

**Material Safety Data Sheet****ETHREL® BRAND ETHEPHON PLANT GROWTH  
REGULATOR FOR PINEAPPLE AND SUGARCANE**

MSDS Number: 102000001940

MSDS Version 2.0

Revision Date: 10/31/2005

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

<b>Product Name</b>	ETHREL® BRAND ETHEPHON PLANT GROWTH REGULATOR FOR PINEAPPLE AND SUGARCANE
<b>Chemical Name</b>	Ethephon
<b>MSDS Number</b>	102000001940
<b>EPA Registration No.</b>	264-257

Bayer CropScience  
2 T.W. Alexander Drive  
Research Triangle PK, NC 27709  
USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call 1-800-334-7577 (24 hours/day)  
For Product Information call: 1-866-99BAYER (1-866-992-2937)

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Ethephon	16672-87-0	39.90

**SECTION 3. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview**

Danger! Hazard to humans and domestic animals. Corrosive to skin and eyes. Causes irreversible eye damage. Causes skin irritation. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing.

**Physical State**

liquid

**Odor**

product specific

**Appearance**

colourless to amber

**Immediate Effects****Eye**

Corrosive - causes irreversible eye damage. Causes burns, corneal opacity.

**Skin**

Harmful if absorbed through skin. May cause irritation, redness, swelling on prolonged contact.

**Ingestion**

Harmful if swallowed. May cause burns to mouth and esophagus, chest pain, abdominal pain.

**Inhalation**

Harmful if inhaled. Mists may cause upper respiratory tract irritation, coughing, sore throat.

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<b>Chronic or Delayed Long-Term</b>	Prolonged contact can cause chronic bronchitis.
<b>Medical Conditions Aggravated by Exposure</b>	Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

**SECTION 4. FIRST AID MEASURES**

<b>General</b>	Have the product container or label with you when calling a poison control center or doctor or going for treatment.
<b>Eye</b>	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.
<b>Skin</b>	Take off all contaminated clothing immediately. Rinse immediately with plenty of water for at least 15 minutes. Call a poison control center or doctor for treatment advice.
<b>Ingestion</b>	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person.
<b>Inhalation</b>	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
<b>Notes to Physician Signs and Symptoms</b>	<p>The primary toxicology of this product is due to its irritant properties on mucosal membranes.</p> <p>Severe overexposure by inhalation may include the delayed onset of pulmonary edema.</p> <p>Keep under medical supervision for up to 72 hours.</p> <p>With severe overexposure by ingestion, careful gastric lavage is required due to the possibility of stomach or esophageal perforation.</p>
<b>Hazards</b>	<p>Must NOT be confused with other organophosphorus compounds since no inhibition properties have been detected.</p> <p>Consideration should be given to the possibility that over exposure to materials other than this product may have occurred.</p>
<b>Treatment</b>	Systemic treatment: In the event of a mouthful or more being ingested, the following measures should be considered: Gastric lavage with charcoal, if necessary further treatment.

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<b>Flash Point</b>	Not relevant; aqueous solution
<b>Fire and Explosion Hazards</b>	<p>The product itself does not burn.</p> <p>In the event of fire the following can be released:</p> <p>carbon monoxide (CO)</p> <p>carbon dioxide (CO<sub>2</sub>)</p> <p>nitrogen oxides (NO<sub>x</sub>)</p> <p>phosphorus oxides (e.g. phosphorus pentoxide)</p> <p>hydrogen chloride (HCl)</p>
<b>Suitable Extinguishing Media</b>	water spray, foam, carbon dioxide (CO <sub>2</sub> ), dry powder
<b>Fire Fighting Instructions</b>	<p>Dike area to prevent runoff and contamination of water sources. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.</p> <p>Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.</p>

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

<b>Personal Precautions</b>	Wear acid-resistant boots. Avoid contact with skin and eyes.
<b>Methods for Cleaning Up</b>	<p>Pick up and fill the product into a tightly closed container. When picked up, treat material as prescribed in Ch. 13. "Disposal considerations". Recover the product by pumping, suction or absorption using a dry and inert absorbent clay.</p> <p>Cleanup and Disposal of Spill: Pump any free liquid into an appropriate closed container. Clean floors and contaminated objects with plenty of water. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Collect washings for disposal. Sweep up and shovel into suitable containers for disposal.</p>
<b>Additional Advice</b>	Do not empty into drains. Environmental and Regulatory Reporting: If spilled on the ground, the affected area should be removed to a depth of one or two inches and placed in an appropriate container. Do not allow to enter soil, waterways or waste water canal.



