possible as a result of raising of dust.</td>
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<td></td>
<td>In analogy to other similar compounds a skin sensitisation potential is plausible.</td>
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<td></td>
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<td>Sensitive persons react with respiratory difficulties.</td>
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<td>Cases of skin sensitisation were observed.</td>
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### 12. ECOLOGICAL INFORMATION

General Ecological Information

No ecotoxicological studies are available.

### 13. DISPOSAL CONSIDERATIONS

**WASTE DISPOSAL**

Advice on disposal

Waste must be disposed of in accordance with federal, provincial and local regulations. Empty containers must be handled with care due to product residue. **DO NOT HEAT OR CUT THE EMPTY CONTAINER WITH AN ELECTRIC OR GAS TORCH.**

### 14. TRANSPORT INFORMATION

Transport/further information

Not classified as dangerous in the meaning of transport regulations.

### 15. REGULATORY INFORMATION

**US Federal Regulations**
OSHA
If listed below, chemical specific standards apply to the product or components:

- None listed

Clean Air Act Section (112)
If listed below, components present at or above the de minimus level are hazardous air pollutants:

- None listed

CERCLA Reportable Quantities
If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- None listed

SARA Title III Section 311/312 Hazard Categories
The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard

SARA Title III Section 313 Reportable Substances
If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- None listed

Toxic Substances Control Act (TSCA)
If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None listed

State Regulations

California Proposition 65
A warning under the California Drinking Water Act is required only if listed below:

- None listed
International Chemical Inventory Status

Unless otherwise noted, this product is in compliance with the inventory listing of the countries shown below. For information on listing for countries not shown, contact Evonik Degussa Corporation Product Regulatory Services Department:

- USA (TSCA)  Listed/registered

16. OTHER INFORMATION

HMIS Ratings

Health : 2
Flammability : 1
Physical Hazard : 0

Further information

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.