

MATERIAL SAFETY DATA SHEET

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SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- a. **Product Identifier** SENATOR[®] 70 WP AGRICULTURAL FUNGICIDE
Pest Control Products Act Number: 25343
Formulation Number: C0015
Chemical Classes: Benzimidazole fungicide
Synonym: Thiophanate-methyl
- b. **Name of Supplier, Address and Emergency Telephone Number** - See above.
- c. **Name of Manufacturer, Address and Emergency Telephone Number** - See above.
- d. **Product Use:** Wettable powder fungicide to be mixed in water for agricultural use.
- e. **Date of MSDS Preparation:** March 17, 2005
- f. **Name and Telephone Number of Party Responsible for MSDS Preparation:**
Prepared by Engage Agro as a direct copy of Easout Ag Label (PCP # 12279) for which MSDS was prepared by International Compliance Centre for Novartis Crop Protection Canada Inc. - For further information, contact Brenda Nailor at 519-826-7878

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

- a. **Chemical Identity and CAS Registry No. of hazardous ingredients (WHMIS Controlled Products) present at 1.0%, or 0.1% as appropriate, by weight.** None other than as in Section 2g.
- b. **Ingredients present which are on the WHMIS Ingredient Disclosure List at, or above, the minimum concentration specified on the List.** None.
- c. **Ingredients with unknown toxicological properties:** None.
- d. **Ingredients the supplier believes may be harmful:** None other than as in Section 2g.
- e. **PIN (Transport Canada - Product Identification Number) for the entire product:** Not applicable.
- f. **Generic chemical identity and Registry Number for trade secret ingredients registered under the Hazardous Materials Information Review Commission:** Not applicable.
- g. **Ingredient concentration in units of wt./wt., vol./vol. or wt./vol.** expressed as: i) actual concentration, or ii) a range as specified in the Controlled Product Regulations.
Thiophanate methyl - 70% (wt./wt.)
CAS Number 23564-05-8
Chemical name: Dimethyl (1,2-phenylenebis(iminocarbonothioyl))biscarbamate
- h. **Exposure limits for ingredients:** Particulates Not Otherwise Classified TLV-TWA 10 mg/m³

SECTION 3 HAZARDS IDENTIFICATION

Potential Health Effects:

- a. **Relevant routes of exposure**
- b. **Adverse health effects from exposure to product or ingredients of product:**
- i) length of exposure
 - ii) severity of effect
 - iii) target organ
 - iv) type of effect
 - v) signs and symptoms

Overexposure effects:

Acute: No human experience. Test animals showed a drop in blood pressure with tremors and convulsions after massive doses. Some individuals may develop an allergy.

INGESTION: practically nontoxic. Oral LD50 rat exceeds 6 g/kg

INHALATION: practically nontoxic.

SKIN: practically nontoxic. Dermal LD50 rat exceeds 10 g/kg mildly irritating

Sensitizing. A skin sensitization reaction indicates that some individuals may develop allergy to this product.

EYE: Minimally irritating.

vi) **medical conditions known to be aggravated:** Individuals with known sensitivity to thiophanate methyl should not be exposed to this product. Individuals with allergic history or pre-existing dermatitis should use extra care in handling this product.

SECTION 4 FIRST AID MEASURES

IF POISONING IS SUSPECTED, or any symptoms are serious, immediately contact the poison information centre, doctor or nearest hospital. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms, and follow the advice given.

EYES: Flush eyes with clean water, holding eyelids apart. Obtain medical attention if irritation occurs.

SKIN: Immediately remove contaminated clothing and wash skin, hair and fingernails thoroughly. Obtain medical attention if irritation occurs.

INHALATION: Move to fresh air, clean up, and rest.

INGESTION: If a large amount was swallowed, give water to drink and induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or poison control centre (1-800-267-1373) immediately. Apply artificial respiration if necessary.

NOTE TO PHYSICIAN: Thiophanate methyl is a benzimidazole fungicide. There is no specific antidote. It would be difficult to swallow significant amounts. Rapid elimination from the body is expected. Treat according to symptoms.

SECTION 5 FIRE FIGHTING MEASURES

1. **Flash point and method:** Not applicable.
2. **Upper and lower flammable (explosive) limits in air:** Not available.
3. **Autoignition temperature:** Not applicable.
4. **Hazardous combustion products:** Thermal decomposition product may include carbon monoxide and hydrogen cyanide.
5. **Conditions under which flammability could occur:** The product presents a possible dust explosion hazard, but is not impact or shock sensitive.
6. **Extinguishing media:** All are compatible. Avoid excessive water.
7. **Special fire fighting procedures:** Self-contained breathing apparatus and full protective clothing. Treat as a solid chemical type fire where discharges to the environment are to be controlled as quickly as possible. Use of buildings, area and equipment is to be prevented until properly decontaminated.
7. **Sensitivity to explosion by mechanical impact:** None.
8. **Sensitivity to explosion by static discharge:** Possible dust explosion hazard.

SECTION 6 ACCIDENTAL RELEASE MEASURES

a. **Procedures for dealing with release or spill:** Wear protective clothing (see Section 8). Avoid creating dust. Stop further release or spread of contamination. Sweep up spilled material and packages and collect in a disposable container. Wash area with detergent and water. On soils, skim off the upper contaminated layer and collect for disposal. Spread the remainder out over a larger area. Check local spill reporting regulations.

