Bayer CropScience

Material Safety Data Sheet
TOPS®-MZ-GAUCHO® POTATO SEED-PIECE TREATMENT

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: TOPS®-MZ-GAUCHO® POTATO SEED-PIECE TREATMENT
MSDS Number: 102000012924
EPA Registration No.: 264-977

Bayer CropScience
2 T.W. Alexander Drive
Research Triangle PK, NC 27709
USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)
For Product Information call: 1-866-99BAYER (1-866-992-2937)

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Component Name</th>
<th>CAS-No.</th>
<th>Average % by Weight</th>
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<tbody>
<tr>
<td>Imidacloprid</td>
<td>138261-41-3</td>
<td>1.25</td>
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<tr>
<td>Thiophanate-methyl</td>
<td>23564-05-8</td>
<td>2.50</td>
</tr>
<tr>
<td>Mancozeb</td>
<td>8018-01-7</td>
<td>6.00</td>
</tr>
<tr>
<td>Wood dust</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information.

Emergency Overview: Caution! Harmful if swallowed, inhaled or absorbed through the skin. Avoid breathing dust or spray mist. Avoid contact with skin, eyes and clothing.

Physical State: solid

Odor: characteristic

Appearance: light tan to brown

Routes of Exposure: Inhalation, Ingestion, Eye contact, Skin Absorption, Skin contact

Immediate Effects

Eye: May cause eye irritation. Avoid contact with eyes.

Skin: May cause skin irritation. Harmful if absorbed through skin. Avoid contact with skin and clothing.

Ingestion: Do not take internally. Harmful if swallowed.

Inhalation: Dusts may cause upper respiratory tract irritation, coughing. Harmful if inhaled. Avoid breathing dust or spray mist.
Chronic or Delayed Long-Term

This product contains ingredients that are considered to be probable or suspected human carcinogens (see Section 11 - Chronic). This product or its components may have target organ effects.

SECTION 4. FIRST AID MEASURES

General
When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

Skin
Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Inhalation
Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Notes to Physician Treatment
There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

SECTION 5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards
Heating or fire can release toxic gas. Keep away from open flames, hot surfaces and sources of ignition.

Suitable Extinguishing Media
foam, carbon dioxide (CO2), dry chemical, water fog

Fire Fighting Instructions
Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Dike area to prevent runoff and contamination of water sources. Equipment or materials involved in pesticide fires may become contaminated.

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.
SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods for Cleaning Up
Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations.

Additional Advice
Use personal protective equipment. Do not allow product to enter streams, sewers or other waterways.

SECTION 7. HANDLING AND STORAGE

Handling Procedures
Handle and open container in a manner as to prevent spillage.

Storing Procedures
Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

Work/Hygienic Procedures
Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.

Take off contaminated clothing and shoes immediately. Then wash thoroughly and put on clean clothing.

Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. As soon as practical, wash thoroughly and change into clean clothing.

Min/Max Storage Temperatures
Do not transport or store below -18 °C / -0 °F
Do not transport or store above 32 °C / 90 °F

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General Protection
Follow all label instructions. Train employees in safe use of the product.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.
Engineering Controls
Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

Eye/Face Protection
Tightly fitting safety goggles

Hand Protection
Chemical resistant nitrile rubber gloves

Body Protection
Wear long-sleeved shirt and long pants and shoes plus socks.

Respiratory Protection
When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or Industry recommendations.

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<tr>
<th>Exposure Limits</th>
<th>NIOSH</th>
<th>REL</th>
<th>Lang</th>
<th>Expr.</th>
<th>Conc.</th>
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<tr>
<td>Mancozeb</td>
<td>8018-01-7</td>
<td></td>
<td></td>
<td>as Mn</td>
<td>1 mg/m³</td>
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<td></td>
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<td>TWA</td>
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<td></td>
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<td>NIOSH</td>
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<td>Form of Exposure</td>
<td>OSHA Z1A</td>
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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance**
- light tan to brown

**Physical State**
- solid

**Odor**
- characteristic
Bulk Density  
30 - 40 lbs./cu. ft.

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability  
Stable

Conditions to Avoid  
Excessive heat and fire.

Incompatibility  
oxidizing agents

Hazardous Decomposition Products  
In case of fire hazardous decomposition products may be produced such as:
- hydrogen sulfide
- nitrogen oxides (NOx)
- hydrogen chloride (HCl)
- hydrogen cyanide (hydrocyanic acid)
- Sulphur oxides
- Carbon oxides
- aldehydes

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity studies have been bridged from a very similar formulation containing similar percentages of the active ingredients, imidacloprid, thiophanate-methyl and mancozeb. The non-acute information pertains to the technical-grade active ingredients.

Acute Oral Toxicity  
male/female rat: LD50: > 5,000 mg/kg

Acute Dermal Toxicity  
male/female rat: LD50: > 2,000 mg/kg

Acute Inhalation Toxicity  
rat: LC50: > 2.1 mg/l  
Exposure time: 4 h  
Determined in the form of dust.  
(actual)  
highest concentration tested.  
No deaths

male/female rat: LC50: > 8.4 mg/l  
Exposure time: 1 h  
Determined in the form of dust.  
Extrapolated from the 4 hr LC50.  
(actual)

Skin Irritation  
No skin irritation.

Eye Irritation  
Mild eye irritation.

