


**SECTION 1 - PRODUCT & COMPANY IDENTIFICATION**

ARYSTA LifeScience South Africa (Pty) Ltd  
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Substance: 1) acetochlor;  
 2) atrazine;

Product Name: **LIMAR COMBI**  
 Product Use: Herbicide  
 Creation Date: May 2012  
 Revision Date: August 2017

**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**

Common name: 1) acetochlor;  
 2) atrazine;

Chemical Name: 1) 2-chloro-*N*-ethoxymethyl-6'-ethylaceto-*o*-toluidide (IUPAC);  
 2) 6-chloro-*N*<sup>2</sup>-ethyl-*N*<sup>4</sup>-isopropyl-1,3,5-triazine-2,4-diamine (IUPAC);

CAS No.: 1) 34256-82-1;  
 2) 1912-24-9;

Chemical Family: 1) chloroacetamide;  
 2) triazine;

Chemical Formula: 1) C<sub>14</sub>H<sub>20</sub>ClNO<sub>2</sub>;  
 2) C<sub>8</sub>H<sub>14</sub>ClN<sub>5</sub>;

Molecular weight: 1) 269.8 2) 215.7

Use: For pre-emergence and early post-emergence control of annual broadleaf weeds and grasses, as listed in maize.

Formulation: acetochlor: 250 g/l plus  
 atrazine 250 g/l plus  
 Suspension Concentrate

**Hazardous ingredients of toxicological concern:**

Inert:	concern:	% present:
Acetochlor	harmful	> 250 %
Atrazine	water contamination risk	> 250 %
Inerts	harmful	> Up to 100 %

Symbols: Xn, N

Risk-phrase(s): R 20/22, R 36/37/38, R 52

**SECTION 3 - HAZARD IDENTIFICATION**
**WHO Toxicity Class:**

Acetochlor: III

Atrazine: class U

Likely routes of exposure: Skin contact, ingestion and inhalation.

**Skin contact:**

May be irritant to skin and cause redness and discomfort. It is moderate skin sensitizes in animal tests.

**Eye contact:**

Moderate irritant to eyes causing redness, pain and blurred vision.

**Ingestion:**
**MATERIAL SAFETY DATA SHEET**



Low oral toxicity. Ingestion of large quantities may cause nausea, vomiting, abdominal distress, diarrhea and muscle spasms.

**Inhalation:**

Unlikely to cause harmful effects under normal conditions of handling and use, but may cause sore throat, headache, nausea, abdominal distress or increased respiration if large quantities is inhaled.

#### SECTION 4 - FIRST AID MEASURES AND PRECAUTIONS

The acute toxicity of these herbicides for man is very low, and no adverse health effects from exposure to this combination herbicide have been reported. Symptoms of poisoning includes abdominal pain, diarrhea and vomiting, eye irritation, irritation of mucous membranes and skin reactions.

**Inhalation:** If vapours or mists have been inhaled and irritation has developed, remove the source of contamination or move victim to fresh air. The patient should be kept under observation and obtain medical attention if irritation persists.

**Skin contact:** Remove contaminated clothing, shoes and leather goods immediately. Gently wipe off excess chemical. Wash skin gently and thoroughly with non-abrasive soap and large amounts of water until no evidence of chemical remains (approximately 15 to 20 minutes). If irritation persists, seek medical advice immediately. Persons who become sensitized may require specialized medical management with anti-inflammatory agents.

**Eye contact:** Immediately flush contaminated eyes with gently flowing clean water for 20 minutes, occasionally lifting upper and lower lids until no evidence of chemical remains (approximately 15 to 20 minutes). Obtain medical attention if irritation persists.

**Ingestion:** If swallowed, have the patient to rinse mouth thoroughly with water. Do not induce vomiting. Seek medical advice immediately and show the container, label, or this Data Sheet.

**Advice to physician:**

No specific antidote is available. Treat symptomatically and supportively when required. If large amounts have been ingested, perform gastric lavage and administer activated charcoal.

#### SECTION 5 - FIRE-FIGHTING MEASURES

**Flash point: None. This material is non-flammable.**

Keep fire exposed containers cool by spraying with water.

**Extinguishing Media:** For small fires, use foam, carbon dioxide, dry powder or halon extinguishing agents. For large fires, use foam or water-fog; avoid use of water jet. Contain run-off water with, for example, temporary earth barriers.

