Unique knockdown and long lasting water-based insecticide for space spray

Aqua Reslin® Super

Water-based space spray insecticide for the control of insect pests of public health and vectors such as flies and mosquitoes. Particularly suitable for use in sensitive situations where there is public access.

Aqua Reslin® Super is a unique water-based space spray concentrate (oil in water emulsion) specially designed for dilution with water only and applied by ultra low volume - ULV (aerial or vehicle mounted application techniques), thermal fogging (hand-held fogging machines) or misting techniques.
Water – the natural diluent

Water is the natural choice for the diluent for space sprays, particularly in the light of increased concern about the use of diesel. But water-dilutable emulsifiable concentrate (EC) formulations have a disadvantage in terms of poorer insecticidal performance in comparison with diesel or oil-diluted products. This is the result of evaporation of water (which is more volatile than diesel) from the spray, leaving droplets which are too small for efficient impaction on the insect. Water is also ready available, environmentally acceptable and cheap.

Patented Aqua technology

The Film Forming Aqueous Spray Technology (FFAST®) is a unique patented formulation system which allows the use of water as the diluent without the normal drawbacks of evaporation. The principle behind FFAST® is simple yet extremely effective. As each droplet is formed, long chain alcohol molecules rapidly migrate to the surface where they align to form a protective skin. This gives a sealed package of water-based insecticide, thereby retarding evaporation and greatly extending the effective range of the spray.

Aqua Reslin® Super benefits

Aqua Reslin® Super combines an EW formulation and the FFAST® technology which allows water as diluent with a good efficacy. The key result of this is that Aqua Reslin® Super provides long-lasting effective droplets in all climatic conditions and is as effective as oil/diesel diluted space spray concentrates when sprayed at equivalent active ingredient rates. Water forms 64% (by weight) of the concentrate which as a consequence is classified as non-hazardous. It is a clear, white, free flowing liquid. Aqua Reslin® Super is completely acceptable in use, a user friendly concentrate producing a space spray that minimises flammability, smell, staining, paintwork damage, toxicological risk and pollution.

Effective and protected droplets

Ultra Low Volume space spraying minimises the amount of insecticide spray which needs to be applied, with Aqua Reslin® Super this is as little as half a litre per hectare. This quantity, when correctly applied, will provide around 400 billion droplets, or one and a half million droplets in each cubic metre of air in the treated area. This is more than enough PROVIDED the droplets maintain the correct size to ensure a long lasting aerosol life and effective impaction on the insect pests. It is here that the unique Aqua formulation development from Bayer comes into effect. As each droplet is formed the evaporation retardant alcohol molecules instantly migrate to the surface where they align and bond together to form a protective skin inhibiting evaporation. Field trials and control operations carried out under a variety of climatic conditions, in West Africa, Spain, South East Asia and the Middle East, have clearly demonstrated improved droplet characteristics and effective insect control.

Impact on the environment

Aqua Reslin® Super significantly reduces environmental pollution because the formulation is water-based and water-diluted. The active ingredients permethrin and esbioallethrin are rapidly degraded in the natural environment and the low dosage rates again contribute to a reduction in environmental contamination.
Effective action

Aqua Reslin® Super contains biodegradable pyrethroids; permethrin with its exceptional killing properties and esbioallethrin associated with hyperactivation of target insects, increased uptake of the insecticidal spray and rapid knockdown. These pyrethroids are synergised to produce greater activity by the inclusion of piperonyl butoxide which inactivates the detoxification systems in the insects. This balanced formulation gives effective insect control with minimal hazard to man and his environment. The extensive use of water as the base carrier and diluent reduces chemical contamination and eliminates fire risk, this is especially useful for indoor or aerial spraying.

Maximised uses

The versatility of Aqua Reslin® Super means that it is the only product needed to meet all ULV insecticide requirements, ranging from indoor treatments to large scale ground or even aerial spraying applications.

Method of use

Aqua Reslin® Super is diluted with water and applied as a mist, thermal fog or ULV aerosol spray. For ULV aerosol applications, the generator should be capable of producing a distribution of droplets with a volume median diameter (VMD) value of 25 microns.

