Material Safety Data Sheet

Dow AgroSciences Canada Inc.

Product Name: Indar 75 WSP Agricultural Fungicide **Issue Date:** 2012.02.29

Dow AgroSciences Canada Inc. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name

Indar 75 WSP Agricultural Fungicide

COMPANY IDENTIFICATION

Dow AgroSciences Canada Inc.
A Subsidiary of The Dow Chemical Company
Suite 2100, 450 1st Street SW,
Calgary, AB T2P 5H1
Canada

For MSDS updates and Product Information: 800-667-3852

Prepared By: Prepared for use in Canada by EH&S, Hazard Communications.
Revision 2012.02.29

Customer Information Number: 800-667-3852
solutions@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 613-996-6666
Local Emergency Contact: 613-996-6666

2. Hazards Identification

Emergency Overview

Color: Off-white
Physical State: Powder
Odor: Musty
Hazards of product:

CAUTION! May be harmful if inhaled. May cause respiratory tract irritation. May form explosive dust-air mixture. Keep upwind of spill. Slipping hazard. Avoid temperatures above 160°C (320°F) Toxic fumes may be released in fire situations. Highly toxic to fish and/or other aquatic organisms. Cancer hazard. Can cause cancer.

Potential Health Effects

Eye Contact: Essentially nonirritating to eyes. Solid or dust may cause irritation due to mechanical action.
Skin Contact: Brief contact is essentially nonirritating to skin.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: Prolonged excessive exposure to dust may cause adverse effects. Dust may cause irritation of the upper respiratory tract (nose and throat) and lungs.
Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.
Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.
Effects of Repeated Exposure: For the active ingredient(s): In animals, effects have been reported on the following organs: Liver. Thyroid. For the minor component(s): Diatomaceous earth or amorphous silica is considered a nuisance dust and does not cause the lung injury associated with crystalline silica. However, repeated excessive exposures to dust of amorphous silica (which is the main component in this product) may cause potentially reversible lung effects.
Cancer Information: Crystalline silica has been shown to cause cancer in laboratory animals and humans. Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.
Birth Defects/Developmental Effects: For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.
Reproductive Effects: For the active ingredient(s): In animal studies, has been shown to interfere with reproduction in females.

3. Composition/information on ingredients

Component	CAS #	Amount W/W
Fenbuconazole	114369-43-6	75.0 %
Kaolin	1332-58-7	>= 0.6 - <= 15.5 %
Titanium dioxide	13463-67-7	0.4 %
Silica, crystalline (quartz)	14808-60-7	0.1 %
Balance	Not available	>= 9.0 - <= 22.9 %

Amounts are presented as percentages by weight.

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.
Skin Contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Eye Contact: Hold eyes 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 eyes. Call a poison control center or doctor for treatment advice.
Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.
Repeated excessive exposure may aggravate preexisting lung disease.

5. Fire Fighting Measures

Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam.

Special hazards arising from the substance or mixture

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide. Hydrogen chloride.
Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Do not permit dust to accumulate. When suspended in air dust can pose an explosion hazard. Minimize ignition sources. If dust layers are exposed to elevated temperatures, spontaneous combustion may occur. Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, electrically bond and ground equipment and do not permit dust to accumulate. Dust can be ignited by static discharge. Dense smoke is produced when product burns.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Soak thoroughly with water to cool and prevent re-ignition. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. Dust explosion hazard may result from forceful application of fire extinguishing agents. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the “Accidental Release Measures” and the “Ecological Information” sections of this (M)SDS.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.
See Section 9 for related Physical Properties

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Keep upwind of spill. Spilled material may cause a slipping hazard. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions:
Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance.