**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 may produce irritating and/or toxic vapours, 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:**

Acetochlor is toxic to fish and very toxic to algae. 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. Considered as Marine Pollutant.

**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. 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.

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To decontaminate spill area, tools and equipment, wash with a suitable solution (i.e. organic solvent, detergent bleach or caustic). Add the solution to the drums already collected. Label drums with its content and dispose it in accordance with local regulations.

Open burning or dumping of this material is prohibited.

Do not get water inside containers.

## SECTION 7 - HANDLING AND STORAGE REQUIREMENTS

### Handling:

Avoid contact with eyes, skin and clothing. Avoid inhalation of spray and vapour. Use with adequate ventilation. Do not eat, drink or smoke while working. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the pesticide 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 unauthorised persons, children and animals. Store in its original labelled container in isolated, dry, cool and well-ventilated area. Not to be stored next to feeds, food and water supplies. 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.

### 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 chemical-resistant gloves to prevent contact with this substance.

### Eye protection:

The use of safety goggles is recommended.

**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

<b>Appearance:</b>	An off-white free flowing liquid.
<b>Odour:</b>	No odour.
<b>Flash point:</b>	Not flammable.
<b>Solubility:</b>	Suspendible in water.
<b>Density:</b>	1.108 ± 0.05 g/ml

## SECTION 10 - STABILITY AND REACTIVITY

### Stability:

Relatively stable in neutral, weakly acids and alkaline media, but rapidly hydrolyzed to the hydroxy derivatives in strong acids and alkaline and at 70 °C neutral media.

### Reactivity:

Spray solutions containing this product should be mixed or applied using stainless steel, aluminium, fibreglass or plastic-lined containers. Compatible with most herbicides at normal rates, but flocculation might occur with paraquat.

### Hazardous decomposition product(s):

Combustion or thermal decomposition will evolve toxic and irritant vapours.

## SECTION 11 - TOXICOLOGICAL INFORMATION

**Acute oral LD<sub>50</sub>, rats (calculated):** > 2700 mg/kg

**Acute dermal LD<sub>50</sub>, rats (calculated):** > 3900 mg/kg

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**Inhalation LC<sub>50</sub>, 4hours, rats (technical):**

Acetochlor tech:	> 3.0 mg/ℓ (4hrs)
Atrazine tech:	> 5.8 mg/ℓ (4hrs)

**Acute skin irritation:** mild irritant

**Acute eye irritation:** moderate irritant

**Skin sensitization:** moderate sensitizer

**Teratogenicity/Development:**

Acetochlor did not induce either maternal or developmental toxicity in rabbits up to 300 mg/kg/day, the highest dose tested.

Atrazine does not appear to be teratogenic.

**Mutagenicity:**

Acetochlor was weakly positive in the gene mutation assay with and without activation in the mouse lymphoma assay. However, negative in a DNA damage repair assay, Salmonella assay and chromosomal aberration studies. Positive evidence of mutagenicity was found in various studies at the mid- and high-dose levels.

Atrazine is not mutagenic.

**Carcinogenicity:**

In various studies carcinogenicity effects were noted. Based on data, the US EPA has classified acetochlor as a "probable human carcinogen".

Atrazine did not cause tumors in mice. However, mammary tumors were observed in rats after lifetime administration of high doses of atrazine. Thus, available data regarding atrazine's carcinogenic potential are inconclusive.

**ADI:**

Acetochlor:	0.01 mg/kg b.w
Atrazine:	0.005 mg/kg b.w

## SECTION 12 - ECOLOGICAL INFORMATION

**Degradability:**

**Acetochlor:** Acetochlor is adsorbed by soil colloids and leached very little. The main method of degradation is microbial breakdown. Average persistence at recommended rates is 8 to 12 weeks, but vary depending on soil type and climatic conditions. It is very active on heavy or high organic matter soils.

In animals: The primary routes of metabolism for acetochlor are glutathione conjugation and metabolism by cytochrome P450.

In plants: In maize and soya beans, acetochlor is rapidly absorbed and metabolised in the germinating plant. In maize, the first metabolite is glutathione, and in soya beans homogluthathione.

