SECTION 1 - PRODUCT & COMPANY IDENTIFICATION

ARysta LifeScience South Africa (Pty) Ltd
Co. Reg. No.: 2009/019713/07
7 Sunbury Office Park,
Off Douglas Saunders Drive,
La Lucia Ridge, South Africa, 4019

Substance: phosphorous acid
Product Name: HYPERPHOS 400 SL
Product Use: Fungicide
Creation Date: Sept 2006
Revision Date: October 13

24 Hr Emergency Number: 082 771 2712
In case of Poisoning:
Poison Information Centre 082 446 8946
Tygerberg Hospital: (021) 931 6129
Poison Emergency Enquiries (021) 689 5227

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Common Name: phosphorous acid
Chemical Name: mono- and di-potassium hydrogen phosphate
Chemical family: inorganic
CAS No.: 13598-36-2
Chemical formula: H$_3$PO$_3$
Molecular weight: 82

Use: Systemic fungicide for the control of Phytophthora diseases in citrus and pineapples and downy mildew in grapes. Also stimulates plant's natural defense reactions against these diseases.

Formulation:
- potassium phosphite  560 g/ℓ
- (phosphorous acid equivalent: 400 g/ℓ)
- Soluble Liquid

Hazardous ingredients of toxicological concern:

<table>
<thead>
<tr>
<th>Inert:</th>
<th>Concern:</th>
<th>% present:</th>
</tr>
</thead>
<tbody>
<tr>
<td>potassium phosphite</td>
<td>corrosive, harmful</td>
<td>&gt; 55 %</td>
</tr>
<tr>
<td>(phosphorous acid equivalent)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>none</td>
<td>&lt; 50 %</td>
</tr>
</tbody>
</table>

Symbols: C, Xi
Indication of danger: Corrosive, Irritant
Risk-phrase(s): R34, R36/37/38

SECTION 3 - HAZARD IDENTIFICATION

Likely routes of exposure:
Skin and eye contact and ingestion.
May cause moderate to severe irritation to skin and eyes. Skin inflammation is characterized by itching, scaling, reddening or blistering. Irritating to respiratory system.
Product may cause burns to the exposed area.
Harmful if swallowed.

SECTION 4 - FIRST AID MEASURES AND PRECAUTIONS

Inhalation:
Remove source of contamination, or move victim to fresh air. Keep affected person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately if effects persist.
Skin contact:
Move the victim to fresh air and remove all contaminated clothing, shoes and leather goods. Gently wipe off excess chemical. Wash affected skin areas gently and thoroughly with cold water and non-abrasive soap. Do not rub the skin. Cover irritated skin with emollient. Cold water may be used. If irritation persists, obtain medical attention.

Eye contact:
Immediately flush the eyes with clean, gently flowing cold water for 20 minutes, holding the eyelid(s) open. If irritation persists, obtain medical attention.

Ingestion:
Have victim rinse mouth thoroughly with water. Do not induce vomiting. Seek medical advice immediately, showing container and label.

Advice to physician:
There is no specific antidote. Treat symptomatically and supportively as and when required. If product is swallowed, gastric lavage could be considered, taking care to prevent aspiration of gastric material. Give oxygen if respiration is depressed.

SECTION 5 - FIRE-FIGHTING MEASURES

Fire and explosion hazard:
Flash point: None – water based.
This material is not flammable.
Extinguishing agents:
Extinguishes fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Use as little water as possible. Use spray or fog. Solid stream may cause spreading. Contain water used for fire fighting for later disposal.

Fire fighting:
Remove spectators from surrounding area. Remove container from fire area if possible. Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind.

Personal protective equipment:
Fire may produce irritating or poisonous vapours (oxides of phosphorous, hydrogen and phosphate gases), mists or other products of combustion. Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

SECTION 6 - ACCIDENTAL RELEASE MEASURES (SPILLAGE)

Personal precautions:
Avoid contact with skin and eyes. Do not breathe in spray or fumes. For personal protection see Section 8.

Environmental precautions:
Do not allow entering drains or watercourses. Spillage or uncontrolled discharges into water courses (or public waters) to be reported immediately to the Police and to the Department of Water/Environmental Affairs.

Occupational spill:
Do not touch spilled material; stop leak if you can do it without risk. Keep out unprotected persons and animals.
For small liquid spills, soak up with damp earth or sand, or other non-combustible absorbent material. Place the material into a clean, dry container and cover for subsequent disposal.
For large liquid spills, contain the liquid by damming in with absorptive material and pump into containers. Soak up remainder with absorbent material.
Label containers with its content and dispose it in accordance with local regulations. Open burning or dumping of this material is prohibited.
Do not flush spilled material into drains. Keep spectators away. In situations where product comes in contact with water, contain contaminated water for disposal.

SECTION 7 - HANDLING AND STORAGE REQUIREMENTS

Handling:
Avoid contact with eyes, prolonged contact with skin, and inhalation of spray and fumes. Handle product with caution. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking or using the toilet. Remove clothing immediately if the herbicide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Operators should change and wash clothing after use. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination.