7. Handling and Storage

Handling
General Handling: Keep away from heat, sparks and flame. No smoking, open flames or sources of ignition in handling and storage area. Electrically ground and bond all equipment. Keep out of reach of children. Do not swallow. Avoid breathing dust or mist. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Good housekeeping and controlling of dusts are necessary for safe handling of product. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage
Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Titanium dioxide	OEL (QUE)	TWA Total dust.	10 mg/m3
	CAD ON OEL	TWAEV Total dust.	10 mg/m3
	ACGIH	TWA	10 mg/m3
	CAD AB OEL	TWA	10 mg/m3
	CAD BC OEL	TWA Respirable fraction.	3 mg/m3
	CAD BC OEL	TWA Total dust.	10 mg/m3
	OEL (QUE)	TWA Total dust.	10 mg/m3
Kaolin	OEL (QUE)	TWA Total dust.	10 mg/m3
	CAD BC OEL	TWA Respirable.	2 mg/m3
	CAD ON OEL	TWAEV Respirable.	2 mg/m3
	ACGIH	TWA Respirable fraction.	2 mg/m3 The value is for particulate matter containing no asbestos and <1% crystalline silica.
	CAD MB OEL	TWA Respirable fraction	2 mg/m3
	OEL (QUE)	TWA Respirable dust.	5 mg/m3
	CAD AB OEL	TWA Respirable.	2 mg/m3

Silica, crystalline (quartz)	CAD ON OEL	TWAEV Respirable fraction.	0.10 mg/m3
	ACGIH	TWA Respirable fraction.	0.025 mg/m3
	OEL (QUE)	TWA Respirable dust.	0.1 mg/m3 Exposure must be minimized.
	CAD BC OEL	TWA Respirable fraction.	0.025 mg/m3
	OEL (QUE)	TWA Respirable dust.	0.1 mg/m3 Exposure must be minimized.
	CAD AB OEL	TWA Respirable particles.	0.025 mg/m3

Consult local authorities for recommended exposure limits.
RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Personal Protection

Eye/Face Protection: Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.
Skin Protection: Wear clean, body-covering clothing.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. The following should be effective types of air-purifying respirators: Particulate filter.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance	
Physical State	Powder
Color	Off-white
Odor	Musty
Odor Threshold	No test data available
pH	7.6
Melting Point	No test data available
Freezing Point	Not applicable
Boiling Point (760 mmHg)	Not applicable.

Flash Point - Closed Cup	Not applicable
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Flammable Limits In Air	**Lower**: Not applicable **Upper**: Not applicable
Vapor Pressure	Not applicable
Vapor Density (air = 1)	Not applicable
Specific Gravity (H2O = 1)	Not applicable
Solubility in water (by weight)	Dispersible
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Dynamic Viscosity	Not applicable
Kinematic Viscosity	Not applicable
Liquid Density	Not applicable
Bulk Density	0.24 g/ml

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.

Chemical stability
Thermally stable at typical use temperatures.

Possibility of hazardous reactions
Polymerization will not occur.

Conditions to Avoid: Avoid temperatures above 160°C (320°F) Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid static discharge. Avoid direct sunlight.

Incompatible Materials: Avoid contact with: Oxidizers. Strong acids.

Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Toxic flammable gases can be released during decomposition. Decomposition products can include and are not limited to: Isobutylene. Hydrogen chloride.

11. Toxicological Information

Acute Toxicity
Ingestion
As product: LD50, rat, male and female 4,000 mg/kg
Dermal
As product: LD50, rat, male and female > 2,000 mg/kg
No deaths occurred at this concentration.
Inhalation
As product: LC50, 4 h, Dust, rat, male and female > 4.40 mg/l
No deaths occurred at this concentration.

Eye damage/eye irritation
Essentially nonirritating to eyes. Solid or dust may cause irritation due to mechanical action.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Sensitization
Skin
Did not cause allergic skin reactions when tested in guinea pigs.

Respiratory
No relevant data found.

