



## MATERIAL SAFETY DATA SHEET

### **ENDOFORCE<sup>®</sup> 350EC**

ASTRA INDUSTRIAL COMPLEX CO., LTD. (ASTRACHEM)  
P.O. BOX 30447, AL-KHOBAR 31952  
KINGDOM OF SAUDI ARABIA

#### 1. PRODUCT IDENTIFICATION

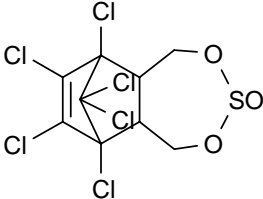
**Product Name:** **ENDOFORCE<sup>®</sup> 350EC**

**Chemical Class:** Insecticide Acaricide

**Use:** Endoforce 350EC is an emulsifiable concentrate insecticide formulaaion. It contains 350 g/L of the active ingredient of Endosulfan. Endosulfan is a chlorinated hydrocarbon insecticide of the cyclodine subgroup which acts as a contact poison in a wide variety of insects and mites. It can also be used as a wood preservative. It is used primarily on food crops like tea, fruits, vegetables and grains

**Producer:** **Astra Industrial Complex Co., Ltd.**  
P.O. Box 30447, Al-Khobar 31952  
Kingdom of Saudi Arabia  
Emergency Tel # (+966) 3 8121 406

#### 2. COMPOSITION / INFORMATION ON INGREDIENTS

Substance	Proportions (% w/w)	Chemical structure
<b>Endosulfan Technical 96.40%</b> <b>CAS No. 115-29-7</b> <b>Chemical Name:</b> (1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-en-2,3-ylenebismethylene) sulfite; 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepine 3-oxide (IUPAC)	34.05 (350 ± 17.5 g/L)	
<b>Blend of anionic and nonionic emulsifiers</b>	5.60	
<b>Organic solvents</b>	60.0	



### 3. HAZARD IDENTIFICATION

#### **Signs of Poisoning:**

Symptoms Irritation skin; nausea, confusion, agitation, flushing, dry mouth, tremor, convulsions, headache; in animals: kidney, liver injury; decreased testis weight.

#### **Primary Routes of Entry:**

Inhalation, skin absorption, ingestion, skin and/or eye contact

#### **Effects of single over exposures:**

##### **Ingestion:**

Blue lips or finger nails. Convulsions. Diarrhoea. Dizziness. Headache. Nausea. Unconsciousness. Vomiting. Weakness.

##### **Skin Absorption:**

May be cause irritation and facial skin sensations.

##### **Inhalation:**

May be cause irritation to the respiratory system.

##### **Eyes:**

May be cause eye irritation.

### 4. FIRST AID MEASURES

#### **Emergency and First aid Procedures**

##### **Ingestion:**

Call a physician or poison control center. Do not induce vomiting. Do not give anything by mouth to an unconscious person.

##### **Skin:**

Wash affected area with plenty of soap and water. Remove contaminated clothing. Launder contaminated clothing separately. Get medical attention.

##### **Inhalation:**

Remove victim to fresh air. If not breathing administer artificial respiration. Avoid unprotected mouth to mouth resuscitation. GET MEDICAL ATTENTION.

##### **Eye:**

Hold eyelids open and flush with a steady stream of water for at least 15 minutes. (remove contact lenses if easily possible) GET MEDICAL ATTENTION.



**Note to Physician:**

The treatment of systemic intoxication should be primarily symptomatic and supportive. Diazepam IV for convulsions or phenobarbital may be indicated. Attention should be given to maintain respiratory, cardiovascular and renal functions.

5. FIRE FIGHTING MEASURES

**Fire and Explosion:**

Flash point 30 °C

COMBUSTIBLE

**Flammable limits in air:**

Not determined.

**Auto ignition Temperature:**

Not determined.

**Extinguishing Media:**

Use carbon dioxide or dry chemical for small fires and water fog or foam (alcohol, polymer or ordinary) for large fires. Cool containers from maximum distance.

**Unusual fire and explosion hazards:**

Noxious fumes may be emitted under fire conditions.

**Special fire fighting procedures:**

Fire fighters should use self-contained breathing apparatus and full turnout gear. Prevent runoff of fire water. Avoid exposure to smoke. (Keep upwind).

6. ACCIDENTAL RELEASE MEASURES

**Steps to be taken if material is released or spilled:**

Dike the area using absorbent materials such as sand or clay. Recover and contain as much product as possible using absorbent. Clean spill area using a solution of water and detergent. Collect and contain wash water and all contaminated absorbent for disposal. If spilled on the ground, the affected area should be excavated to a depth of 1-2 inches. Prevent the spilled product or washing from reaching public sewers or waterways. Wear appropriate protective equipment during the cleanup. Ensure that tools and equipment are adequately decontaminated.



