1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Spectro™ 90 WDG**
EPA Reg. No.: 1001-72
Product Type: Fungicide

Company Name: Nufarm Inc.
11901 S. Austin Avenue
Alsip, IL 60803
1-800-345-3330

Telephone Numbers: **For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, Call CHEMTREC Day or Night: 1-800-424-9300**
For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION

HEALTH HAZARDS:

Acute toxicity, oral	Category 4
Acute toxicity, inhalation	Category 3
Carcinogenicity	Category 2
Eye irritation	Category 2A
Specific target organ toxicity – Repeated exposure	Category 2

ENVIRONMENTAL HAZARDS:

Hazardous to aquatic environment, acute	Category 2
Hazardous to aquatic environment, chronic	Category 2

SIGNAL WORD:
DANGER

HAZARD STATEMENTS:
Harmful if swallowed. Toxic if inhaled. Suspected of causing cancer. Causes serious eye irritation. May cause damage to organs (kidney, liver, and thyroid) through prolonged or repeated exposure. Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

Wash hands and skin thoroughly after handling. Do not eat, drink, or smoke when using this product. Avoid breathing dust. Use only outdoors or in well-ventilated area. Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

IF SWALLOWED: Call a poison center/doctor if you feel unwell. Rinse mouth. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

IF EXPOSED OR CONCERNED: Get medical advice/attention.
Collect spillage.

Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Chlorothalonil	1897-45-6	69.84 – 74.16
Thiophanate-methyl	23564-05-8	17.1 – 18.9
Silica gel, precipitated, crystal-free	112926-00-8	0.64 – 0.78
Other Ingredients	Trade Secret	Trade Secret

Synonyms: Mixture containing the fungicides Chlorothalonil and Thiophanate-methyl

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

4. FIRST AID MEASURES

If in Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
If Swallowed: Call a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
If on Skin or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for several minutes.Call a poison control center or doctor for treatment advice.
Most Important symptoms/effects, acute and delayed: Eye exposure may cause moderate to severe irritation.
Indication of Immediate medical attention and special treatment if needed, if necessary:
Respiratory distress, itchy skin, skin or eye irritation.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Use extinguishing media suitable for surrounding materials. Dry chemical, carbon dioxide, foam, water spray or fog.
Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.
Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as oxides of carbon and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.
Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.
Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.
Methods for Cleanup and Disposal: Avoid creation of dusty conditions. Scrape up and place in appropriate closed container. Wash entire spill area with a detergent slurry, absorb and sweep into container for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.
Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

HANDLING: Do not get in eyes or on clothing or skin. Wear goggles or face-shield when handling. Wear a respirator as specified below under Personal Protection Equipment (PPE). Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE: Store in a cool, dry area in original unopened container. Store in a secured area unavailable to unauthorized persons. Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:
Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.
Eye/Face Protection: Not normally required. To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.
Skin Protection: To avoid contact with skin, wear long pants, long-sleeved shirt, socks and shoes. An emergency shower or water supply should be readily accessible to the work area.
Respiratory Protection: Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.
General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

	OSHA		ACGIH		
Component	**TWA**	**STEL**	**TWA**	**STEL**	**Unit**
Chlorothalonil	NE	NE	NE	NE	
Thiophanate-methyl	NE	NE	NE	NE	
Silica gel, precipitated, crystal-free	80	NE	NE	NE	Mg/m^3
Other Ingredients	NE	NE	NE	NE	

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Grayish white fine granular
Odor:	Faint, musky odor
Odor threshold:	No data available
pH:	6.8 (1% w/w solution)
Melting point/freezing point:	Not available
Initial boiling point and boiling range	Not available
Flash point:	Not available
Evaporation rate:	Not available
Flammability (solid, gas):	Not available
Upper/lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Vapor density:	Not available
Relative density:	0.61 – 0.67 g/ml
Solubility(ies):	No data available
Partition coefficient: n-octanol/water:	Not available
Autoignition temperature:	Not available
Decomposition temperature:	Not available
Viscosity:	Not applicable due to product form (solid granule)

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY

Reactivity: Not reactive
Chemical Stability: This material is stable under normal handling and storage conditions.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Keep away from moisture. Do not store near heat, flame or sources of ignition.
Incompatible Materials: Oxidizing agents and acids.
Hazardous Decomposition Products: Under fire conditions may produce gases such as hydrogen chloride, and oxides of carbon, nitrogen and sulfur.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Eye contact, Skin contact
Symptoms of Exposure:
Eye Contact: Eye exposure causes severe irritation.
Skin Contact: May be harmful if absorbed through the skin.
Ingestion: May be harmful if ingested.
Inhalation: Harmful if inhaled.
Delayed, immediate and chronic effects of exposure: Repeated overexposure / prolonged exposure may cause liver and thyroid damage.

