MATERIAL SAFETY DATA SHEET

Dinotefuran 20% SG

INSECTICIDE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Dinotefuran 20 SG Insecticide

SYNONYM(S): Dinotefuran 20% SG

MANUFACTURER

PI Industries Limited 237, GIDC PANOLI District:-Bharuch Gujarat (INDIA) **For information, call:** +91 2646 655471-74 **Emergency Number:** +91 2646 655471-74

MARKETED BY: Indofil Industries Limited, Kalpataru Square, 4TH Floor ,Kondivita Road, off Andheri-Kurla Road, Amdheri (E) ,Mumbai- 400059

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name: Dinotefuran,N-methyl-N_-nitro-N__-[(tetrahydro-3-furanyl) methyl] guanidine* CASE No.165252-70-0)

Weight/Percent: 20 %

Particulates Not Otherwise Classified** (No CAS#) 80 %

ACGIHExposure Limits: 10 mg/m3TWA (inhalable particulate); 3 mg/m3 TWA (respirable fraction)

OSHAExposureLimits : 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

*** Active Ingredient** 20% ** Other ingredients, which are maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identity is withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling +91 2646 655471-74.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION • *Harmful* if swallowed or absorbed through skin.

• Powder material may form explosive dust-air mixture.

• Avoid breathing dust or vapors.

• Avoid contact with eyes, skin and clothing.

• Keep out of reach of children.

POTENTIAL HEALTH EFFECTS

Acute Toxicity (Primary Routes of Exposure)

Signs and Symptoms of Systemic Effects: No significant

Signs of systemic toxicity were observed in animals exposed to very high oral, dermal or inhalation dosages of Dinotefuran Technical.

Acute Eye Contact: This product can cause brief and/or minor eye irritation. The expected adverse health effects resulting from an exposure may include redness and possible swelling.

Acute Skin Contact: This product can cause brief and/or minor irritation. The expected adverse health effects resulting from an exposure may include redness and possibly some minor swelling. This product is slightly toxic when absorbed through the skin. This product is not expected to cause allergic skin reactions.

Acute Ingestion: This product is slightly toxic when ingested.

Acute Inhalation: This product is minimally toxic when inhaled.

Chronic Toxicity (including cancer): No specific target organ(s) could be identified in chronic studies conducted with Dinotefuran in rats, mice and dogs, nor did it produce tumors in rats or mice.

Developmental Toxicity (birth defects): No developmental toxicity was produced in animals exposed ton Dinotefuran Technical, even at doses that were toxic to the regnant animal.

Reproductive Toxicity: Dinotefuran Technical was tested in a two-generation rat reproduction study. Reduced preweaning weight gain was observed only at a dose that also produced systemic maternal toxicity.

Potentially Aggravated Medical Conditions: None known for complete discussion of the toxicology data from which this evaluation was made, refer to Section 11. For Regulatory Information, refer to Section 15.

4. FIRST AID MEASURES

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

EYE CONTACT: 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 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.

INGESTION: Call a poison control center or doctor immediately for treatment advice. Have a 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. Do not give anything by mouth to an unconscious person.

INHALATION: 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.

NOTES TO PHYSICIAN: None

5. FIRE FIGHTING MEASURES

FLASH POINT: Not applicable

AUTOIGNITION: 350°C (Dinotefuran)

EXTINGUISHING MEDIA: Water fog, carbon dioxide, foam, dry chemical

FLAMMABLE LIMITS IN AIR - LOWER (%): Not applicable

FLAMMABLE LIMITS IN AIR - UPPER (%): Not applicable

NFPA RATING:

Health: 1

Flammability: 3

Reactivity: 1

Special: None (Least-0, Slight-1, Moderate-2, High-3, Extreme-4).

These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

FIRE FIGHTING INSTRUCTIONS: Products of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment.

Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse. Read the entire document.

This material is not expected to burn or explode in normal conditions, but will burn violently if involved in a fire. Dinotefuran becomes self-reactive in high temperatures. Exposure to heat may promote violent decomposition.
HAZARDOUS COMBUSTION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce: Oxides of nitrogen.

6. ACCIDENTAL RELEASE MEASURES

OBSERVE PRECAUTIONS IN SECTION 8: PERSONAL PROTECTION top the source of the spill if safe to do so. Contain the spill to prevent further contamination of the soil, surface water, or ground water.

FOR SPILLS ON LAND: CONTAINMENT: Remove all sources of ignition. Ventilate area of leak or spill. Clean-up personnel may require protection from inhalation of dust. Avoid runoff into storm sewers or other bodies of water.
CLEANUP: Clean up spill immediately in a manner that does not disperse dust into the air and place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

FOR SPILLS IN WATER: CONTAINMENT: This material will disperse or dissolve in water. Stop the source of the release. Contain and isolate to prevent further release into soil, surface water and ground water.

