

MATERIAL SAFETY DATA SHEET

Engage Agro Corporation
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Date of MSDS Preparation (Y/M/D): 2014-12-23

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SECTION – 1: PRODUCT IDENTIFICATION

Product Identifier: JADE™ Fungicide
Registration Number: 24030 (Pest Control Products Act)
Chemical Class: Triazole Derivative Fungicide
Synonym: Propiconazole 250 EC

Name of Supplier, Address and Emergency Telephone Number – See above.

Active Ingredient(%): Propiconazole (25%) CAS No.: 60207-90-1

Chemical Name: 1-[[2-(2,4-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]methyl]-1H-1,2,4-triazole

Product Use: Emulsifiable concentrate fungicide for disease control in agricultural crops. For further details please refer to product label.

Name and Telephone Number of Party Responsible for MSDS Preparation:

Engage Agro Corporation. For further information please contact Engage Agro at 519-826-7878.

SECTION – 2 : COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen	WHMIS†
1,2,4- Trimethylbenzene CAS # 95-63-6	Not Established	25 ppm (125 mg/m ³) TWA	25 ppm (125 mg/m ³) REL **	No	Yes
Naphthalene CAS # 91-20-3	10 ppm (50 mg/m ³) TWA	10 ppm (50 mg/m ³) TWA (skin)	10 ppm (50 mg/m ³) TWA**	<u>NTP</u> : Anticipated Carcinogen <u>IARC</u> : Group 2B Possible Human Carcinogen	Yes
Petroleum Solvent CAS # 64742-94-5	Not Established	Not Established	100 mg/m ³ (15 ppm) TWA *	No	Not Established
Propiconazole (25%)	Not Established	Not Established	8 mg/m ³ TWA ***	No	Not Established

* Recommended by manufacturer

** Recommended by NIOSH

*** Occupational Exposure Limit (OEL)

† Material listed in Ingredient Disclosure List under Hazardous Products Act.

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

Hazard Category:C,S

SECTION – 3: HAZARDS IDENTIFICATION

Symptoms of Acute Exposure

Harmful if inhaled. May cause eye, skin and respiratory irritation. Exposure to high vapour levels may cause headache, dizziness, numbness, nausea, incoordination, or other central nervous system effects.

Hazardous Decomposition Products

Hydrogen cyanide.

Physical Properties

Appearance: Clear yellow liquid.

Odour: Aromatic solvent.

Unusual Fire, Explosion and Reactivity Hazards

Combustible liquid. Can release vapours that form explosive mixtures at temperatures at or above the flash point.

Heavy vapours can flow along surfaces to distant ignition sources and flash back.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Potential Health Effects

Relevant routes of exposure: Skin, eyes, mouth, lungs.

SECTION – 4: FIRST AID MEASURES

IF POISONING IS SUSPECTED, immediately contact the poison information centre, doctor or nearest hospital. Have the product container, label or Material Safety Data Sheet with you when calling Engage Agro, a poison control center or doctor, or going for treatment. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given. Call the Engage Agro Emergency Line **1-866-336-2983**, for further information.

EYE CONTACT:	Flush eyes with clean water, holding eyelids apart for a minimum of 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Engage Agro, a poison control center or doctor for treatment advice. Obtain medical attention immediately if irritation persists.
SKIN CONTACT:	Immediately remove contaminated clothing and wash skin, hair and fingernails thoroughly with soap and water. Flush skin with plenty of water for 15-20 minutes. Call Engage Agro, a poison control center or doctor for treatment advice.
INHALATION:	Move victim to fresh air. If not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call Engage Agro, a poison control center or doctor for treatment advice.
INGESTION:	If swallowed, immediately contact Engage Agro, a poison control centre, doctor or nearest hospital for treatment advice. Provided the patient is conscious, wash out mouth with water. Do not induce vomiting unless directed by a physician or a poison control center. Do not give any liquid to the person. Call Engage Agro, a poison control centre or doctor for treatment advice.

NOTES TO PHYSICIAN:

There is no specific antidote if this product is ingested. Treat symptomatically. Contains petroleum distillate - vomiting may cause aspiration pneumonia.

Induction of emesis is not recommended due to the large amount of petroleum solvent in this product, which could cause chemical pneumonitis if aspirated.

MEDICAL CONDITIONS KNOWN TO BE AGGRAVATED:

Persons with preexisting dermatitis, respiratory disorders, or an allergic history should use extra care in handling this product.

SECTION – 5: FIRE FIGHTING MEASURES

Flash point and method: 62 °C (P.M.C.C.).