**Atrazine** is highly persistent in soil. Chemical hydrolysis, followed by degradation by soil micro-organisms, accounts for most of the breakdown of atrazine. Addition of organic material increases the rate of hydrolysis. Atrazine can persist for longer than 12 months under dry or cold conditions. Moderately to highly mobile in soils with low clay or organic matter content. It does not absorb strongly to soil particles and therefore has a lengthy half-life of 60 to >100 days. Despite its moderately solubility in water, atrazine has a high potential for groundwater contamination.

In water atrazine is chemically hydrolyzed, followed by biodegradation. Bioconcentration and volatilization of atrazine are not environmentally important.

In tolerant plants, atrazine is readily metabolised to hydroxyatrazine and amino acid conjugates, with further decomposition. In sensitive plants, unaltered atrazine accumulates, leading to chlorosis and death. Water GV: 2 µg/ℓ.

**ECOTOXICOLOGY:****Birds: Moderately toxic to birds.**

<u>Acetochlor</u> : LD <sub>50</sub> :	Bobwhite quail:	> 1260 mg/kg
<u>Atrazine</u> : LD <sub>50</sub> :	Bobwhite quail:	940 mg/kg
	Mallard duck:	> 2000 mg/kg

**Fish: Very toxic to fish.**

<u>Acetochlor</u> : LC <sub>50</sub> (96 hours):	Bluegill sunfish:	1.5 mg/ℓ
	Rainbow trout:	0.36 mg/ℓ
<u>Atrazine</u> : LC <sub>50</sub> (96hrs):	Rainbow trout:	4.5 to 11.0 mg/ℓ
	Bluegill sunfish:	16 mg/ℓ

**Daphnia: Very toxic to Daphnia.**

<u>Acetochlor</u> :	LC <sub>50</sub> 48 hours:	9 mg/ℓ
<u>Atrazine</u> :	LC <sub>50</sub> 48 hours:	6.9 mg/ℓ

**Bees: Not toxic to bees.**

<u>Acetochlor</u> :	LD <sub>50</sub> (oral):	> 100 µg/bee
	LD <sub>50</sub> (contact):	> 200 µg/bee
<u>Atrazine</u> :	LD <sub>50</sub> (oral):	> 97 µg/bee
	LD <sub>50</sub> (contact):	> 100 µg/bee

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**Earthworms:**

Acetochlor: LC<sub>50</sub> (14 days): 211 mg/kg soil

Atrazine: LC<sub>50</sub> (14 days): 78 mg/kg soil

**Other:**

Atrazine: Long-term studies in aquatic ecosystems indicate no permanent damage up to 0.020 mg/ℓ.

**Product is considered a marine pollutant.**

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**SECTION 13 - DISPOSAL CONSIDERATION**


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**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 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.

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**SECTION 14 - TRANSPORT INFORMATION**


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**UN NUMBER:** 3082

**Road Transport ADR/ RID:**

Class: 9

Packaging group: III

Shipping name: Environmentally hazardous substance, liquid, N.O.S. (acetochlor 250 g/ℓ plus atrazine 250 g/ℓ )

**Maritime Transport IMDG / IMO:**

Class: 9

Packaging group: III

Shipping name: Environmentally hazardous substance, liquid, N.O.S. (acetochlor 250 g/ℓ plus atrazine 250 g/ℓ )

**Considered a marine pollutant.**

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**SECTION 15 - REGULATORY INFORMATION**


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**Symbol :** Xn, N

**Indication of danger :** Harmful, Environmentally hazardous substance.

**Risk phrases:**

**R 20/22** Harmful by inhalation and if swallowed.

**R 36/38** Irritating to eyes and skin.

**R 52** Harmful to aquatic organisms.

**Safety phrases:**

**S 1/2** Keep locked up and out of the reach of children.

**S 24/25** Avoid contact with skin and eyes.

**S 36/39** Wear suitable protective clothing 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

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**SECTION 16 - OTHER INFORMATION**


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**Packaging:**

Packed in 1, 5, 10, 20 and 25 ℓ polyethylene plastic containers and labelled according to South African regulations and guidelines.

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Issued by: Arysta Lifescience South Africa  
Poisons Helpline 0861 555 777

Phone: 031 514 5600  
Spillage Helpline (HAZMAT) 0800 147 112

**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.

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