CLEANUP: Clean up spill immediately. Absorb spill with inert material. Remove contaminated water for treatment or disposal.

7. HANDLING AND STORAGE **END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.**

Keep away from all possible sources of ignition (sparks or flame). Avoid high temperatures exceeding 150°C. Keep container closed. Use only with adequate ventilation.

To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring the material. Use explosion-proof electrical equipment. Take precautionary measures against static discharges.

Keep pesticide in original container. Do not store or transport near food or feed. Do not contaminate food or feed. Do not put concentrate into food or drink containers. Do not dilute concentrate in food or drink containers. Store in a cool, dry place, out of direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

EYES: Do not get this material in your eyes. Eye contact can be avoided by wearing protective eyewear.
RESPIRATORY PROTECTION: Use this material only in well ventilated areas. If operating conditions result in airborne concentrations of this material, the use of an approved respirator is recommended.

SKIN PROTECTION: Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

EXPOSURE LIMITS - See Section 2.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Granule

COLOR: White

ODOR: Odorless

MELTING POINT: 107.5°C (Dinotefuran)

BOILING POINT: Decomposed 208°C (Dinotefuran)

BULK DENSITY: 0.56 g/ml

VAPOR PRESSURE: Not applicable

pH: 7.6 (1% solution)

SOLUBILITY: Soluble in water.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable at normal ambient temperatures.

INCOMPATIBILITY: Strong oxidizers, heat and sources of ignition.

OXIDATION/REDUCTION PROPERTIES: Not an oxidizing or reducing agent.

EXPLODABILITY: Minimum Explosive Concentration: 110 mg/L Maximum Oxygen Concentration: 11%

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon oxides, nitrogen oxides sulfur oxides, crystalline silica

11. TOXICOLOGICAL INFORMATION ACUTE (Product Specific Information):

Eye Irritation: This product produced brief and/or minor eye irritation in the eyes of test animals. (Toxicity Category III)

Skin Irritation: This product produced brief and/or minor irritation in animals. (Toxicity Category IV)

Oral Toxicity: The oral LD50 in rats is > 2000 mg/kg. (Toxicity Category III)

Dermal Toxicity: The dermal LD50 in rats is > 2000 mg/kg. (Toxicity Category III)

Inhalation Toxicity: The 4-hour inhalation LC50 is > 2.94 mg/L. (Toxicity Category IV)

Skin Sensitization: This product was not a skin sensitizer in animals.

TOXICITY OF DINOTEFURAN TECHNICAL

SUBCHRONIC: Dinotefuran technical was tested in 13-week dietary toxicity studies in rats, mice and dogs. In the rat study, a NOEL of 500 ppm was established, based on reduced body weight gain in females and adrenal cortical vacuolation in males and a NOAEL of 5,000 ppm based on marked growth retardation at 25,000 ppm (adrenal cortical vacuolation not adverse).A NOEL of 25,000 ppm was established in the mouse study based on reduced body weight gain at 50,000 ppm. In the dog 13-week dietary study, a NOEL of 8,000 ppm was established based on reduced body weight gain. No target organs were identified in sub chronic inhalation or dermal toxicity studies in rats.

CHRONIC/CARCINOGENICITY: Dinotefuran technical was tested in lifetime studies with rats and mice and a one-year study with dogs. In common with the sub chronic studies in these species, no specific target organs could be identified. In the 78-week mouse study a NOAEL of 2500 ppm was established, based on decreased weight gain and a decrease in circulating platelet counts. In the 104-week rat study a NOAEL of 2000 ppm was established, based on a decrease in weight gain in females. There were no treatment-related effects in rats or mice on survival or the nature and incidence of neoplastic and adverse non-neoplastic histomorphological findings in either species at any dose level. In the 52-week dog study a NOAEL of 16000 ppm was established based on decreased weight gain in both sexes and decreased food consumption in females.

NEUROTOXICITY: Dinotefuran did not produce any functional or histomorphological evidence of neurotoxicity in acute (gavage) and 13-week (dietary) neurotoxicity studies in rats. The NOEL for neurotoxicity in the acute study was 1,500 mg/kg, the highest dose level administered. The NOEL for neurotoxicity in the 13-week dietary study was 50,000 ppm. The NOEL for all effects in this study was 5,000 ppm based on reduced body weight gain and food consumption.

