

MATERIAL SAFETY DATA SHEET (MSDS)

EMATECH (Emamectin Benzoate 5% WDG) — Commercial Agrochemical Formulation

Product Name: EMATECH

Formulation Type: Water Dispersible Granules (WDG)

Active Ingredient: Emamectin Benzoate 5% WDG

Chemical Family: Avermectin Insecticide

Brand Name: Binz Life Science

Recommended Use: Agricultural Insecticide

Manufacturer: Binz Life Science

Standard Pack Size: 150 g

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifier

Product Name: EMATECH

Synonyms: Emamectin Benzoate 5% WDG, Avermectin derivative water dispersible granules.

CAS Number (Active Ingredient): 155569-91-8 (Emamectin B1a) and 137512-74-4 (Emamectin B1b).

1.2 Recommended Use of the Product and Restrictions on Use

Recommended Use: Systemic and contact agricultural insecticide for the control of lepidopteran larvae, bollworms, leafminers, and other chewing insect pests in various agricultural crops including cotton, vegetables, fruits, and cereals.

Restrictions on Use: Use strictly in accordance with product label instructions. Not recommended for residential indoor use or non-agricultural applications.

1.3 Manufacturer Information

Manufacturer: Binz Life Science

Country of Origin: Pakistan

Operational Sector: Agrochemical Formulation and Crop Protection Division.

SECTION 2: HAZARD IDENTIFICATION

2.1 Classification of the Substance or Mixture

Classification according to Globally Harmonized System (GHS) and national regulatory standards:

- Acute Toxicity (Oral) – Category 3 (H301: Toxic if swallowed)
- Acute Toxicity (Dermal) – Category 4 (H312: Harmful in contact with skin)
- Skin Corrosion/Irritation – Category 2 (H315: Causes skin irritation)
- Serious Eye Damage/Eye Irritation – Category 2A (H319: Causes serious eye irritation)
- Specific Target Organ Toxicity (Single Exposure) – Category 1 (H370: Causes damage to nervous system)
- Specific Target Organ Toxicity (Repeated Exposure) – Category 2 (H373: May cause damage to organs through prolonged or repeated exposure)
- Hazardous to the Aquatic Environment (Acute Hazard) – Category 1 (H400: Very toxic to aquatic life)
- Hazardous to the Aquatic Environment (Long-Term Hazard) – Category 1 (H410: Very toxic to aquatic life with long lasting effects)

2.2 GHS Label Elements

Signal Word: **DANGER**

Hazard Pictograms:

Skull and crossbones (Acute toxicity), Health hazard (STOT), Environment (Aquatic toxicity), Exclamation mark (Skin/Eye irritation).

Hazard Statements:

- H301: Toxic if swallowed.
- H312: Harmful in contact with skin.
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H370: Causes damage to the central nervous system.
- H373: May cause damage to organs through prolonged or repeated exposure.
- H410: Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

- P260: Do not breathe dust, fume, gas, mist, vapours, or spray.
- P262: Do not get in eyes, on skin, or on clothing.
- P264: Wash thoroughly handling and application with soap and water.
- P270: Do not eat, drink, or smoke when using this product.
- P273: Avoid release to the environment.
- P280: Wear protective gloves, protective clothing, eye protection, face protection, and respiratory protection.
- P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P314: Get medical advice/attention if you feel unwell.
- P391: Collect spillage.
- P501: Dispose of contents/container in accordance with local, regional, and national regulations.

2.3 Other Hazards

This product contains active ingredients that are extremely toxic to fish, aquatic invertebrates, and bees. Direct exposure during foraging or application must be strictly avoided. Dust generated from handling dry granules may cause mechanical eye and respiratory irritation.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

This product is a multi-component formulation presented as water dispersible granules (WDG).