Toxicological Data:
Data from laboratory studies conducted are summarized below:
Oral: Rat LD_{50}: 500-5,000 mg/kg (female) and >5,000 mg/kg (males)
Dermal: Rat LD_{50}: >5,000 mg/kg
Inhalation: Rat 4-hr LC_{50}: 0.066 mg/L
Eye Irritation: Rabbit: Extremely irritating
Skin Irritation: Rabbit: Non-irritating irritating
Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to chlorothalonil may cause decreased body weight gains and increased liver and kidney weights. Repeated overexposure to thiophanate methyl may cause mild anemia and affect the liver and thyroid.
Carcinogenicity / Chronic Health Effects: Prolonged overexposure to chlorothalonil may affect the liver and kidneys. In mice and rat studies, chlorothalonil produced renal tubular tumors (adenomas and carcinomas) in males of each species and in female rates. The incidences of forestomach papillomas and carcinocomas were observed in both species; however, this is not considered toxicologically relevant to humans. The International Agency for Research on Cancer (IARC) lists exposure to chlorothalonil as a class 2B carcinogen (possibly carcinogenic to humans). Prolonged overexposure to thiophanate methyl may affect the liver and thyroid. Thiophanate methyl produced dose-dependent increases in benign liver tumors in mice and thyroid tumors in rats.
Reproductive Toxicity: Chlorothalonil did not demonstrate reproductive effects in animal studies. Thiophanate methyl did not cause reproductive toxicity in multi-generation studies in rats.
Developmental Toxicity: Animal tests with chlorothalonil have not demonstrated developmental effects. In a rabbit study with thiophanate methyl, slight skeletal variations and decreased fetal weights were observed at doses that were also toxic to mother animals.
Genotoxicity: Studies indicate that chlorothalonil did not produce genetic damage in mammalian or bacterial cell cultures or in animal studies. There have been some positive and some negative studies, but the weight of evidence is that thiophanate methyl is not mutagenic.
Assessment of Carcinogenicity:
This product contains substances that are considered to be probable or suspected human carcinogens as follows:

	Regulatory Agency Listing As Carcinogen			
Component	**ACGIH**	**IARC**	**NTP**	**OSHA**
Chlorothalonil	No	2B	No	No

12. ECOLOGICAL INFORMATION

Environmental Hazards: This pesticide is toxic to aquatic invertebrates and wildlife.

Ecotoxicity:
Data on Chlorothalonil Technical:

96-hour LC_{50} Bluegill: 60 ppb
96-hour LC_{50} Rainbow Trout: 47 ppb
48-hour EC_{50} Daphnia: 68 ppb
48-hour Honey Bee Contact LD_{50}:> 181 µg/bee
Bobwhite Quail 8-day Dietary LC_{50}: >10,000 ppm
Mallard Duck 8-day Dietary LC_{50}: >10,000 ppm
Mallard Duck Oral LD_{50}: >4,640 mg/kg

Data on Thiophanate Methyl Technical:

96-hour LC_{50} Bluegill: >41 ppm
96-hour LC_{50} Rainbow Trout: 8.3 ppm
48-hour EC_{50} Daphnia: 5.4 ppm
96-hour LC_{50} Mysid: 1.1 ppm
Bobwhite Quail 8-day Dietary LC_{50}: >10,000 ppm
Mallard Duck Oral LD_{50}: 4,640 mg/kg
48-hour Honey Bee Contact LD_{50}: >100 ⌈g/bee

Environmental Fate:
Chlorothalonil is resistant to hydrolysis, photolysis and volatilization and only moderately susceptible to degradation in soil under aerobic conditions. In aerobic soils, the average half-life for chlorothalonis is from 1 to 3 months. Chlorothalonil is somewhat persistent in water when microbial activity is limited and hydrological residence times are long. Aerobic aquatic half-lives range from 2 hours to 8 days. The bioaccumulation potential of chlorothalonil is low. Thiophanate methyl degrades primarily to MBC whether on foliage, in soil or in water in a matter of days. Both photolysis and hydrolysis are important routes of degradation. MBC is microbially degraded, but stable to aqueous photodegradation, stable to hydrolysis at pH values ranging from 5 to 7 and stable to soil photolysis. Metabolism under aerobic and anaerobic conditions in both soil and water proceeds at a slow rate. Under application conditions, average half-lives are about 20 to 50 days, but may be as short as a few days with repeated use.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide is a violation of Federal law.

Container Handling and Disposal: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Completely empty bag into application equipment. Then dispose of empty in a sanitary landfill or by incineration or as allowed by State and local authorities by burning. If burned, stay out of smoke.

14. TRANSPORTATION INFORMATION

DOT

< 55 lbs per completed package
Non Regulated

≥ 55 lbs but < 882 lbs per completed package
UN3077, Environmentally hazardous substance, solid, n.o.s, (thiophanate-methyl), 9, III, RQ

>882 lbs per completed package
UN3077, Environmentally hazardous substance, solid, n.o.s, (thiophanate-methyl), 9, III, RQ, Marine Pollutant

IMDG
UN3077, Environmentally hazardous substance, solid, n.o.s, (thiophanate-methyl), 9, III, Marine Pollutant

IATA
Non Regulated

15. REGULATORY INFORMATION

EPA FIFRA INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

DANGER. Corrosive, causes irreversible eye damage. May be fatal if inhaled. Harmful if swallowed or absorbed through skin. May be a potential skin sensitizer. Do not get in eyes or on clothing or skin. Wear goggles or face-shield when handling. Wear a respirator as specified below under Personal Protection Equipment (PPE). Do not breathe dust or spray mist. Avoid prolonged contact with skin. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Note to User: This product may produce mild bronchial irritation and temporary irritation of the skin characterized by redness or rash on exposed skin areas. Affected persons should consult a physician.

U.S. FEDERAL REGULATIONS

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:
Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):
Immediate and Delayed

Section 313 Toxic Chemical(s):
Thiophanate-methyl (CAS No. 23564-05-8) 17.1 – 18.9 equivalent by weight in product.
Chlorothalonil (CAS No. 1897-45-6) 69.84 – 74.16 equivalent by weight in product.

Reportable Quantity (RQ) under U.S. CERCLA:
Thiophanate-methyl (CAS No. 23564-05-8) 10 pounds

RCRA Waste Code:
Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

State Information:
Other state regulations may apply. Check individual state requirements.

California Proposition 65: ⚠ **ATTENTION**. This product can expose you to chemicals including thiophanate methyl which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 3 **Flammability:** 1 **Reactivity:** 0

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that

labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

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