DEVELOPMENTAL TOXICITY: In a developmental toxicity study of Dinotefuran technical in rats the maternal NOAEL was 300 mg/kg/day based on reduced weight gain, food consumption and water intake at 1000 mg/kg/day.

Dinotefuran technical did not produce developmental effects in rats at doses up to 1000 mg/kg/day (the highest does tested). In a study with rabbits the maternal NOAEL was 52 mg/kg/day based on reduced weight gain, food consumption and water intake and clinical signs noted at 300 mg/kg/day and pathology findings in the liver and stomach at 125 mg/kg/day and higher. The developmental NOEL was 300 mg/kg/day.

REPRODUCTION: Dinotefuran technical was tested in a two-generation rat reproduction study at doses of 0, 300, 1000, 3000 and 10000 ppm. The NOAEL for systemic toxicity in parental animals was 3000 ppm based on decreased body weight gain and food consumption and decreased spleen and thyroid weights at the highest dose level evaluated (10000 ppm). The NOAEL for reproductive effects was 10000 ppm. The NOAEL for effects on the offspring was 3000 ppm based on reduced preweaning weight gain at 10000 ppm.

MUTAGENICITY: Dinotefuran technical was negative in the following in vitro assays: Ames Assay, mouse lymphoma (L5178Y), mammalian cytogenetics (CHL/IU) or DNA Repair. Dinotefuran technical was negative in the following in vivo assays: mouse micronucleus. Overall, Dinotefuran technical does not present a genetic hazard.

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 3. For information regarding regulations pertaining to this product, refer to Section 15.

12. ECOLOGICAL INFORMATION AVIAN TOXICITY:

Dinotefuran Technical is practically non-toxic to moderately toxic to avian species.

Test results include:

Oral LD50 quail: greater than 2000 mg/kg; Dietary

LC50 Mallard duck: greater than 997.9 ppm;

Dietary LC50 quail: greater than 1301 ppm;

Reproduction quail: NOEL = 5000 ppm;

Reproduction Mallard duck: NOEL = 2000 ppm

AQUATIC ORGANISM TOXICITY:

Dinotefuran Technical is practically nontoxic to fish and practically nontoxic to highly toxic to aquatic invertebrate species.

Test results include:

LC50 (96 hr) Bluegill Sunfish: greater than 100 mg/l;

LC50 (96 hr) Rainbow Trout: greater than 100 mg/l;

LC50 (96 hr) Common Carp: greater than 100 mg/l
LC50 (96 hr) Sheepshead Minnow: greater than 109 mg/l

NOEC (early life stage) Rainbow Trout: greater than 10 mg/l;

EC50 (48 hr) Daphnia magna: greater than 1000 mg/l;

NOEC (lifecycle) Daphnia magna: greater than 10 mg/l;

LC50 (96 hr) Mysid Shrimp: 0.79 mg/l;

EC50 (96 hr) Oyster Shell Deposition: greater than 141mg/l.

OTHER NON-TARGET ORGANISM TOXICITY:

Dinotefuran Technical is highly toxic to bees. The acute oral and contact LD50 in bees were 0.056 μg/bee and 0.022 ug/bee, respectively.

13. DISPOSAL CONSIDERATIONS

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS. DISPOSAL METHODS: Check government regulations and local authorities for approved disposal of this material. Dispose in accordance with applicable laws and regulations.

14. TRANSPORT INFORMATION

IATA (ground) SHIPPING NAME: Pesticides, dry, non-regulated

IATA TECHNICAL SHIPPING NAME: Dinotefuran 20% Solid

IATA REPORTABLE QUANTITY (RQ): Not applicable

IATA UN/NA NUMBER: Not applicable

IATA HAZARD CLASS: Not applicable

REMARKS: None

EXEMPTION REQUIREMENT: None

15. REGULATORY INFORMATION

UN NUMBER: NOT REGULATED (Non Hazardous product)

All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/ formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

This MSDS Summarizes Our Best Knowledge Of The Health And Safety Hazard Information of The Product And How To Safely Handle And Use The Product In The Workplace. Each User Must Review This MSDS in The Context Of How The Product Will Be Handled And Used In The Workplace. If Clarification or Further Information Is Needed To Ensure That An Appropriate Risk Assessment Can Be Made, the User Should Contact This Company So We Can Attempt To Obtain Additional Information From Our Suppliers Our Responsibility for Products Sold is Subject to Our Standard Terms And Conditions, A Copy of which is Sent To Our Customers And Is Also Available On Request. Please Read All Labels Carefully Before Using Product.

16. OTHER INFORMATION

Disclaimer: The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other

warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall PI Industries be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if PI Industries has been advised of the possibility of such damages.

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