Upper and lower flammable (explosive) limits in air: Lower: 1.8% Upper: 11.7%

Auto-ignition temperature: Not Available.

Flammability: Combustible liquid.

Hazardous combustion products: Toxic, flammable fumes are released by thermal decomposition in a fire. Thermal decomposition products may include hydrogen cyanide.

Conditions under which flammability could occur: Can release vapours that form explosive mixtures at temperatures at or above the flash point. Heavy vapours can flow along surfaces to distant ignition sources and flash back. Keep fire exposed containers cool by spraying with water.

Extinguishing media: Use foam, carbon dioxide, dry powder, halon extinguishant or water fog or mist, (avoid use of water jet). Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. Contain run-off water with, for example, temporary earth barriers.

Sensitivity to explosion by mechanical impact: No.

Sensitivity to explosion by static discharge: Yes.

SECTION – 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices. A small spill can be handled routinely. Use adequate ventilation and wear equipment and clothing as described in Section 8 and/or the product label.

Procedures for dealing with release or spill: Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Sections 7 and 8. Pump or scoop large amounts of liquid into a disposable container. Absorb remaining liquid or smaller spills with clay, sand or vermiculite. Scoop or sweep up material and place into a disposal container. On soils, small amounts will naturally decompose. For large amounts, skim off the upper contaminated layer and collect for disposal. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposal. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory authority.

SECTION – 7: HANDLING AND STORAGE

Handling practices: KEEP OUT OF REACH OF CHILDREN. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Avoid breathing vapours or spray mist. Wear full protective clothing and equipment (see Section 8). After work, rinse gloves and remove protective equipment, and wash hands thoroughly with soap and water after handling, and before eating, tobacco use, drinking, applying cosmetics or using the toilet. Wash contaminated clothing before re-use and separate from household laundry. Keep containers closed when not in use. Protect product, wash or rinse water, and contaminated materials from uncontrolled release into the environment, or from access by animals, birds or unauthorized people.

Appropriate storage practices/requirements: Store in original container only in a well-ventilated, cool, dry, secure area. Protect from heat, sparks and flame. Do not expose containers to temperatures above 40 °C. Keep separate from other products to prevent cross contamination. Rotate stock. Clean up spilled material immediately.

National Fire Code classification: Class IIIA Combustible Liquid.

SECTION – 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Applicable control measures, including engineering controls: This product is intended for use outdoors where engineering controls are not necessary. If necessary, ensure work areas have ventilation, containment, and procedures sufficient to maintain airborne levels below the TLV. Warehouses, production area, parking lots and waste holding facilities must have adequate containment to prevent environmental contamination. Provide separate shower and eating facilities.

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Personal protective equipment for each exposure route:

General: Avoid breathing dust, vapours or aerosols. Avoid contact with eye, skin and clothing. Wash thoroughly after handling and before eating, drinking, applying cosmetics or handling tobacco.

- INGESTION:** Do not eat, drink, handle tobacco, or apply cosmetics in areas where there is a potential for exposure to this material. Always wash thoroughly after handling.
- EYES:** Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
- SKIN:** Where contact is likely, wear chemical-resistant (such as nitrile or butyl) gloves, coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear.
- INHALATION:** A respirator is not normally required when handling this substance. A combination particulate/organic vapour respirator should be used until effective engineering controls are installed to comply with occupational exposure limits, or until exposure limits are established. Use a NIOSH approved respirator with an organic vapour (OV) cartridge or canister with any R, P or HE filter.
Use a self-contained breathing apparatus in cases of emergency spills, when exposure levels are unknown, or under any circumstances where air-purifying respirators may not provide adequate protection.

SECTION – 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear yellow liquid.

Formulation Type: Emulsifiable concentrate.

Odour: Aromatic solvent odour.

pH: 5.4 – 8.0 (1% emulsion in water @ 25 °C.).

Vapour pressure and reference temperature: 4.2×10^{-7} mmHg @ 25 °C (Propiconazole Technical).

Vapour density: Not available.

Boiling point: Not available.

Melting point: Not available.

Freezing point: -40 °C.

Specific gravity or density: 0.98 g/cm³ @ 20 °C.

Evaporation Rate: Not available.

Water/oil partition coefficient: Log P 3.65 (Propiconazole Technical).

Odour threshold: Not available.

Viscosity: 5.1 cps (or mPas) @ 21 °C.

Solubility in Water: 0.1 g/L @ 20 °C (Propiconazole Technical).

SECTION – 10: STABILITY AND REACTIVITY

Chemical stability: Stable under normal use and storage conditions.

