

SAFETY DATA SHEET

GHS

United States

Section 1. Product and company identification

Product name DURAX® (CBS) POWDER In case of emergency

1-203-853-1400

Supplier/Manufacturer Vanderbilt Chemicals, LLC Chemtrec: 1-800-424-9300

Outside US: +1-703-527-3887

30 Winfield Street Norwalk, CT 06855

Chemical name N-cyclohexyl-2-benzothiazolesulfenamide

20850

Synonym CBTS, 2-benzothiazolesulfenamide, N-cyclohexyl-,

Material uses Accelerator.

Product type Powder.

Section 2. Hazards identification

OSHA/HCS status This material is considered hazardous by the OSHA Hazard Communication Standard

(29 CFR 1910.1200).

Classification of the COMBUSTIBLE DUSTS

substance or mixture SKIN SENSITIZATION - Category 1

GHS label elements
Hazard pictograms

Code



Signal word Warning

Hazard statements May form combustible dust concentrations in air.

May cause an allergic skin reaction.

Precautionary statements

Prevention Wear protective gloves. Avoid breathing dust. Contaminated work clothing should not

be allowed out of the workplace.

Response IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before

reuse. If skin irritation or rash occurs: Get medical attention.

Storage Not applicable.

Disposal Dispose of contents and container in accordance with all local, regional, national and

international regulations.

Supplemental label

elements

Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames

and other ignition sources. No smoking. Prevent dust accumulation.

Hazards not otherwise

classified

Fine dust clouds may form explosive mixtures with air. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes,

skin, nose and throat.

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Section 3. Composition/information on ingredients

Substance/mixture Substance

Ingredient name	CAS number	% by weight
N-cyclohexyl-2-benzothiazolesulfenamide	95-33-0	>99

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact Immediately flush eyes with plenty of water, occasionally lifting the upper and lower

eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10

minutes. Get medical attention if irritation occurs.

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. If

not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar,

tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical

surveillance for 48 hours.

Skin contact Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash

contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean

shoes thoroughly before reuse.

Ingestion Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and

keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately.

Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact Exposure to airborne concentrations above statutory or recommended exposure limits

may cause irritation of the eyes.

Inhalation Exposure to airborne concentrations above statutory or recommended exposure limits

may cause irritation of the nose, throat and lungs. Exposure to decomposition products

may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact May cause an allergic skin reaction.

Ingestion No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact Adverse symptoms may include the following:

irritation redness

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Section 4. First aid measures

Inhalation Adverse symptoms may include the following:

respiratory tract irritation

coughing

Skin contact Adverse symptoms may include the following:

> irritation redness

No specific data. Ingestion

Indication of immediate medical attention and special treatment needed, if necessary

In case of inhalation of decomposition products in a fire, symptoms may be delayed. Notes to physician

The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments No specific treatment.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may

be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash

contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing

media

Unsuitable extinguishing

media

In case of fire, use water spray (fog), foam, dry chemical or CO2.

Do not use water jet.

Specific hazards arising from the chemical

Hazardous thermal

decomposition products

Fine dust clouds may form explosive mixtures with air.

Decomposition products may include the following materials: carbon dioxide

carbon monoxide nitrogen oxides sulfur oxides

Special protective actions

for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water

spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Remark

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

As with any dry material, pouring or allowing to free-fall or to be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come in contact

with the material or its container.

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Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill

Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill

Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing dust. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

The following substances may be present after storage and/or during processing: mercaptobenzothiazole disulfide, cyclohexylamine, 2-mercaptobenzothiazole and benzothiazole.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles. Recommended: splash goggles

Skin protection

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: lab coat

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

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Section 8. Exposure controls/personal protection

Respiratory protection

Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: Dust respirator.

Personal protective equipment (Pictograms)



Section 9. Physical and chemical properties

Appearance

Physical state Solid. [Powder.]
Color Tan. [Light]

Odor Amine-like. [Slight]
Odor threshold Not available.
pH Not available.

