

# Safety Data Sheet

## ENDURA

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### 1. Identification

#### Product identifier used on the label

**ENDURA**

#### Recommended use of the chemical and restriction on use

Recommended use\*: fungicide

\* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

#### Details of the supplier of the safety data sheet

Company:  
BASF CORPORATION  
100 Park Avenue  
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

#### Emergency telephone number

CHEMTREC: 1-800-424-9300  
BASF HOTLINE: 1-800-832-HELP (4357)

#### Other means of identification

Substance number: 134581  
EPA Registration number: 7969-197  
Molecular formula: C<sub>18</sub> H<sub>12</sub> Cl<sub>2</sub> N<sub>2</sub> O  
Synonyms: boscalid

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### 2. Hazards Identification

**According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200**

#### Classification of the product

Combustible Dust                      Combustible Dust (1)                      Combustible Dust

#### Label elements

Signal Word:  
Warning

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Hazard Statement:

May form combustible dust concentration in air.

### 3. Composition / Information on Ingredients

**According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200**

<u>CAS Number</u>	<u>Weight %</u>	<u>Chemical name</u>
188425-85-6	70.0 %	Boscalid
577-11-7	0.1 - 1.0%	sodium-di-ethyl-hexyl-sulfosuccinate
7783-20-2	7.0 - 10.0%	Ammonium sulphate
1332-58-7	1.0 - 5.0%	Kaolin

### 4. First-Aid Measures

#### Description of first aid measures

**General advice:**

Remove contaminated clothing.

**If inhaled:**

Keep patient calm, remove to fresh air.

**If on skin:**

Wash thoroughly with soap and water.

**If in eyes:**

Wash affected eyes for at least 15 minutes under running water with eyelids held open.

**If swallowed:**

Rinse mouth and then drink plenty of water.

#### Most important symptoms and effects, both acute and delayed

Symptoms: No significant reaction of the human body to the product known.

#### Indication of any immediate medical attention and special treatment needed

Note to physician

Treatment: Symptomatic treatment (decontamination, vital functions).

### 5. Fire-Fighting Measures

#### Extinguishing media

Suitable extinguishing media:

foam, dry powder, carbon dioxide, water spray

#### Special hazards arising from the substance or mixture

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Hazards during fire-fighting:

carbon monoxide, carbon dioxide, Hydrocarbons, halogenated hydrocarbons, nitrogen oxides, acid halides

If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released if the product is involved in a fire.

### Advice for fire-fighters

Protective equipment for fire-fighting:

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

### Further information:

Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to enter drains or waterways.

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## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

### Environmental precautions

Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Contain contaminated water/firefighting water.

### Methods and material for containment and cleaning up

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

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## 7. Handling and Storage

### Precautions for safe handling

RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Ensure adequate ventilation. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/ product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

Protection against fire and explosion:

The relevant fire protection measures should be noted. Fire extinguishers should be kept handy.

Avoid all sources of ignition: heat, sparks, open flame. Sources of ignition should be kept well clear.

Avoid extreme heat. Keep away from oxidizable substances. Electrical equipment should conform to

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national electric code. Ground all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

Dust explosion class: Dust explosion class 2 (Kst-value 200 up to 300 bar m s-1).

### Conditions for safe storage, including any incompatibilities

Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

Further information on storage conditions: Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed. Protect from temperatures above: 104 °F  
Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

## 8. Exposure Controls/Personal Protection

**Users of a pesticidal product should refer to the product label for personal protective equipment requirements.**

### Components with occupational exposure limits

Kaolin	OSHA PEL	PEL 5 mg/m3 Respirable fraction ; PEL 15 mg/m3 Total dust ; TWA value 10 mg/m3 Total dust ; TWA value 5 mg/m3 Respirable fraction ;
	ACGIH TLV	TWA value 2 mg/m3 Respirable fraction ; The value is for particulate matter containing no asbestos and <1% crystalline silica.

### Personal protective equipment

#### **RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:**

##### **Respiratory protection:**

Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) TC23C Chemical/Mechanical type filter system to remove a combination of particles, gas and vapours. For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

##### **Hand protection:**

Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

##### **Eye protection:**

Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

##### **Body protection:**

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

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### General safety and hygiene measures:

Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Personal protective equipment should be decontaminated prior to reuse. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work. Keep away from food, drink and animal feeding stuffs.