Chemical Component / Common Name	CAS Number	Concentration (% w/w)	GHS Classification
Enamectin Benzoate (Mixture of B1a and B1b)	155569-91-8 / 137512-74-4	5.0% min.	Acute Tox. 3 (H301), Acute Tox. 3 (H311), STOT SE 1 (H370), Aquatic Acute 1 (H400), Aquatic Chronic 1 (H410)
Dispersing Agent / Lignosulfonate salt	Confidential / Proprietary	15.0% – 20.0%	Eye Irrit. 2 (H319)
Wetting Agent / Alkyl naphthalene sulfonate	Confidential / Proprietary	5.0% – 8.0%	Skin Irrit. 2 (H315), Eye Dam. 1 (H318)
Inert Solid Carriers / Kaolin / Silica filler	1332-58-7 / 7631-86-9	Balance (up to 100%)	Not classified as hazardous

Note: Concentrations are expressed as weight by weight percentages. Exact percentages are withheld as proprietary business confidential information.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: Remove victims from the source of exposure immediately. Move to fresh air. Remove contaminated clothing and footwear. If the patient is unconscious or experiencing acute symptoms, seek immediate emergency medical assistance and show this Material Safety Data Sheet or product label.

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration (do not use mouth-to-mouth method if victim ingested or inhaled the substance; use a pocket mask equipped with a one-way valve or other proper respiratory medical device). Administer oxygen if breathing is difficult. Seek immediate medical attention.

Skin Contact: Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If skin irritation develops or persists, get medical attention.

Eye Contact: Immediately flush eyes with gently flowing water for at least 15 minutes, holding eyelids open. Remove contact lenses if present and easy to do after the first 5 minutes, then continue rinsing eye. Get medical attention immediately, preferably by an ophthalmologist.

Ingestion: Never give anything by mouth to an unconscious person. Do NOT induce vomiting without medical advice. If conscious, rinse mouth thoroughly with water. If spontaneous vomiting occurs, lean patient forward or place on the left side with head down to prevent aspiration into lungs. Obtain emergency medical attention immediately.

4.2 Most Important Symptoms and Effects, Acute and Delayed

Symptoms of overexposure may include tremors, ataxia, lethargy, dilated pupils, muscular incoordination, and respiratory depression. Avermectins affect the central nervous system by enhancing GABA-mediated synaptic transmission.

4.3 Indication of Immediate Medical Attention and Special Treatment Needed

Treat symptomatically. There is no specific antidote available. Supportive care as indicated by the patient's clinical condition is recommended. Toxicity can be minimized by early gastric lavage, administration of activated charcoal, and sodium sulfate cathartic. If accidental exposure has occurred through ingestion or skin absorption, monitor vital signs and neurological status closely.

SECTION 5: FIRE FIGHTING MEASURES

5.1 Extinguishing Media

Suitable Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical powder, or carbon dioxide (CO₂).

Unsuitable Extinguishing Media: Do not use high-pressure water jet as this may scatter and spread burning material and contaminate surrounding areas.

5.2 Special Hazards Arising from the Substance or Mixture

Specific Hazards during Firefighting: Combustion or thermal decomposition may generate hazardous and toxic fumes, including carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x), and irritating organic vapours or halogenated compounds. Dust clouds formed in enclosed spaces during handling or fire situations may present a dust explosion hazard.

5.3 Advice for Firefighters

Special Protective Equipment: Wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure demand mode equipped with a full facepiece.

Firefighting Procedures: Evacuate personnel to a safe distance upwind of the fire. Cool closed containers exposed to fire with water spray. Prevent runoff from fire control or dilution from entering drains, sewers, or watercourses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

Restrict access to the spill area. Only properly trained and equipped personnel wearing full personal protective equipment (PPE) should participate in clean-up operations. Avoid breathing dust or generating airborne particulate. Ensure adequate ventilation in indoor or confined spaces.

6.2 Environmental Precautions

Prevent spilled material from entering surface water systems, storm drains, irrigation canals, soil, or groundwater. If the product contaminates rivers, lakes, or public water systems, notify appropriate local environmental authorities immediately.

6.3 Methods and Materials for Containment and Cleaning Up

Contain spill immediately. For small spills, sweep up carefully or vacuum using a HEPA-filtered vacuum cleaner. Avoid creating dust clouds. Place collected material into clean, dry, labeled sealable containers for proper disposal. For large spills, construct temporary earthen dikes or barriers to contain the spread. Wash down the contaminated surface thoroughly with water and detergent, collecting all wash water for hazardous waste treatment. Never flush spilled product down municipal drains.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Handling Practices: Handle product with care in accordance with good industrial hygiene and safety practices. Avoid contact with eyes, skin, and clothing. Do not breathe dust or spray mist during mixing, loading, or application. Use local exhaust ventilation or wear approved respiratory protection if dust generation is likely.