SECTION 7 HANDLING AND STORAGE

a. **Handling practices:** KEEP OUT OF REACH OF CHILDREN. Avoid dust. Stop work, remove protective equipment, and wash hands before eating, smoking, drinking, or using the toilet. Clean up spilled material immediately, and clean clothes, equipment, and work area after use. Keep product, wash or rinse water, and contaminated materials out of water, away from crops, and away from access by people, animals, or birds.

b. **Appropriate storage practices/requirements:** Store in original container only in a well-ventilated, cool, dry, secure area set aside for fungicides. Keep separate from other products to prevent cross contamination. Rotate stock. Clean up spilled material and patch broken bags immediately.

National Fire Code classification: Not applicable.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

a. **Applicable control measures, including engineering controls:** Ensure work areas have ventilation, containment, and procedures sufficient to maintain airborne levels below the TLV. Warehouses, production areas, parking lots and waste holding facilities must have adequate containment to prevent environmental contamination. Provide separate shower and eating facilities. KEEP OUT OF REACH OF CHILDREN and animals. Keep out of water supplies, ground water or open water.

b. **Personal protective equipment for each exposure route:**

Eye contact: Wear safety glasses or goggles when direct exposure to product, dust, splash or spray is likely.

Skin contact: Wear full-length work clothing, enclosed boots, and a hat. Wear nitrile gloves and an apron if direct contact with the product or spray mix is likely.

Inhalation: Use a dust mask or pesticide respirator if ventilation is not adequate.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

a. **Appearance:** Grey-brown powder.

b. **Odour:** Sulfurous.

c. **Physical state:** Solid.

d. **pH:** Not applicable.

e. **Vapour pressure and reference temperature:** Not applicable.

f. **Vapour density:** Not available.

g. **Boiling point:** Not applicable.

h. **Freezing/Melting point:** Decomposes.

i. **Specific gravity or density:** Not available.

j. **Evaporation Rate:** Not applicable.

k. **Water/oil partition coefficient:** Not available.

l. **Odour threshold:** Not available.

m. **Viscosity:** Not applicable.

n. **Solubility in water:** Forms a suspension.

SECTION 10 STABILITY AND REACTIVITY

a. **Chemical stability:** Stable.

b. **Conditions to avoid:** Flame, heat, ignition sources.

c. **Incompatibility with other materials:** None known.

d. **Hazardous decomposition products:** None known.

e. **Hazardous polymerization:** Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on product: Information on active ingredient:

(Thiophanate methyl)

a. **LD50 (species and route)**

Acute Oral - rat - exceeds 6000 mg/kg 6640 mg/kg
Acute Dermal - rat - exceeds 10,000 mg/kg Exceeds 10,000 mg/kg

LC50 (species)

Not known Rat 1700 mg/m³/4H

b. Irritation data

Mildly irritating

c. Results of studies on:

- **Sensitization** - A skin sensitization reaction indicates that some individuals may develop allergy to this product.

- **Carcinogenicity** Thiophanate methyl is not considered to be a carcinogen or oncogen. The No Adverse Effect

Level in 2-year feeding studies in rats and mice was 160 ppm in the diet and in dogs it was 50 ppm.

- **Reproductive toxicity, Teratogenicity** - Thiophanate methyl had no adverse effects on the ability of rats to reproduce in a 3-generation reproduction study at levels up to 160 ppm in the diet. Higher levels reduced growth. Thiophanate methyl was not teratogenic in rats or mice.

- **Mutagenicity:** Thiophanate methyl was not mutagenic in standard test systems.

- **Chronic exposure:** Long-term exposure to low levels of SENATOR 70WP is not known to cause any ill effects in humans.

d. Other materials that show synergistic toxic effects together with the product: None known.

SECTION 12 ECOLOGICAL INFORMATION

The active ingredient (Thiophanate methyl) has shown the following results:

Birds - Acute oral LD50 for Japanese quail >5000 mg/kg

Fish - LC50 (48 hours) for rainbow trout 7.8, carp 11 mg/l

Bees - Non-toxic to bees

Degradation and metabolism: Environmental: In soil, in aqueous solution, and under the influence of UV light, cyclization occurs, leading to the formation of carbendazim. This then undergoes degradation to 2-aminobenzimidazole and 5-hydroxy-2-aminobenzimidazole.

In plants: In plants cyclization occurs, leading to the formation of carbendazim.

In animals: In rats, following oral administration, 61% is excreted in the urine and 35% in the faeces within 90 minutes after the last dose. Metabolism involves cyclization to carbendazim. The principal metabolite in rats is methyl 5-hydroxybenzimidazol-2-carbamate.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste disposal information: Do not reuse bags. Dispose of empty bags in accordance with local regulations. Consult provincial environment ministry for advice on waste disposal. Industrial/commercial waste may be handled at licensed facilities only. Waste shipments must be securely packed and properly labeled. Only licensed carriers may be used, and proper documents must accompany the shipment. This product is biodegradable.

SECTION 14 TRANSPORT INFORMATION

a. Shipping information such as shipping classification:

TRANSPORTATION OF DANGEROUS GOODS CLASSIFICATION - ROAD/RAIL Not regulated.

SECTION 15 REGULATORY INFORMATION

a. WHMIS classification for product: Exempt

b. A statement that the MSDS has been prepared to meet WHMIS requirements, except for use of the 16 headings.

This MSDS has been prepared in accordance with WHMIS requirements, but the data are presented under 16 headings.

SECTION 16 OTHER INFORMATION

The information and recommendations contained herein are based on information believed to be correct. However, no guarantee or warranty of any kind, expressed or implied is made with respect to the information provided herein.

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