## 9. Physical and Chemical Properties

Form:	granules
Odour:	odourless
Odour threshold:	Not determined due to potential health hazard by inhalation.
Colour:	beige
pH value:	approx. 4.5 - 6.5 ( 10 g/l, 20 °C)
Melting point:	> 20 °C
Boiling point:	The substance / product decomposes therefore not determined.
Flash point:	not applicable
Flammability:	Based on the structure or composition there is no indication of flammability
Lower explosion limit:	As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Upper explosion limit:	As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Vapour pressure:	negligible
Density:	approx. 12.4931 Lb/USg ( 68 °F)
Vapour density:	not applicable
Partitioning coefficient n- octanol/water (log Pow):	not applicable
Self-ignition temperature:	not self-igniting
Thermal decomposition:	215 °C (DSC (DIN 51007)) carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrogen chloride, halogenated hydrocarbons, Hydrocarbons If product is heated above decomposition temperature, toxic vapours will be released. Stable at ambient temperature.
Viscosity, dynamic:	not applicable, the product is a solid
Solubility in water:	dispersible
Molar mass:	343.21 g/mol
Evaporation rate:	not applicable
Other Information:	If necessary, information on other physical and chemical parameters is indicated in this section.

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### 10. Stability and Reactivity

#### Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Oxidizing properties:

Not an oxidizer.

Dust explosivity characteristics:

Kst: 265 m.bar/s

Pmax = 7.2 BARA

Dust explosion class:

Dust explosion class 2 (Kst-value 200 up to 300 bar m s-1) (St 2)

Minimum ignition energy:

36 - 45 mJ

#### Chemical stability

The product is stable if stored and handled as prescribed/indicated.

#### Possibility of hazardous reactions

The product is chemically stable.

Hazardous polymerization will not occur. No hazardous reactions if stored and handled as prescribed/indicated.

#### Conditions to avoid

Limiting oxygen concentration: 10.5 volume %

Avoid all sources of ignition: heat, sparks, open flame. This product may form an explosive mixture if:

1. the dust is suspended in the atmosphere as a dust cloud AND 2. the concentration of the dust is above the lower explosion limit (LEL) AND 3. the limiting oxygen concentration (LOC) is exceeded.

#### Incompatible materials

strong oxidizing agents, strong bases, strong acids

#### Hazardous decomposition products

Decomposition products:

Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated., Prolonged thermal loading can result in products of degradation being given off.

Thermal decomposition:

215 °C (DSC (DIN 51007))

Possible thermal decomposition products:

carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrogen chloride, halogenated hydrocarbons, Hydrocarbons

If product is heated above decomposition temperature, toxic vapours will be released. Stable at ambient temperature.

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### 11. Toxicological information

#### Primary routes of exposure

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Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

### Acute Toxicity/Effects

#### Acute toxicity

Assessment of acute toxicity: Moderately toxic after single ingestion. Slightly toxic after short-term skin contact. Slightly toxic after short-term inhalation.

#### Oral

Type of value: LD50  
Species: rat (male/female)  
Value: > 2,000 mg/kg (OECD Guideline 423)  
No mortality was observed.

#### Inhalation

Type of value: LC50  
Species: rat (male/female)  
Value: > 5.4 mg/l (OECD Guideline 403)  
Exposure time: 4 h

#### Dermal

Type of value: LD50  
Species: rat (male/female)  
Value: > 2,000 mg/kg (OECD Guideline 402)  
No mortality was observed.

#### Assessment other acute effects

Assessment of STOT single:  
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

The product has not been tested. The statement has been derived from the properties of the individual components.

#### Irritation / corrosion

Assessment of irritating effects: May cause slight irritation to the skin. May cause moderate but temporary irritation to the eyes.

#### Skin

Species: rabbit  
Result: non-irritant

#### Eye

Species: rabbit  
Result: Slightly irritating.  
Method: OECD Guideline 405

#### Sensitization

Assessment of sensitization: Skin sensitizing effects were not observed in animal studies. Some individuals may develop an allergic dermatitis.

### Chronic Toxicity/Effects

#### Repeated dose toxicity

Assessment of repeated dose toxicity: The product has not been tested. The statement has been derived from the properties of the individual components.

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*Information on: boscalid (ISO); 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-nicotinamide*  
*Assessment of repeated dose toxicity: Adaptive effects were observed after repeated exposure in animal studies.*

*Information on: Kaolin*  
*Assessment of repeated dose toxicity: Repeated inhalative uptake of particles/dust reaching the alveoli may cause damage to the lungs.*

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### Genetic toxicity

Assessment of mutagenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Mutagenicity tests revealed no genotoxic potential.

### Carcinogenicity

Assessment of carcinogenicity: The product has not been tested. The statement has been derived from the properties of the individual components.

