SECTION 1 - PRODUCT & COMPANY IDENTIFICATION

ARYSTA LifeScience South Africa (Pty) Ltd
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Product Name: **Ethephon 480 SL**
Product Use: Growth Regulant
Creation Date: November 2011
Revision Date: August 2019

24 Hr Emergency Number:
In case of Poisoning:
Poisons Helpline 0861 555 777
In case of Spillage:
Spill Tech Oil & Chemical Pollution Control 086 100 0366 / 083 253 6618

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name: 2-chloroethylphosphonic acid **(IUPAC)**
CAS No.: 16672-87-0
Chemical family: ethylene generator
Chemical formula: C2H6ClO3P
Molecular weight: 144.5

Use: A soluble concentrate plant growth regulant with systemic properties, penetrates into plant tissues, decompose to ethylene, which affects the growth processes.
Formulation: ethephon 480 g/l
Soluble Liquid
Ingredients: ethephon and water.
Symbol: C, Xn
Indication of danger: Corrosive, Harmful
Risk Phrases: R20/21, R34, R36/37/38, R41, R52

SECTION 3 - HAZARD IDENTIFICATION

Toxicity class: WHO: III (table 5) (a.i.); EPA: I (tech)
Main hazard:
Corrosive! Causes eye and skin damage. The product is considered of low toxicity.
Ingestion:
Product is harmful if swallowed. May cause burns to mouth, throat, oesophagus and stomach. Perforations are rare, but may occur.
Eye contact:
Corrosive. May cause severe eye irritation. Can cause corneal burns and permanent tissue damage.
Skin contact:
Corrosive. Irritant to skin. Severe dermal burns may occur. Product is considered to be a dermal sensitizer.
Inhalation:
Harmful. Overexposure may cause respiratory tract irritation and may result in dyspnea, pleuritic chest pain, pulmonary edema, hypoxemia, bronchospasm, pneumonitis, tracheobronchitis and persistent pulmonary function abnormalities.
Other health effects:
Ethephon is a weak to moderate cholinesterase inhibitor. Repeated minor exposure may have a cumulative poisoning effect.

SECTION 4 - FIRST AID MEASURES AND PRECAUTIONS

Inhalation:
Move the victim to fresh air or remove source of contamination. Keep person warm and at rest. Treat symptomatically and supportively as and when required. Qualified personnel should perform administration of oxygen. Get medical attention immediately.
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 water and non-abrasive soap. Do not rub the skin. If irritation persists, seek medical advice.

Eye contact:
Immediately flush the contaminated eyes with gently flowing clean water for 15 to 20 minutes, occasionally lifting the upper and lower lids. Seek medical advice.

Ingestion:
Do not induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical attention immediately. Qualified medical personnel should perform administration of oxygen. If the person is alert, rinse mouth thoroughly with water and give person glass of milk to drink.

Advice to physician:
The product is an acid and corrosive.

Oral exposure treatment: If the product has been ingested, do not give bicarbonate to neutralize; activated charcoal is of no value. Dilute acid by drinking large amounts of water or milk. Observe patient carefully for possible development of oesophageal or gastrointestinal tract irritation or burns.

Eye damage treatment: It may take 48 to 72 hours after the burn to correctly assess the degree of ocular damage. If ocular damage is minor, topical mydriatics and antibiotics may be sufficient. If more extensive, consult ophthalmologist.

Skin contact treatment: Acute exposure: Chemical burns to skin are often associated with concurrent thermaburns and trauma. Systemic toxicity may as well occur from absorbed acid. Deep or extensive burns may require grafting. Chronic exposure: Prolonged or repeated exposure can result in dermatitis. Ulcerations may alsooccur. Treat symptomatically and supportively.

SECTION 5 - FIRE-FIGHTING MEASURES

Fire and explosion hazard:
This product will not burn. Not flammable. Not combustible. Product contains water.

