

Product Name: MIRACULAN** EC Plant Growth Regulator**Issue Date:** 2012/05/07**Print Date:** 02 May 2019

Dow AgroSciences India Pvt. Ltd. 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. Identification of the substance/preparation and of the company/undertaking**Product Name**

MIRACULAN** EC Plant Growth Regulator

Identified uses

Plant Protection Product

COMPANY IDENTIFICATION

Dow AgroSciences India Pvt. Ltd.
A Subsidiary of The Dow Chemical Company
1st Floor, Block B, 02, Godrej IT Park
Pirojshanangar, L.B.S. Marg
Chembur
Mumbai, MA 400 079
India

Customer Information Number:

91-22-55985700

SDSQuestion@dow.com**EMERGENCY TELEPHONE NUMBER****24-Hour Emergency Contact:**

91-2356-272046

Local Emergency Contact:

91 22 67978600

2. Composition/information on ingredients

Component	Amount	Classification:	CAS #	EC #
Naphtha (petroleum), hydrodesulfurized heavy; Low boiling point hydrogen treated naphtha	> 10.0 - < 40.0 %	Xn: R65; R66	64742-82-1	265-185-4
Solvent naphtha (petroleum), heavy aromatic	> 50.0 - < 80.0 %	Carc. 3: R40; Xn: R65; R66; N: R51/53	64742-94-5	265-198-5

See Section 16 for full text of R-phrases.

3. Hazards Identification

Limited evidence of a carcinogenic effect.

Harmful: may cause lung damage if swallowed.

Repeated exposure may cause skin dryness or cracking.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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. If breathing is difficult, oxygen should be administered by qualified personnel.

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: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not 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

Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

Skin contact may aggravate preexisting dermatitis. 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. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Extinguishing Media to Avoid: Do not use direct water stream. Straight or direct water streams may not be effective to extinguish fire.

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: Carbon monoxide. Carbon dioxide.

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. Electrically ground and bond all equipment. Flammable mixtures of this product are readily ignited even by static discharge. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Flammable mixtures may exist within the vapor space of containers at room temperature. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9. Dense smoke is produced when product burns.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water may not be effective in extinguishing fire. 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. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Eliminate ignition sources. 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. 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.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. For large spills, warn public of downwind explosion hazard. Check area with combustible gas detector before reentering area. Ground and bond all containers and handling equipment. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Ground and bond all containers and handling equipment. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling

General Handling: Keep out of reach of children. Keep away from heat, sparks and flame. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Keep container closed. Use only with adequate ventilation. No smoking, open flames or sources of ignition in handling and storage area. Electrically bond and ground all containers and equipment before transfer or use of material. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Containers, even those that have been emptied,

can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Never use air pressure for transferring product. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage

Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies. Minimize sources of ignition, such as static build-up, heat, spark or flame. Keep container closed. Flammable mixtures may exist within the vapor space of containers at room temperature.

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Naphtha (petroleum), hydrodesulfurized heavy; Low boiling point hydrogen treated naphtha	ACGIH	TWA	100 ppm

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). Safety glasses (with side shields) should be consistent with EN 166 or equivalent. If exposure causes eye discomfort, use a full-face respirator.

Skin Protection: Wear clean, body-covering clothing.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 4 or higher (breakthrough time greater than 120 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 1 or higher (breakthrough time greater than 10 minutes according to EN 374) is recommended. 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. Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face 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	Liquid.
Color	Colorless
Odor	Aromatic
pH	Not applicable
Melting Point	No test data available
Freezing Point	No test data available
Boiling Point (760 mmHg)	No test data available.
Flash Point - Closed Cup	> 24.5 °C <i>Literature</i>
Flammable Limits In Air	Lower: No test data available Upper: No test data available
Vapor Pressure	No test data available
Vapor Density (air = 1)	No test data available
Specific Gravity (H ₂ O = 1)	0.88
Solubility in water (by weight)	emulsifies in water
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
Liquid Density	No test data available

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: Exposure to elevated temperatures can cause product to decompose. Avoid static discharge.

Incompatible Materials: None known.

Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials.

11. Toxicological Information

Acute Toxicity

Ingestion

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product: Single dose oral LD50 has not been determined. Estimated. LD50, rat > 5,000 mg/kg

Aspiration hazard

Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

Dermal

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The dermal LD50 has not been determined. Estimated. LD50, rat > 2,000 mg/kg

Inhalation

Prolonged excessive exposure may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects.

|| As product: The LC50 has not been determined. Estimated. LC50, 4 h, Aerosol, rat > 5 mg/l

Eye damage/eye irritation

|| May cause slight eye irritation. Vapor may cause eye irritation experienced as mild discomfort and redness.

Skin corrosion/irritation

|| May cause drying and flaking of the skin. Prolonged contact may cause moderate skin irritation with local redness.