*Information on: boscalid (ISO); 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-nicotinamide*  
*Assessment of carcinogenicity: In long-term studies in rats the substance induced thyroid tumors. The effect is caused by an animal specific mechanism that has no human counter part. In long-term studies in mice in which the substance was given by feed, a carcinogenic effect was not observed.*

*Information on: Kaolin*  
*Assessment of carcinogenicity: The American Conference of Governmental Industrial Hygienists (ACGIH) has classified this substance as Group A4 - Not classifiable as human carcinogen.*

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### Reproductive toxicity

Assessment of reproduction toxicity: The product has not been tested. The statement has been derived from the properties of the individual components. The results of animal studies gave no indication of a fertility impairing effect.

### Teratogenicity

Assessment of teratogenicity: The product has not been tested. The statement has been derived from the properties of the individual components. Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

## **Symptoms of Exposure**

No significant reaction of the human body to the product known.

### Medical conditions aggravated by overexposure

Individuals with allergic history or pre-existing dermatitis should use extra precautions when handling this product.

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## **12. Ecological Information**

### **Toxicity**

#### Aquatic toxicity

Assessment of aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms.



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### Toxicity to fish

LC50 (96 h) 420 mg/l, *Cyprinus carpio*

### Aquatic invertebrates

EC50 (48 h) > 1,000 mg/l, *Daphnia magna*

### Aquatic plants

EC50 (72 h) 150 mg/l, *Pseudokirchneriella subcapitata*

No observed effect concentration (72 h) 32 mg/l, *Pseudokirchneriella subcapitata*

### Assessment of terrestrial toxicity

With high probability not acutely harmful to terrestrial organisms.

### Other terrestrial non-mammals

#### *Information on: Boscalid*

*LD50 > 2,000 mg/kg, Colinus virginianus*

*LC50, Colinus virginianus*

*LC50, Anas platyrhynchos*

*LD50 > 200 ug/bee, Apis mellifera*

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## **Bioaccumulative potential**

### Bioaccumulation potential

*Information on: boscalid (ISO); 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-nicotinamide*

*Bioconcentration factor: 57 - 70 (28 d), Oncorhynchus mykiss*

*Does not accumulate in organisms.*

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## **Mobility in soil**

### Assessment transport between environmental compartments

The product has not been tested. The statement has been derived from the properties of the individual components.

*Information on: boscalid (ISO); 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-nicotinamide*

*Following exposure to soil, adsorption to solid soil particles is probable, therefore contamination of groundwater is not expected.*

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## **Additional information**

### Other ecotoxicological advice:

The ecological data given are those of the active ingredient. Do not release untreated into natural waters.

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## **13. Disposal considerations**

### **Waste disposal of substance:**

Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions,

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contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

### Container disposal:

Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

### RCRA:

This product is not regulated by RCRA.

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## 14. Transport Information

### Land transport

USDOT

Not classified as a dangerous good under transport regulations

### Sea transport

IMDG

Not classified as a dangerous good under transport regulations

### Air transport

IATA/ICAO

Not classified as a dangerous good under transport regulations

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## 15. Regulatory Information

### Federal Regulations

#### Registration status:

Crop Protection TSCA, US released / exempt

Chemical TSCA, US blocked / not listed

EPCRA 311/312 (Hazard categories): Acute; Chronic

### State regulations

#### State RTK

<u>State RTK</u>	<u>CAS Number</u>	<u>Chemical name</u>
PA	7783-20-2	Ammonium sulphate
	1332-58-7	Kaolin
MA	7783-20-2	Ammonium sulphate
	1332-58-7	Kaolin
NJ	7783-20-2	Ammonium sulphate
	1332-58-7	Kaolin

#### CA Prop. 65:

CA PROP 65: An assessment has determined that there is no significant risk present., PROP 65 warning(s) are not required for this product.

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### HMIS III rating

Health: 3      Flammability: 1      Physical hazard:0

### Labeling requirements under FIFRA

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label.

#### WARNING:

Causes substantial but temporary eye injury.

HARMFUL IN CONTACT WITH SKIN.

HARMFUL IF SWALLOWED.

MAY CAUSE ALLERGIC SKIN REACTION.

KEEP OUT OF REACH OF CHILDREN.

KEEP OUT OF REACH OF DOMESTIC ANIMALS.

Avoid contact with the skin, eyes and clothing.

## 16. Other Information

### SDS Prepared by:

BASF NA Product Regulations

SDS Prepared on: 2016/05/06

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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