Special Hazards:
Product is stable up to 75 oC. Ethylene gas is released with decomposition. Thermal decomposition products may be hazardous and may include oxides of carbon, oxides of phosphorous and hydrogen chloride.

Extinguishing agents:
Extinguish 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. Avoid the accumulation of polluted run-off from the site.

Fire fighting:
Remove spectators from surrounding area. Isolate the fire area and evacuate downwind. Use a recommended extinguishing agent for the type of surrounding fire. Fight fire from maximum distance and use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind. Remove container from fire area if possible and without risk. Water can be used to cool unaffected containers but must be contained for later disposal.
Dyke fire control water for later disposal. Do not scatter the material. Avoid pollution of waterways. Do not use high volume water jet, due to contamination risk. Contain water used for fire fighting for later disposal. Avoid the accumulation of polluted run-off from the site.

Personal protective equipment:
Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus. Do not breath corrosive fumes from burning material. Keep upwind.

SECTION 6 - ACCIDENTAL RELEASE MEASURES (SPILLAGE)

Personal precautions:
Avoid contact with skin and eyes. Do not breathe in spray or fumes. Ventilate area of spill or leak, especially confined areas.
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 spills: Soak up with absorptive material such as damp earth or sand or other suitable non-combustible absorbent material. Place the material into a clean, dry container and cover for subsequent disposal. Label containers with its content and dispose it in accordance with local regulations. In situations where product comes in contact with water, contain contaminated water for later disposal. Prevent material from spreading by damming in with absorptive material. Do not flush spilled material into drains. Keep spectators away and upwind. Open burning or dumping of this material is prohibited. Do not get water inside containers

SECTION 7 - HANDLING AND STORAGE REQUIREMENTS

Handling:
Harmful in contact with skin and if swallowed. Corrosive and irritating to eyes and skin. Avoid contact with eyes and skin, and inhalation of spray and vapour. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the product gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. 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:
Keep under lock and key and out of reach of unauthorized persons, children and animals. Store in its original labeled container in isolated, dry, cool and well-ventilated area. Not to be stored next to foodstuffs and water supplies. Store away from incompatible substances. Product is stable in aqueous solutions of a pH<5, at higher pH the product decomposes to ethylene. This product is sensitive to UV irradiation.
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:
An approved respirator suitable for protection from mists of pesticides is adequate. Limitations of respirator use specified by the approved 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:
The use of safety goggles and face-shield to prevent contact is recommended.

***Emergency eyewash*:** 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:	Clear, straw-coloured liquid with slight acrid odour.
Flammability:	Not flammable & not combustible.
Flash point:	Not applicable. Product is water-based.
Corrosiveness:	Corrosive to metal.
Solubility:	Readily soluble in water.
pH:	1,2 ± 0,1 in 5% aqueous solution. 0,62 ± 0,1 in 100% aqueous solution.
Density:	1,27 ± 0,05 g/ml

SECTION 10 - STABILITY AND REACTIVITY

Stability:
Will decompose at temperatures above 75OC. Product is stable in aqueous solutions of a pH <5. at higher pH the product decomposes to ethylene. Product is UV irradiation sensitive.

Storage stability:
Stable for a period of 2 years under normal warehouse and field conditions.

Conditions and Materials to Avoid:
Keep the product in a cool, dry place, at below 30 OC. Protect form sunlight, open flame and sources of heat.

Incompatible with strong oxidizing agents, alkaline materials and solutions containing metal irons, e.g. iron-, zinc-, copper-, and manganese-containing fungicides. Corrosive to metals such as iron, aluminium and copper.

Hazardous decomposition products:

Ethylene gas is released with decomposition. Thermal decomposition products may be hazardous and may include oxides of carbon, oxides of phosphorous and hydrogen chloride.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute oral LD50 in rats:

Formulation, calculated: >6300 mg/kg

Acute dermal LD50 in rabbits:

Formulation, calculated: > 5000 mg/kg

Acute inhalation in rats:

Formulation, calculated: > 10,4 mg/l/4hours

Acute skin irritation in rabbits:

Corrosive. Irritant to skin.