Melting point 100 to 105°C (212 to 221°F)

Boiling point Not available.

Flash point Open cup: 177°C (350.6°F) [Cleveland.]

Burning timeNot available.Burning rateNot available.Evaporation rateNot available.

Flammability (solid, gas)

As with any dry material, pouring or allowing to free-fall or to be conveyed through

chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come in contact

with the material or its container.

Lower and upper explosive

(flammable) limits

Not available.

Vapor pressure Not available.
Vapor density Not available.

Density 1.3 g/cm³ [25°C (77°F)]

Relative density 1.3

Solubility Insoluble in the following materials: cold water.

Solubility in water Not available.

Partition coefficient: n- Not available.

octanol/water

Auto-ignition temperature 339°C (642.2°F)

Decomposition temperature Not available.

SADT Not available.

Viscosity Not available.

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Section 10. Stability and reactivity

ReactivityNo specific test data related to reactivity available for this product or its ingredients.

Chemical stability The product is stable.

Possibility of hazardous

reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoidAvoid the creation of dust when handling and avoid all possible sources of ignition

(spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Prevent dust

accumulation.

Incompatible materials Reactive or incompatible with the following materials:

oxidizing materials

Hazardous decomposition

products

Under normal conditions of storage and use, hazardous decomposition products should

not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
N-cyclohexyl- 2-benzothiazolesulfenamide	LD50 Dermal	Rabbit	>7940 mg/kg	-
	LD50 Oral	Rat	5300 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
N-cyclohexyl- 2-benzothiazolesulfenamide	Eyes - Mild irritant	Rabbit	-	100 Percent	-
	Skin - Mild irritant	Rabbit	_	100 Percent	-

Conclusion/Summary

Respiratory Inhalation of dust may cause respiratory irritation.

Sensitization

Product/ingredient name	Route of exposure	Species	Result
N-cyclohexyl- 2-benzothiazolesulfenamide	skin	Human	Sensitizing

Mutagenicity

Product/ingredient name	Test	Experiment	Result
N-cyclohexyl- 2-benzothiazolesulfenamide	-	Experiment: In vitro Subject: Bacteria	Negative

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Section 11. Toxicological information

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Conclusion/Summary No teratogenic effects were observed when groups of 25 mated female rats were

treated orally with CBTS at dosages of 100, 300 or 500 mg/kg on days 6-15 of gestation. However, a published study reports an increase in embryonic mortality and a slight decrease in fetal body weight at 2000 mg/kg. Also, 2000 mg/kg of CBTS administered orally to female and male rats prior to mating caused an increase in total embryonic mortality with treated females and in untreated females

mated with treated males.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely

routes of exposure

Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

Eye contact Exposure to airborne concentrations above statutory or recommended exposure

limits may cause irritation of the eyes.

Inhalation Exposure to airborne concentrations above statutory or recommended exposure

limits may cause irritation of the nose, throat and lungs.

Skin contact May cause an allergic skin reaction.

Ingestion No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Adverse symptoms may include the following: **Eye contact**

irritation redness

Inhalation Adverse symptoms may include the following:

respiratory tract irritation

coughing

Skin contact Adverse symptoms may include the following:

> irritation redness

Ingestion No specific data.

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Section 11. Toxicological information

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate

Not available.

effects

Potential delayed effects Not available.

Long term exposure

Potential immediate

Not available.

effects

Potential delayed effects Not available.

Potential chronic health effects

Not available.

General Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Once sensitized, a severe allergic reaction may occur when subsequently exposed

to very low levels.