Sensitization

Skin

|| Based on information for component(s): Did not cause allergic skin reactions when tested in guinea pigs.

Respiratory

|| No relevant data found.

Repeated Dose Toxicity

|| For the solvent(s): In animals, effects have been reported on the following organs: Central nervous system. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. May cause hearing loss based on animal data.

Chronic Toxicity and Carcinogenicity

|| No relevant information found.

Developmental Toxicity

|| For the solvent(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Reproductive Toxicity

|| For the solvent(s): No relevant information found.

Genetic Toxicology

|| For the solvent(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

12. Ecological Information

Toxicity

Data for Component: Naphtha (petroleum), hydrodesulfurized heavy; Low boiling point hydrogen treated naphtha

|| Material is harmful to aquatic organisms (LC50/EC50/IC50 between 10 and 100 mg/L in the most sensitive species).

Fish Acute & Prolonged Toxicity

|| LC50, Fish, 96 h: 10 - 100 mg/l

Aquatic Invertebrate Acute Toxicity

|| EC50, Daphnia magna (Water flea), static test, 48 h: > 100 mg/l

Aquatic Plant Toxicity

|| EC50, algae, 72 h: 10 - 100 mg/l

Data for Component: Solvent naphtha (petroleum), heavy aromatic

|| Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

Fish Acute & Prolonged Toxicity

|| LL50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: 2 - 5 mg/l

Aquatic Invertebrate Acute Toxicity

|| EL50, Daphnia magna (Water flea), static test, 48 h, immobilization: 3 - 10 mg/l

Aquatic Plant Toxicity

|| EL50, Pseudokirchneriella subcapitata (green algae), static test, 72 h: 11 mg/l

Toxicity to Above Ground Organisms

|| Based on information for a similar material: dietary LC50, Colinus virginianus (Bobwhite quail): > 6,500 ppm

|| Based on information for a similar material: oral LD50, Colinus virginianus (Bobwhite quail): > 2,250 mg/kg

Persistence and Degradability

Data for Component: **Naphtha (petroleum), hydrodesulfurized heavy; Low boiling point hydrogen treated naphtha**

|| Material is expected to be readily biodegradable.

Data for Component: **Solvent naphtha (petroleum), heavy aromatic**

|| Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
39 %	28 d	OECD 301D Test	fail

Bioaccumulative potential

Data for Component: **Naphtha (petroleum), hydrodesulfurized heavy; Low boiling point hydrogen treated naphtha**

|| **Bioaccumulation:** Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

|| **Partition coefficient, n-octanol/water (log Pow):** 2.1 - 6 Estimated.

Data for Component: **Solvent naphtha (petroleum), heavy aromatic**

|| **Bioaccumulation:** Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

|| **Partition coefficient, n-octanol/water (log Pow):** 2.9 - 6.1 Measured

Mobility in soil

Data for Component: **Naphtha (petroleum), hydrodesulfurized heavy; Low boiling point hydrogen treated naphtha**

|| **Mobility in soil:** Expected to be relatively immobile in soil (Koc > 5000).

Data for Component: **Solvent naphtha (petroleum), heavy aromatic**

|| **Mobility in soil:** No data available.

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

ROAD & RAIL

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: PETROLEUM NAPHTHA, 1,2,4-TRIMETHYLBENZENE

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

Classification: F1

Hazard identification No: 30

Environmental Hazard: Yes

OCEAN

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: PETROLEUM NAPHTHA, 1,2,4-TRIMETHYLBENZENE

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

EMS Number: F-E,S-E

Marine pollutant.: Yes

AIR

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: PETROLEUM NAPHTHA, 1,2,4-TRIMETHYLBENZENE

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

Cargo Packing Instruction: 366

Passenger Packing Instruction: 355

Environmental Hazard: Yes

INLAND WATERWAYS

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: PETROLEUM NAPHTHA, 1,2,4-TRIMETHYLBENZENE

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

Classification: F1

Hazard identification No: 30

Environmental Hazard: Yes

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

Classification and User Label Information

Hazard Symbol:

Xn - Harmful

N - Dangerous for the environment

Risk Phrases :

R40 - Limited evidence of a carcinogenic effect.

R65 - Harmful: may cause lung damage if swallowed.

R66 - Repeated exposure may cause skin dryness or cracking.

R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases :

S23 - Do not breathe gas/fumes/vapour/spray.

S24 - Avoid contact with skin.

S57 - Use appropriate container to avoid environmental contamination.

S60 - This material and its container must be disposed of as hazardous waste.

S62 - If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

To avoid risks to man and the environment, comply with the instructions for use.

16. Other Information

Risk-phrases in the Composition section

R40	Limited evidence of a carcinogenic effect.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.

Revision

Identification Number: 62113 / 4068 / Issue Date 2012/05/07 / Version: 2.0

DAS Code: GF-2046

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

Dow AgroSciences India Pvt. Ltd. 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 activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.