Repeated Dose Toxicity
For the active ingredient(s): In animals, effects have been reported on the following organs: Liver. Thyroid. For the minor component(s): Diatomaceous earth or amorphous silica is considered a nuisance dust and does not cause the lung injury associated with crystalline silica. However, repeated excessive exposures to dust of amorphous silica (which is the main component in this product) may cause potentially reversible lung effects. Repeated exposures to dusts of this material are not anticipated to result in systemic toxicity or permanent lung injury; however, excessive exposures may cause less severe respiratory effects.

Chronic Toxicity and Carcinogenicity
For the active ingredient(s): Available data are inadequate to evaluate carcinogenicity. Crystalline silica has been shown to cause cancer in laboratory animals and humans. Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

Carcinogenicity Classifications:

Component	List	Classification
Silica, crystalline (quartz)	ACGIH	Suspected human carcinogen.; Group A2
	IARC	Carcinogenic to humans.; 1

Developmental Toxicity
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive Toxicity
For the active ingredient(s): In animal studies, has been shown to interfere with reproduction in females.

Genetic Toxicology
For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

12. Ecological Information

Toxicity
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
For the active ingredient(s): LC50, Lepomis macrochirus (Bluegill sunfish), flow-through test, 48 h: 0.68 mg/l

Aquatic Plant Toxicity
As product: ErC50, diatom Navicula sp., Growth rate inhibition, 96 h: 1.7 mg/l

Persistence and Degradability

Data for Component: **Fenbuconazole**
Expected to degrade only slowly in the environment.
Data for Component: **Kaolin**
Biodegradation is not applicable.
Data for Component: **Titanium dioxide**
Biodegradation is not applicable.
Data for Component: **Silica, crystalline (quartz)**
Biodegradation is not applicable.

Bioaccumulative potential
Data for Component: **Fenbuconazole**
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 3.23 Measured
Bioconcentration Factor (BCF): > 160; Lepomis macrochirus (Bluegill sunfish)

Data for Component: **Kaolin**
Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Data for Component: **Titanium dioxide**
Bioaccumulation: No data available.
Bioconcentration Factor (BCF): No data available.

Data for Component: **Silica, crystalline (quartz)**
Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Mobility in soil

Data for Component: **Fenbuconazole**
Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000)., Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Partition coefficient, soil organic carbon/water (Koc): > 5,000 Estimated.
Henry's Law Constant (H): 8.31E-08 atm*m3/mole Measured

Data for Component: **Kaolin**
Mobility in soil: No relevant data found.

Data for Component: **Titanium dioxide**
Mobility in soil: No data available.

Data for Component: **Silica, crystalline (quartz)**
Mobility in soil: No relevant data found.

13. Disposal Considerations

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. Transport Information

TDG Small container
NOT REGULATED

TDG Large container
NOT REGULATED

IMDG
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical Name: FENBUCONAZOLE
Hazard Class: 9 **ID Number:** UN3077 **Packing Group:** PG III
EMS Number: F-A,S-F
Marine pollutant.: Yes

ICAO/IATA
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical Name: FENBUCONAZOLE
Hazard Class: 9 **ID Number:** UN 3077 **Packing Group:** PG III
Cargo Packing Instruction: 911
Passenger Packing Instruction: 911

15. Regulatory Information

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Hazardous Products Act Information: CPR Compliance
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Hazardous Products Act Information: WHMIS Classification
This product is exempt under WHMIS.

Hazardous Products Act Information: Hazardous Ingredients
This product contains the following ingredients which are Controlled Products and/or are on the Ingredient Disclosure List (Canadian HPA Section 13 and 14).

Component	CAS #	Amount W/W
Silica gel, precipitated, crystalline-free	112926-00-8	< 5.0 %
Silica, crystalline (quartz)	14808-60-7	< 1.0 %

Pest Control Products Act Registration number: 27294

National Fire Code of Canada
Not applicable

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	1	0

Recommended Uses and Restrictions

Identified uses
Product use: End use fungicide product

Revision

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DAS Code: XF-92037
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
VOL/VOL	Volume/Volume

Dow AgroSciences Canada Inc. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his

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