Hygiene Measures: Wash thoroughly after handling and before eating, drinking, smoking, chewing tobacco, or using the restroom. Remove contaminated clothing and protective equipment before entering dining areas. Wash work clothing and protective gear separately from daily laundry.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Store in original, tightly sealed packaging in a cool, dry, well-ventilated, secure storage area designated for agrochemicals. Protect containers from direct sunlight, extreme heat, open flames, and moisture. Keep away from food, drink, animal feedingstuffs, and fertilizers.

Incompatible Materials: Strong oxidizing agents, strong acids, and strong bases.

Storage Stability: Stable under normal commercial storage conditions for at least two years.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

Component Exposure Limits:

- Emamectin Benzoate: Manufacturer Occupational Exposure Limit (OEL): 0.02 mg/m³ (8-hour TWA).
- Inert Mineral Dust / Kaolin: ACGIH TLV: 2 mg/m³ (respirable fraction); OSHA PEL: 15 mg/m³ (total dust), 5 mg/m³ (respirable fraction).

8.2 Exposure Controls

Engineering Controls: Ensure adequate ventilation, especially in enclosed working areas. Use closed systems, local exhaust ventilation, or other engineering controls to maintain airborne dust concentrations below recommended exposure limits.

8.3 Individual Protection Measures (Personal Protective Equipment - PPE)

Eye / Face Protection: Wear tightly fitting safety goggles or chemical safety face shields (8-inch minimum) to protect against dust and splashing.

Skin and Body Protection: Wear long-sleeved shirts, long trousers, chemical-resistant overalls or aprons made of nitrile or butyl rubber, and heavy-duty chemical-resistant safety boots.

Hand Protection: Wear chemical-resistant gloves manufactured from high-grade nitrile rubber, neoprene, or PVC. Inspect gloves prior to use and discard immediately if punctured, torn, or showing signs of degradation.

Respiratory Protection: When handling dry granules, mixing spray solutions, or spraying in situations where dust or mist inhalation is possible, wear a NIOSH-approved or EN-certified half-face or full-face particulate respirator equipped with N95 (or higher) filters.

General Hygiene Guidance: Emergency eye-wash fountains and safety showers should be located in the immediate vicinity of any potential exposure area. Do not eat, drink, or smoke during application or handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Property	Specification / Value
Appearance	Pale yellow to off-white granular solid
Physical State	Water Dispersible Granules (WDG)
Odor	Faint chemical / characteristic odor
pH (1% aqueous dispersion)	5.0 – 8.0
Melting Point / Freezing Point	Not applicable (formulation)
Initial Boiling Point and Boiling Range	Not applicable
Flash Point	Not applicable (solid formulation)
Evaporation Rate	Not applicable
Flammability (solid, gas)	Not highly flammable
Upper / Lower Flammability Limits	Not determined
Vapor Pressure	Negligible at ambient temperatures
Vapor Density	Not applicable
Relative Density (Bulk Density)	0.55 – 0.75 g/cm ³
Solubility in Water	Dispersible in water, forming a stable suspension
Partition Coefficient (n-octanol/water)	Log Pow = 5.0 (for active ingredient Emamectin Benzoate)
Auto-Ignition Temperature	Not determined
Decomposition Temperature	> 140 °C
Viscosity	Not applicable

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under normal conditions of storage, handling, and use. Does not undergo violent polymerization.

10.2 Chemical Stability

Stable under recommended storage conditions. Sensitive to prolonged exposure to intense ultraviolet light and high humidity.

10.3 Possibility of Hazardous Reactions

No hazardous reactions are expected under normal processing and handling conditions.

10.4 Conditions to Avoid

Extreme temperatures, direct sunlight, moisture, high humidity, and open flames or ignition sources.

10.5 Incompatible Materials

Strong oxidizing agents, strong acids, and strong alkaline materials.

10.6 Hazardous Decomposition Products

Thermal decomposition products may include carbon monoxide, carbon dioxide, nitrogen oxides, and toxic organic fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

The toxicological data below refer to the technical active ingredient and formulated product where available.

Acute Toxicity:

- Oral LD50 (Rat): > 50 – 300 mg/kg (Toxic if swallowed)
- Dermal LD50 (Rabbit): > 1,500 – 2,000 mg/kg (Harmful in contact with skin)
- Inhalation LC50 (Rat, 4 h): > 0.60 mg/L (Dust / Mist)

Skin Corrosion / Irritation:

Causes skin irritation in animal tests (Rabbit). Repeated or prolonged contact may lead to dermatitis or allergic skin reactions in sensitive individuals.

