

MATERIAL SAFETY DATA SHEET

3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA



Material no.		Version	1.3 / US
Specification	155973	Revision date	12/19/2007
Order Number		Print Date	02/28/2008
		Page	1 / 8

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

Product information

Trade name : 3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA
3,3',4,4'-benzophenonetetracarboxylic dianhydride

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.

MATERIAL SAFETY DATA SHEET

3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA



Material no.		Version	1.3 / US
Specification	155973	Revision date	12/19/2007
Order Number		Print Date	02/28/2008
		Page	2 / 8

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.

MATERIAL SAFETY DATA SHEET

3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA



Material no.		Version	1.3 / US
Specification	155973	Revision date	12/19/2007
Order Number		Print Date	02/28/2008
		Page	3 / 8

Extinguishing media which must not be used for safety reasons

high volume water jet

Specific hazards during fire fighting

None known.

Special protective equipment for fire-fighters

As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

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

MATERIAL SAFETY DATA SHEET

3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA



Material no.		Version	1.3 / US
Specification	155973	Revision date	12/19/2007
Order Number		Print Date	02/28/2008
		Page	4 / 8

Control parameters	3 mg/m3	Time Weighted Average (TWA):(ACGIH)
type of exposition	Respirable fraction.	
Control parameters	10 mg/m3	Time Weighted Average (TWA):(ACGIH)
	Inhalable particulate.	
Control parameters	15 mg/m3	Time Weighted Average (TWA)
		Permissible Exposure Limit (PEL):(OSHA Z1)
	Total dust.	
Control parameters	5 mg/m3	Time Weighted Average (TWA)
		Permissible Exposure Limit (PEL):(OSHA Z1)
	Respirable fraction.	

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

MATERIAL SAFETY DATA SHEET**3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA**

Material no.		Version	1.3 / US
Specification	155973	Revision date	12/19/2007
Order Number		Print Date	02/28/2008
		Page	5 / 8

Flash point	Not applicable.
Lower explosion limit	17 %(V)
Upper explosion limit	not determined
Vapor pressure	not determined
Relative density	1.57 (15.6 °C)
Bulk density	510 kg/m ³ powder
Water solubility	0.26 g/l (26 °C) hydrolyses
Relative vapor density	not determined

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 \geq 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/m ³ (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)

MATERIAL SAFETY DATA SHEET

3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA



Material no.		Version	1.3 / US
Specification	155973	Revision date	12/19/2007
Order Number		Print Date	02/28/2008
		Page	6 / 8

Product Eye irritation	not irritating Test substance: (solid)
Product Sensitization	guinea pig: May cause sensitization by inhalation. Test substance: (solid) Allergic reactions are possible.
Product General Toxicity Information	Inhalation of vapours may cause irritation of the respiratory system in very susceptible persons. Repeated or long continued exposure can lead to the following symptoms: nausea, daze, headache.
Product Human experience	If gas/fumes/aerosols occur for short periods: Vapour during processing may be irritating to the respiratory tract and to the eyes. Slight eye and mucous membrane irritations are possible as a result of raising of dust. In analogy to other similar compounds a skin sensitisation potential is plausible. Sensitive persons react with respiratory difficulties. Cases of skin sensitisation were observed.

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

MATERIAL SAFETY DATA SHEET

3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA



Material no.		Version	1.3 / US
Specification	155973	Revision date	12/19/2007
Order Number		Print Date	02/28/2008
		Page	7 / 8

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

MATERIAL SAFETY DATA SHEET

3,3',4,4'-benzophenonetetracarboxylic dianhydride BTDA



Material no.		Version	1.3 / US
Specification	155973	Revision date	12/19/2007
Order Number		Print Date	02/28/2008
		Page	8 / 8

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.