Sensitization  
guinea pig: Non-sensitizing.
Chronic Toxicity

IMIDACLOPRID: In chronic dietary studies in rats and dogs exposed to imidacloprid, the target organs were the thyroids and/or liver.

THIOPHANATE-METHYL: Thionaphenate-methyl caused mild anemia and effects in liver and thyroid in chronic feeding studies. In addition, transient neurological effects (tremors) were observed in dogs.

MANCOZEB: The thyroid is a target organ for mancozeb in chronic dietary studies in rats and dogs.

Assessment Carcinogenicity

IMIDACLOPRID: In oncogenicity studies in rats and mice, imidacloprid was not considered carcinogenic in either species.

THIOPHANATE-METHYL: Thionaphenate-methyl produced benign liver tumors in mice and thyroid tumors in rats.

MANCOZEB: Mancozeb is classified by EPA as a B2 probable human carcinogen.

ACGIH

Wood dust Group A1

NTP

Wood dust

IARC

Wood dust Overall evaluation: 1

OSHA

None.

Reproductive & Developmental Toxicity

REPRODUCTION:

IMIDACLOPRID: In a two-generation reproduction study in rats, imidacloprid was not a primary reproductive toxicant. Offspring exhibited reduced body weights at the high dose and in conjunction with maternal toxicity.

THIOPHANATE-METHYL and MANCOZEB: Thionaphenate-methyl and mancozeb did not cause reproductive toxicity in a multi-generation studies in rats.

DEVELOPMENTAL TOXICITY:

IMIDACLOPRID: In developmental toxicity studies in rats and rabbits, there was no evidence of an embryotoxic or teratogenic potential for imidacloprid. In both species, developmental effects were observed only at high doses and in conjunction with maternal toxicity.

THIOPHANATE-METHYL: Thionaphenate-methyl is not a primary developmental toxicant as only minor delays or variations in fetal development were observed only at doses that caused maternal toxicity.

MANCOZEB: Mancozeb is not a primary developmental toxicant in rats and rabbits. Developmental effects were observed at doses that caused maternal
Neurotoxicity

IMIDACLOPRID: Neurotoxicity studies in rats showed slight behavioral and activity changes only at the highest dose tested. There were no correlating morphological changes observed in the neural tissues.

THIOPHANATE-METHYL: Specific neurotoxicity data were not available in the published literature at the time the MSDS was prepared.

MANCOZEB: In a subchronic study in rats, microscopic changes in peripheral nerves were observed.

Mutagenicity

IMIDACLOPRID: The imidacloprid mutagenicity studies, taken collectively, demonstrate that the active ingredient is not genotoxic or mutagenic.

THIOPHANATE-METHYL: Based on the overall weight of evidence, thiophanate-methyl was not genotoxic in a battery of in vitro and in vivo studies.

MANCOZEB: Numerous in vitro and in vivo mutagenicity tests have been conducted with mancozeb. Four of these tests were positive; in three of the positive tests with mancozeb, the response was weaker or was absent with activation.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Precautions
Toxic to birds, fish and aquatic invertebrates. Exposed treated seed may be hazardous to birds. For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below mean high water mark. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Apply this product only as specified on the label.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance
Open dumping is prohibited. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal
Do not re-use empty containers. Completely empty container into application equipment, then dispose of empty container in a sanitary landfill, by incineration or by other procedures approved by state/provincial and local authorities. If burned, stay out of smoke.

RCRA Classification: The RCRA Classifications may be on the individual component(s) and not necessarily on the product as a whole.
SECTION 14. TRANSPORT INFORMATION

TRANSPORTATION CLASSIFICATION:
Not regulated for shipment by any mode of transportation

FRIEGHT CLASSIFICATION:
Insecticides or Fungicides, N.O.I.; other than poison

SECTION 15. REGULATORY INFORMATION

EPA Registration No. 264-977

US Federal Regulations
TSCA list
None.

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
None.

SARA Title III - Section 302 - Notification and Information
None.

SARA Title III - Section 313 - Toxic Chemical Release Reporting
Thiophanate-methyl 23564-05-8 1.0%
Mancozeb 8018-01-7 1.0%

US States Regulatory Reporting
CA Prop65
This product contains a chemical known to the State of California to cause cancer.
Mancozeb 8018-01-7

This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
Thiophanate-methyl 23564-05-8 Female reproductive toxin.
Thiophanate-methyl 23564-05-8 Male reproductive toxin.

US State Right-To-Know Ingredients
Material Safety Data Sheet
TOPS®-MZ-GAUCHO® POTATO SEED-PIECE TREATMENT

Thiophanate-methyl  23564-05-8  NJ
Mancozeb  8018-01-7  CA, CT, IL, MN, NJ, RI
Wood dust

Canadian Regulations
Canadian Domestic Substance List
Thiophanate-methyl  23564-05-8

Environmental
CERCLA
Thiophanate-methyl  23564-05-8  1 lbs
Mancozeb  8018-01-7

Clean Water Section 307 Priority Pollutants
None.

Safe Drinking Water Act Maximum Contaminant Levels
None.

International Regulations
European Inventory of Existing Commercial Substances (EINECS)
Thiophanate-methyl  23564-05-8

SECTION 16. OTHER INFORMATION

NFPA 704 (National Fire Protection Association):
Health - 2  Flammability - 1  Reactivity - 1  Others - none
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Updated Section 11, Toxicological Information.

Revision Date: 04/26/2006

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