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#### SECTION 7. HANDLING AND STORAGE

<b>Handling Procedures</b>	Do not get in eyes, on skin, or on clothing. Avoid inhalation of vapour or mist. Do not ingest. Do not contaminate water sources, food or feedstuffs when disposing of left-over material.
<b>Storing Procedures</b>	Keep out of the reach of children.
<b>Work/Hygienic Procedures</b>	Wash hands always before eating, drinking, smoking or using the toilet. Wash exposed skin promptly to remove accidental splashes of contact with this material.
<b>Min/Max Storage Temperatures</b>	Protect against frost.

#### SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General Protection</b>	These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and piping systems for maintenance and repairs. Waste resulting from these procedures should be handled in accordance with Section 13: Disposal Considerations. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.
<b>Engineering Controls</b>	Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.
<b>Eye/Face Protection</b>	Safety glasses, and in case of increased risk face shield
<b>Hand Protection</b>	Chemical resistant nitrile rubber gloves Wash gloves when contaminated. Dispose of when contaminated inside, when perforated or when contamination outside cannot be removed.
<b>Body Protection</b>	Wear long-sleeved shirt and long pants and shoes plus socks. Consideration must be given both to durability as well as permeation resistance.  An emergency shower must be readily accessible to the work area.
<b>Respiratory Protection</b>	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or Industry recommendations.  Under normal conditions, in the absence of other airborne contaminants, the following should provide protection from this material up to the conditions specified by the appropriate OSHA, WHMIS or ANSI standard(s):

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Air-purifying (half-mask/full-face) respirator with cartridge/canister approved for use against dusts, mists and fumes, pesticides.

Under conditions immediately dangerous to life or health, or emergency conditions with unknown concentrations, use a full-face positive pressure air-supplied respirator equipped with an emergency escape air supply unit or use a self-contained breathing apparatus unit.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	colourless to amber
<b>Physical State</b>	liquid
<b>Odor</b>	product specific
<b>pH</b>	< 1 (100 %) at 20 °C
<b>Specific Gravity</b>	1.2 at 20 °C
<b>Density</b>	ca. 1.206 g/cm <sup>3</sup> at 20 °C
<b>Boiling Point</b>	100 °C / 212 °F
<b>Melting/Freezing Point</b>	-10 °C / 14 °F
<b>Water Solubility</b>	miscible
<b>Decomposition Temperature</b>	170 °C

**SECTION 10. STABILITY AND REACTIVITY**

<b>Chemical Stability</b>	Stable under normal conditions.  Freezing will affect the physical condition but will not damage the material. Thaw and mix before using.
<b>Conditions to Avoid</b>	Elevated temperatures.
<b>Incompatibility</b>	zinc iron copper strong bases strong oxidizing agents mild steel



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aluminium

#### Hazardous Decomposition Products

Thermal decomposition  
hydrogen chloride (HCl)  
Carbon oxides

#### Hazardous Reactions

Corrodes metals in the presence of water or moisture.  
Risk of ethylene emission in case of increasing pH.

## SECTION 11. TOXICOLOGICAL INFORMATION

NOTE: The dermal toxicity study, and the eye and skin irritation study, has been bridged from a similar product containing the active ingredient, ethephon. All other acute toxicity studies have been bridged from the technical-grade active ingredient. The non-acute information pertains to technical-grade ethephon.

#### Acute Oral Toxicity

rat: LD50: ca. 1,600 mg/kg  
The value mentioned relates to the active ingredient.

#### Acute Inhalation Toxicity

rat: LC50: 4.5 mg/l  
Exposure time: 4 h  
The value mentioned relates to the active ingredient.  
(actual)

rat: LC50: 18.0 mg/l  
Exposure time: 1.0 h  
The value mentioned relates to the active ingredient.  
(actual)  
Extrapolated from the 4 hr LC50.

#### Skin Irritation

rabbit: Severe skin irritation.