### Spillage Disposal

Collect leaking liquid in sealable containers. Do not wash away into sewer. Sweep spilled substance into sealable containers. Carefully collect remainder, and then remove to safe place (extra personal protection: complete protective clothing including self-contained breathing apparatus)

### Waste disposal method:

Dispose of in accordance with local regulations.

### Container disposal:

Dispose of in an approved facility according to local regulations.

## 7. HANDLING AND STORAGE

Store the product in a well-ventilated, secure area out of reach of children and domestic animals. Do not use or store near heat or open flame. Do not store food or feed in storage area. Prevent eating, drinking or smoking in areas where there is a potential exposure to the product. Wash hands before eating, drinking or smoking after using the product.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Protective equipment should be used during the following procedures:

- Manufacture, formulation or application of this product.
- Repair and maintenance of contaminated equipment
- Clear up of leaks and spills.
- Any other activity that may result in hazardous exposures.

### Respiratory Protection:

Use MSHA/NIOSH approved respirator for organic vapors. Use positive pressure contained breathing apparatus where emergency conditions or where exposure limits are exceeded.

### Ventilation:

Exhaust appropriate for removal of vapors.

### Protective clothing:

Chemical resistant gloves, coveralls, apron and foot coverings.



**Eye Protection:**

Safety goggles or face shield in combination with breathing protection.

**User safety recommendations:**

Safety showers and eyes wash should be easily accessible.

**Exposure:**

Prevent dispersion of dust, strict hygiene.

**Personnel Protection:**

May irritate the eye and skin. Avoid contact with eyes and skin. DO NOT inhale spray mist. When preparing spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist and washable hat, elbow-length PVC gloves and face shield. After use and before eating drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield and contaminated clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Assay	"Endosulfan" 350 ± 17.5 g/L
Appearance	Clear Yellow Liquid free of visible impurities
Odour	Aromatic
Density	1.0666 (Kg/L)
Acidity as H <sub>2</sub> SO <sub>4</sub>	0.0% w/w (Specifications <0.0078% w/w)
Water Contents	0.03% w/w (Specifications <0.40% w/w)
Flash Point	30°C
pH	2 (5% emulsion in standard hard water 342 ppm)

10. STABILITY AND REACTIVITY

Stability: Stable to sunlight. Slowly hydrolysed in aqueous acids and alkalis, with the formation of the diol and sulfur dioxide.

Condition to avoid: Excessive heat.

Materials to avoid: Strong oxidizers, acids, and alkalis.



## 11. TOXICOLOGICAL INFORMATION

### Toxicology Data (Active Ingredient):

Acute Oral LD <sub>50</sub> (rat)	70 - 110 mg/Kg
Acute Inhalation LC <sub>50</sub> (4 h rat)	0.0345 mg/l (Male rats)
Eye Irritation (rabbit)	No irritation
Dermal Irritation (rabbit)	No irritation

### Carcinogenicity:

In a National Cancer Institute study done with both mice and rats, the males of both groups experienced such a high mortality rate that no conclusions could be drawn. However, the females of both species failed to develop any carcinogenic conditions 78 weeks after being fed diets containing up to 445 ppm (about 23 mg/kg). There are no reports of cancer in humans exposed to endosulfan. The EPA has placed endosulfan in the "not classifiable" category due to the lack of data on its carcinogenicity.

### Teratogenicity

When moderate to high levels of endosulfan (5 or 10 mg/kg/day) were given orally to female rats on days 6 to 14 of pregnancy, no soft tissue defects were found in their offspring. Some delayed bone formation occurred, however. It is possible that chronic exposure to endosulfan may result in reproductive and/or developmental difficulties in humans. There is no direct evidence of this in humans though.

### Mutagenicity:

Endosulfan is mutagenic to bacterial cells and to yeast cells. The metabolites of endosulfan have also shown the ability to cause cellular changes. This compound has also caused mutagenic effects in two different mammalian species. It is possible that it would induce these changes in humans.

## 12. ECOLOGICAL INFORMATION

It is moderately toxic to bees and is relatively non-toxic to beneficial insects such as parasitic wasps, lady-bird beetles and some mites.

Keep out of water supplies ground water or open water. This product is toxic to bees, fish and other aquatic life.



13. DISPOSAL CONSIDERATION

Pesticide wastes are toxic. Do not reuse product containers. Dispose of product containers, waste containers and residues according to local health and environmental regulations.

14. TRANSPORT INFORMATION

Proper Shipping Name	
UN number	UN No. 2761, 2762, 2995,2996
Class	6.1
Packing Group	II
Marine Pollutant	Yes

15. REGULATORY INFORMATION.

Insecticide for Agricultural use

16. OTHER INFORMATION

Buyer assumes all responsibility for safety and use not in accordance with the product label instructions.