Serious Eye Damage / Irritation:

Causes moderate to severe eye irritation. Direct contact with eyes may result in corneal irritation, redness, tearing, and pain.

Respiratory or Skin Sensitization:

Not a skin sensitizer in standard guinea pig maximization assays. Inhalation of dust may irritate the upper respiratory tract.

Chronic Toxicity and Long-Term Effects:

Carcinogenicity: Eamectin benzoate has been evaluated in long-term rodent feeding studies and is not classified as a human carcinogen by IARC, NTP, ACGIH, or OSHA.

Mutagenicity: Negative in all standard genotoxicity assays (Ames test, in vitro chromosomal aberration, mouse micronucleus test).

Reproductive and Developmental Toxicity: No evidence of teratogenic effects in rats and rabbits. Reproductive effects observed only at maternally toxic dose levels.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

The product is extremely toxic to aquatic organisms, fish, and beneficial insects.

- Fish Toxicity (Rainbow Trout, 96-hour LC50): 0.174 mg/L
- Daphnia Toxicity (Water Flea, 48-hour EC50): 0.00099 mg/L (Very toxic to aquatic invertebrates)
- Algae Toxicity (Pseudokirchneriella subcapitata, 72-hour EbC50): > 0.001 mg/L
- Avian Toxicity (Bobwhite Quail, Oral LD50): 76 mg/kg
- Bee Toxicity (Honeybees, 48-hour oral LD50): 0.0035 µg/bee (Highly toxic to bees)

12.2 Persistence and Degradability

Eamectin benzoate is moderately persistent in soil under aerobic conditions (DT50 = 30 to 60 days). Undergoes rapid aqueous photolysis in water (half-life < 2 days). Not readily biodegradable.

12.3 Bioaccumulative Potential

Low potential for bioaccumulation due to moderate octanol-water partition coefficient and rapid degradation in natural environments.

12.4 Mobility in Soil

Immobile in soil. Binds strongly to soil organic matter and clay minerals, minimizing leaching into groundwater.

12.5 Other Adverse Effects

Do not apply directly to water, areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in adjacent sites.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Product Waste: Waste resulting from the use of this product must be disposed of on site or at an approved waste disposal facility in accordance with applicable national, regional, and local environmental regulations.

Container Disposal: Completely empty container by tapping and shaking to remove all contents. Triple rinse containers (or equivalent) with water, adding rinse water to the spray tank. Puncture or crush empty containers to prevent re-use and dispose of in an approved sanitary landfill or via authorized recycling agencies. Do not burn empty containers or packaging.

SECTION 14: TRANSPORT INFORMATION

14.1 UN Number

UN 3077

14.2 UN Proper Shipping Name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains Eamectin Benzoate)

14.3 Transport Hazard Class(es)

Class: 9 (Miscellaneous dangerous substances and articles)

14.4 Packing Group

Packing Group: III

14.5 Environmental Hazards

Marine Pollutant: Yes

14.6 Special Precautions for User

Ensure that containers are securely closed, upright, and protected from physical damage during transport. Transport in accordance with national and international transport regulations (ADR/RID, IMDG, IATA-DGR).

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health, and Environmental Regulations

This product is registered as an agricultural pesticide under applicable national regulatory frameworks. All active and inert ingredients are listed on official chemical inventories or are exempt from listing.

Classification and labeling comply with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and local agricultural chemical control acts.

SECTION 16: OTHER INFORMATION / DISCLAIMER

16.1 Revision Information

Date of Issue: July 2026

Version Number: 1.0

Supersedes: Previous drafts

16.2 Full Text of H-Statements Referred to in Sections 2 and 3

- H301: Toxic if swallowed.
- H311: Toxic in contact with skin.
- H312: Harmful in contact with skin.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H319: Causes serious eye irritation.
- H370: Causes damage to organs.
- H373: May cause damage to organs through prolonged or repeated exposure.
- H400: Very toxic to aquatic life.
- H410: Very toxic to aquatic life with long lasting effects.

16.3 Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Binz Life Science assumes no responsibility for injury to the recipient or third parties caused by abnormal use of the material even if reasonable safety procedures are followed.