Storage:
Store in its original, labelled and closed container in dry, cool, shaded, well-ventilated area, away from heat, sparks and other sources of ignition. Do not store with other pesticides, fertilizer, seeds, foodstuffs and water supplies. Store away from incompatible substances. Product is incompatible with galvanized material, mild steel, aluminium alloy, brass, tin, caustic soda, chlorates, nitrates and calcium carbide. Keep out of reach of unauthorized persons, children and animals. Local regulations should be complied with.
SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION

It is essential to provide adequate ventilation. The measures appropriate for a particular work site depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT:

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

**Respirator:**

It is usually safe to use the product without a mask or respirator. If the product is used in dusty or confined conditions, a mask or respirator suitable for protection from dusts and mists of pesticides is adequate. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

**Clothing:**

Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

**Gloves:**

Employee must wear appropriate synthetic protective gloves to prevent contact with this substance.

**Eye protection:**

Wear safety goggles or face shield.

**Emergency eye wash:**

Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance:** Light transparent homogenous liquid.
- **Odour:** Slight odour.
- **Relative density:** $1.42 \pm 0.05 \text{ g/cm}^3$.
- **Solubility in water:** Soluble.
- **Flash point:** None. Water based. Does not flash.
- **pH:** $7.0 \pm 0.3$
- **Oxidizing properties:** Incompatible with strong oxidizing agents.

SECTION 10 - STABILITY AND REACTIVITY

- **Stability:**
  Stable under normal temperatures and storage conditions.
- **Storage stability:**
  Stable for 2 years under normal warehouse conditions. Store at temperatures below $30 \text{ °C}$ and above $0 \text{ °C}$.
- **Incompatibility:**
  Incompatible with strong oxidizing agents. Avoid contact with galvanized material, mild steel, aluminium alloy, brass, tin, caustic soda, chlorates, nitrates and calcium carbide. Corrosive.
- **Hazardous decomposition products:**
  Will react with metal. Thermal decomposition products include oxides of phosphorous, hydrogen and phosphate gases.

SECTION 11 - TOXICOLOGICAL INFORMATION

- **Acute oral LD$_{50}$:** (calculated) $> 5000$ mg/kg.
- **Acute dermal LD$_{50}$:** (calculated) $> 5000$ mg/kg.
- **Inhalation:** Harmful, may cause irritation of respiratory tract.
- **Acute skin irritation:** Moderate to severe skin irritant.
- **Acute eye irritation:** Moderate to severe eye irritant.
- **Skin sensitization:** Some individuals may develop extreme allergic problems.

**Other effects:**

Phosphate cannot be transformed to any other forms that could lead to carcinogenicity or mutagenicity.
SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICOLOGY:
The following ecological effects studies were reviewed for mono- and di-potassium salts of phosphorous acid and found acceptable by the EPA.

Birds: Practically non-toxic to birds.
Fish: Practically non-toxic to fish and aquatic organisms.
Daphnia: Slightly toxic to Daphnia.
Bees: Practically non-toxic to bees.

Environmental Fate and Ground Water Data:
The EPA has stated that the environmental fate data requirements were not triggered in their risk assessment because no human health or ecological effects were manifested in the acute toxicity studies (Tier 1).

Ecological Risk Assessment:
A potential for exposure exists to non-target insects, fish and other wildlife with foliar spray applications. However tests results indicate that the compounds are practically non-toxic to birds and freshwater fish, and at most slightly toxic to aquatic invertebrates. Low toxicity, the proposed rate of application, and mitigating label text present minimal to nonexistent risk to wildlife.

Summary of USEPA – Phosphorous acid:
An exemption from the requirement of a tolerance is established for residues of phosphorous acid and its ammonium, sodium and potassium salts in or all food commodities when used as an agricultural fungicide on food crops [FR Doc. 00-25598 Filed 10-4-00 8:45 am] BILLING CODE 6560-50-50F.

SECTION 13 - DISPOSAL CONSIDERATION

Pesticide disposal:
Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product that cannot be reused or reprocessed. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems.
Do not contaminate rivers, dams or any other water sources with the product or used containers.
Comply with local legislation applying to waste disposal.

Container disposal:
Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is destroyed.
TRIPLE RINSE empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter rinse the container three times with a volume of water equal to a minimum of 10% of that of the container. Add the rinsings to the contents of the spray tank before destroying the container in the prescribed manner.
Do not re-use the empty container for any other purpose but destroy it by perforation and flattening and bury in an approved dump site.
Prevent contamination of food, feedstuffs, drinking water and eating utensils.
Comply with local legislation applying to waste disposal.

SECTION 14 - TRANSPORT INFORMATION

UN NUMBER: 1805
Road Transport ADR/IRD:
Class: 8
Packing group: III
Shipping name: Phosphorous acid (corrosive)

Maritime Transport IMDG/IMO:
Class: 8
Packing group: III
Shipping name: Phosphorous acid (corrosive)
SECTION 15 - REGULATORY INFORMATION

Symbol: C, Xi
Indication: Corrosive, Irritant.

Risk phrases:
R 34 Causes burns.
R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety phrases:
S 2 Keep out of reach children.
S 24/25 Avoid contact with skin and eyes.
S 37/39 Wear gloves and eye/face protection.
S 60 This material and its container must be disposed of as hazardous waste.
S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

SECTION 16 - OTHER INFORMATION

Packaging and Labelling:
Packed in 1, 2, 5, 10, 20 and 25 ℓ fluorinated plastic containers and labelled according to South African regulations and guidelines.

Disclaimer:
The information on this sheet is not a specification; it does not guarantee specific properties. The information is intended to provide general guidance as to health and safety based upon our knowledge of the handling, storage use of the product. It is not applicable to unusual or non-standard uses of the product nor where instructions or recommendations are not followed.
All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors and omissions or the consequence thereof.