#### Eye Irritation

In view of its pH being less than 1, the formulation is considered to be severely irritant to the eyes.

rabbit: Corrosive - causes irreversible eye damage.

#### Chronic Toxicity

Ethephon caused decreased body weights, cholinesterase inhibition, and organ effects (thyroid, kidney, liver) in chronic toxicity studies in rats.

Cholinesterase inhibition, smooth muscle atrophy in the gut and decreases in body weight, spleen weight, hemoglobin and hematocrit, were observed in chronic toxicity studies in dogs treated with ethephon.

#### Assessment Carcinogenicity

Ethephon was not carcinogenic in oncogenicity studies in rats and mice.

#### ACGIH

None.

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None.

**IARC**

None.

**OSHA**

None.

**Reproductive &  
Developmental Toxicity**

**DEVELOPMENTAL:** Data from the ethephon developmental toxicity studies in rats and rabbits show no evidence of a potential for developmental effects (malformations or variations) at doses that are not maternally toxic.

**REPRODUCTION:** Ethephon caused decreased pup body weights at the highest dose in a two generation study in rats. No effects were observed on fertility, gestation, mating, organ weights or histopathology.

**Neurotoxicity**

There was no evidence of ethephon causing delayed neurotoxicity in hens.

Ethephon produced transient neurobehavioral effects at high doses without correlating morphological changes in the neural tissues in an acute neurotoxicity screening study in rats.

Ethephon did not produce neurobehavioral effects or morphological changes in the neural tissues in a subchronic neurotoxicity screening study in rats.

**Mutagenicity**

The ethephon mutagenicity studies, taken collectively, demonstrate that the active ingredient is not genotoxic or mutagenic.

**SECTION 12. ECOLOGICAL INFORMATION****Toxicity to Fish**

Rainbow trout (*Oncorhynchus mykiss*)  
LC50: > 100 mg/l  
Exposure time: 96 h  
Test conducted with a similar formulation.

**Toxicity to Aquatic Plants**

*Scenedesmus subspicatus*  
EC50: 56 mg/l  
Exposure time: 72 h  
Test conducted with a similar formulation.

*Chlorella vulgaris*  
EC50: 29 mg/l  
Exposure time: 72 h  
The value mentioned relates to the active ingredient ethephon.

**Acute Toxicity to Aquatic  
Invertebrates**

Water flea (*Daphnia magna*)  
> 721 mg/l  
Exposure time: 48 h  
The value mentioned relates to the active ingredient.

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**SECTION 13. DISPOSAL CONSIDERATIONS****General Disposal  
Guidance**

Pesticide wastes are hazardous. Do not contaminate water, food, or feed by disposal. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law.

Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

**Container Disposal**

Packaging that cannot be cleaned should be disposed of as product waste.

Triple rinse containers. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

**SECTION 14. TRANSPORT INFORMATION****TRANSPORTATION CLASSIFICATION:**

Corrosive Liquid, Acidic, Organic, N.O.S. (Ethephon) // 8 // UN3265 // PG III // ERG 153

**IMDG CLASSIFICATION:**

Corrosive Liquid, Acidic, Organic, N.O.S. (Ethephon 39.9% ) // 8 // UN3265 // PG III

**FREIGHT CLASSIFICATION:**

Inhibitors, Modifiers or Regulators, plant growth

**SECTION 15. REGULATORY INFORMATION**

**EPA Registration No.** 264-257

**US Federal Regulations****TSCA list**

None.

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

None.

**SARA Title III - Section 302 - Notification and Information**

None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**

None.

**US States Regulatory Reporting**





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#### CA Prop65

This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

#### US State Right-To-Know Ingredients

None.

#### Canadian Regulations

##### Canadian Domestic Substance List

None.

#### Environmental

##### CERCLA

None.

##### Clean Water Section 307 Priority Pollutants

None.

##### Safe Drinking Water Act Maximum Contaminant Levels

None.

#### International Regulations

##### European Inventory of Existing Commercial Substances (EINECS)

Ethephon

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## SECTION 16. OTHER INFORMATION

NFPA 704 (National Fire Protection Association):

Health - 3

Flammability - 1

Reactivity - 0

Others - none

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Reformatted due to new MSDS system; updated Section 11: Toxicological Information.

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