Conditions to avoid: Keep away from heat or open flames.

Incompatibility with other materials: Nitric acid, sulfuric acid, strong oxidizing and reducing agents.

Hazardous decomposition products: Hydrogen cyanide.

Hazardous polymerization: Will not occur.

SECTION – 11: TOXICOLOGICAL INFORMATION**Acute toxicity/Irritation Studies (Finished Product):**

Ingestion:	<u>Low Acute Toxicity</u>	
	Oral (LD ₅₀ Rat):	2,105 mg/kg body weight
Dermal:	<u>Low Acute Toxicity</u>	
	Dermal (LD ₅₀ Rabbit):	4,250 mg/kg body weight
Inhalation:	<u>Slightly Acutely Toxic</u>	
	Inhalation (LC ₅₀ Rat):	> 1.0 mg/L air - 4 hours
Eye Contact:	<u>Moderately Irritating (Rabbit)</u>	

Skin Contact: Moderately Irritating (Rabbit)

Skin Sensitization: Potential Skin Sensitizer (Guinea Pig) (Based on the technical)

Reproductive/Developmental Effects

Propiconazole Technical: None observed.

Chronic/Subchronic Toxicity Studies

Propiconazole Technical: None observed.

Carcinogenicity

Propiconazole Technical: Long-term exposure of mice to high dose levels of propiconazole produced an increase in liver tumors in male mice. Propiconazole is not considered to be carcinogenic.

Other Toxicity Information:

None.

Toxicity of Other Components

The acute toxicity test results reported in Section 11, above, for the finished product take into account any acute hazards related to the "other components" in the formulation.

1,2,4-Trimethylbenzene

Inhalation of 1,2,4-trimethylbenzene at high concentrations can cause central nervous system depression, respiratory tract irritation, asphyxiation, cardiac stress and coma. Effects of chronic exposure to this solvent can include blood disorders (anemia, leukopenia) and kidney or liver damage.

Naphthalene

Exposure to naphthalene can cause cataracts, liver damage, kidney failure, respiratory failure, hematuria, anemia, damage to red blood cells, leukocytosis, or coma.

Carcinogen Status:

NTP: Anticipated Carcinogen

IARC: Group 2B Possible Human Carcinogen

Petroleum Solvent

Inhalation of vapours at high concentrations can cause central nervous system effects (dizziness, headache), irritation to eyes or respiratory tract.

Target Organs

Active Ingredients

Propiconazole Technical: Liver, skin, eye.

Inert Ingredients

1,2,4-Trimethylbenzene: CNS, liver, kidney, blood, respiratory tract, skin, eye

Naphthalene: Eye, liver, kidney, respiratory tract, blood, CNS

Petroleum Solvent: Respiratory tract, stomach, liver, thyroid, urinary bladder, CNS, skin

SECTION – 12: ECOLOGICAL INFORMATION

Summary of Effects

The active ingredient, propiconazole, is practically nontoxic to plants birds and insects, but is very toxic to aquatic life.

Eco-Acute Toxicity

Propiconazole Technical:

Green Algae 5-Day EC₅₀ 1.6 ppm

Invertebrates (*Daphnia magna*) 48-hour LC₅₀/EC₅₀ 4.8 ppm

Fish (Rainbow Trout) 96-hour LC₅₀/EC₅₀ 0.85 ppm

Environmental Fate

The active ingredient, propiconazole, has a low bioaccumulation potential, low mobility, and low to moderate persistence in soil and water. The Dissipation half-life in soil is 70 days. The main route of degradation is by microbial degradation and formation of bound residues.

SECTION – 13: DISPOSAL CONSIDERATIONS

Waste disposal information: Do not reuse empty containers unless they are specifically designed to be re-filled. Empty container retains product residue. Dispose of empty containers 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 packaged and properly labelled. Only licensed carriers may be used, and proper documents must accompany the shipment.

SECTION – 14 : TRANSPORT INFORMATION

Shipping information such as shipping classification:

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

SECTION – 15: REGULATORY INFORMATION

WHMIS classification for product: Exempt

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. Other regulations; restrictions and prohibitions

Pest Control Products (PCP) Act Registration No.: 24030

SECTION – 16: OTHER INFORMATION

The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Engage Agro will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years. This product is under the jurisdiction of the Pest Control Products Act and is exempt from the requirements for a WHMIS compliant MSDS. Hazardous properties of all ingredients have been considered in the preparation of this MSDS. Read the entire MSDS for the complete hazard evaluation of this product.

Prepared by: Engage Agro Corporation, Inc.

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