Acute eye irritation in rabbits:

Corrosive. May cause severe eye irritation.

The product is considered to be a dermal sensitizer.

Reproductivity:

A developmental toxicity was conducted on rabbits. The teratogenic NOEL was > 50 mg/kg/day. Embryotoxic NOEL was 50 mg/kg/day; an increased average number of resorptions occurred.

Mutagenicity:

Ethephon studies in *Salmonella typhimurium* indicated no mutagenic effect.

Carcinogenicity:

No dose-related evidence of carcinogenicity/oncogenicity was reported.

ADI: 0,05 mg/kg bw/day.

SECTION 12 - ECOLOGICAL INFORMATION

Breakdown:

Ethephon was found to have low to moderate mobility in soils ranging in texture from loamy sand to peat and silt loam. Therefore, the potential for contamination of groundwater appears to be low to moderate. In soil, rapid degradation to phosphoric acid, ethylene and chloride ions was reported. In plants, ethephon rapidly degrades to phosphate, ethylene and chloride. Ethephon and the ethylene gas it produces, are the major metabolites in plants.

ECOTOXICOLOGY:

Birds: technical grade is slightly toxic, formulated products are practically non-toxic to birds.

Oral LC_{50} (tech): bobwhite quail: 596 to 804 mg/kg

8-day diet LC_{50} (tech): bobwhite quail: > 7000 ppm

Average acute oral toxicity (formulated products) for bobwhite quail is > 10 000 ppm.

Fish: Slightly toxic to fish. Is not expected to accumulate in fish.

LC_{50}: rainbow trout: 170 mg/l bluegill sunfish: 180 mg/l

LC_{50} (96 hours): rainbow trout: 254 to 350 mg/l bluegill sunfish: 222 to 300 mg/l

Daphnia:

EC_{50} (48 hours): *Daphnia magna:* 577,4 mg/l

Bees: Not toxic.

Worms: Not toxic to earthworms.

Other aquatic spp.: Low toxicity.

SECTION 13 - DISPOSAL CONSIDERATION

Pesticide disposal:

Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product 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 draining 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 dumpsite. Prevent contamination of food, feedstuffs, drinking water and eating utensils.

SECTION 14 - TRANSPORT INFORMATION

UN NUMBER: 3265
Road Transport ADR/RID:
Class: 8
Packaging group: III
Shipping name: Corrosive liquid, acidic, organic, N.O.S. (ethephon 480 g/l)
Air Transport IATA/ICAO:
Class: 8
Packaging group: III
Shipping name: Corrosive liquid, acidic, organic, N.O.S. (ethephon 480 g/l)
Maritime Transport IMDG/IMO:
Class: 8
Packaging group: III
Shipping name: Corrosive liquid, acidic, organic, N.O.S. (ethephon 480 g/l)

SECTION 15 - REGULATORY INFORMATION

Symbol:	C, Xn
Indication of danger:	Corrosive; Harmful
Risk phrase(s):	
R 20/21	Harmful by inhalation and in contact with skin.
R 34	Causes burns.
R 36/37/38	Irritating to eyes, respiratory system and skin.
R 41	Risk of serious damage to eyes.
R 52	Harmful to aquatic organisms.
Safety phrases:	
S 2	Keep out of reach children.
S 26	In case of contact with eyes rinse immediately with plenty of water and seek medical advice.
S 24/25	Avoid contact with skin and eyes.
S 36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S 61	Avoid release to the environment

SECTION 16 - OTHER INFORMATION

Packaging:
Packed in 1, 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 nonstandard uses of the product nor where instructions or recommendations are not followed. All information is given in good faith bit without guarantee in respect of accuracy, and no responsibility is accepted for errors and omissions or the consequence thereof.