CarcinogenicityNo known significant effects or critical hazards.MutagenicityNo known significant effects or critical hazards.TeratogenicityNo known significant effects or critical hazards.Developmental effectsNo known significant effects or critical hazards.Fertility effectsNo known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Other information Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
N-cyclohexyl- 2-benzothiazolesulfenamide	Acute EC50 0.15 mg/l	Algae	72 hours
	Acute EC50 0.79 mg/l Acute LC50 2.1 mg/l	Daphnia Fish	48 hours 96 hours

Persistence and degradability

Product/ingredient name	Test	Result		Dose		Inoculum
N-cyclohexyl- 2-benzothiazolesulfenamide	-	0 % - Not r	eadily - 28 days	-		-
Product/ingredient name	Aquatic half-life		Photolysis		Biodeg	radability
N-cyclohexyl- 2-benzothiazolesulfenamide	-		-		Not rea	adily

Bioaccumulative potential

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Section 12. Ecological information

Product/ingredient name	LogPow	BCF	Potential
N-cyclohexyl- 2-benzothiazolesulfenamide	5	-	high

Mobility in soil

Soil/water partition coefficient (Koc)

Not available.

Other adverse effects

No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN3077	Environmentally hazardous substance, solid, n.o.s. (N-cyclohexyl-2-benzothiazolesulfenamide)	9	III	* 2	Remarks Marine pollutant
TDG Classification	UN3077	Environmentally hazardous substance, solid, n.o.s. (N-cyclohexyl-2-benzothiazolesulfenamide)	9	III		Remarks Marine pollutant
			440,0047			10/10

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DURAX® (CBS) POWDE	ER .					
Section 14. Transport information						
ADR/RID Class	UN3077	Environmentally hazardous substance, solid, n.o.s. (N-cyclohexyl-2-benzothiazolesulfenamide)	9	III	1 1 1 1 1 1 1 1 1 1	Remarks Marine pollutant
IMDG Class	UN3077	Environmentally hazardous substance, solid, n.o.s (N-cyclohexyl-2-benzothiazolesulfenamide)	9	III	1 1 1 1 1 1 1 1 1 1	Remarks Marine pollutant
IATA-DGR Class	UN3077	Environmentally hazardous substance, solid, n.o.s. (N-cyclohexyl-2-benzothiazolesulfenamide)	9	III		Remarks Marine pollutant

PG*: Packing group

Section 15. Regulatory information

<u>United States inventory (TSCA 8b)</u> All components are listed or exempted.

U.S. Federal regulations

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ Not applicable.

SARA 311/312

Classification COMBUSTIBLE DUSTS

SKIN SENSITIZATION - Category 1

Composition/information on ingredients

Name	%	Classification
N-cyclohexyl- 2-benzothiazolesulfenamide	>99	SKIN SENSITIZATION - Category 1

State regulations

MassachusettsNone of the components are listed.New YorkNone of the components are listed.New JerseyNone of the components are listed.PennsylvaniaNone of the components are listed.California Prop. 65None of the components are listed.

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Section 15. Regulatory information

International regulations

Australia inventory (AICS) All components are listed or exempted.

Canada inventory All components are listed or exempted.

China inventory (IECSC)All components are listed or exempted.

Europe inventory All components are listed or exempted.

Japan inventory (ENCS) All components are listed or exempted.

Korea inventory (KECI) All components are listed or exempted.

New Zealand Inventory of Chemicals

(NZIoC)

All components are listed or exempted.

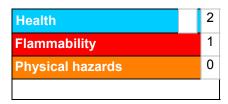
Philippines inventory (PICCS) All components are listed or exempted.

Taiwan Chemical Substances All components are listed or exempted.

Inventory (TCSI)

Section 16. Other information

Hazardous Material Identification System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

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Section 16. Other information

Key to abbreviations ATE = Acute Toxicity Estimate

BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

IATA = International Air Transport Association

IBC = Intermediate Bulk Container

IMDG = International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973

as modified by the Protocol of 1978. ("Marpol" = marine pollution)

UN = United Nations

References Not available.

Information contact Vanderbilt Global Services, LLC

Corporate Risk Management

1-203-295-2143

Visit www.vanderbiltchemicals.com for more information.

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