Application rates

In case of indoor treatments, remove all pets and foodstuffs from the room and cover all surfaces used for food preparation. Turn off the electricity.

<table>
<thead>
<tr>
<th>Application technique</th>
<th>Situation</th>
<th>Dilution Rate</th>
<th>Application rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flies and mosquitoes</td>
<td>Indoor</td>
<td>1 + 9</td>
<td>150 ml / 3000 m³</td>
</tr>
<tr>
<td></td>
<td>Outdoor</td>
<td>1 + 9</td>
<td>300 ml / 3000 m³</td>
</tr>
<tr>
<td></td>
<td>Aerial</td>
<td>1 + 1</td>
<td>200 ml / ha</td>
</tr>
<tr>
<td></td>
<td>Indoor</td>
<td>1 + 49</td>
<td>0.1 - 0.2 L / house</td>
</tr>
<tr>
<td></td>
<td>Outdoor</td>
<td>1 + 49</td>
<td>5 L / ha</td>
</tr>
<tr>
<td></td>
<td>Aerial</td>
<td>1 + 99</td>
<td>10 L / ha</td>
</tr>
<tr>
<td></td>
<td>Indoor</td>
<td>1 + 49</td>
<td>0.1 - 0.2 L / house</td>
</tr>
<tr>
<td></td>
<td>Outdoor</td>
<td>1 + 49</td>
<td>1 L / 3000 m³</td>
</tr>
<tr>
<td>Cockroaches and bed bugs</td>
<td>Indoor</td>
<td>1 + 2</td>
<td>350 ml / 3000 m³</td>
</tr>
<tr>
<td></td>
<td>Outdoor</td>
<td>1 + 9</td>
<td>1.1 L / 3000 m³</td>
</tr>
</tbody>
</table>

General pest control:
For the control of crawling insects, such as cockroaches and stored products beetles, direct the mist, fog or ULV aerosol at likely insect harbourages to obtain good penetration. The required dilution rate and application rate depends on:
- the species of target pests;
- the application technique and,
- the site of application.

Toxicity

<table>
<thead>
<tr>
<th>Aqua Reslin® Super</th>
<th>LD₅₀ (mg/kg bw)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (rat)</td>
<td>2 068</td>
</tr>
<tr>
<td>Dermal (rat)</td>
<td>&gt; 4 900</td>
</tr>
<tr>
<td>Skin irritation (rabbit)</td>
<td>No skin irritation</td>
</tr>
<tr>
<td>Eye irritation (rabbit)</td>
<td>No eye irritation</td>
</tr>
</tbody>
</table>

Environmental protection

<table>
<thead>
<tr>
<th>Toxin</th>
<th>Species</th>
<th>EC₅₀ (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>permethrin</td>
<td>(48h)</td>
<td>0.00017</td>
</tr>
<tr>
<td>esbioallethrin</td>
<td>(48h)</td>
<td>0.016</td>
</tr>
<tr>
<td>Trout</td>
<td>LD₅₀ (mg/l)</td>
<td>0.134 (preparation)</td>
</tr>
<tr>
<td>Daphnia</td>
<td>EC₅₀ (mg/l)</td>
<td>0.00017 - 0.016</td>
</tr>
<tr>
<td>Quail</td>
<td>LD₅₀ (mg/l)</td>
<td>&gt; 5000</td>
</tr>
</tbody>
</table>

Our permethrin has been evaluated by the World Health Organization and complies with the WHO/SIT/28.R1 specifications, providing the user with maximum security of product quality.

Safety Advice

- Wear suitable protective clothing when handling the product (e.g. coveralls, eye protection (faceshield), and gloves) and when applying the product (e.g. coveralls, gloves, goggles and spray mask).
- Avoid working in spray mist or wear a spray mask and suitable protective clothing.
- When spraying indoors exclude persons and animals during treatment, and ventilate treated areas thoroughly after treatment.
- Wash splashes from skin or eyes immediately with plenty of water.
- Wash hands and exposed skin before eating, drinking or smoking and after work.
- Mechanical sprayers can be noisy. The use of ear protection is recommended when spraying indoors or in other enclosed places.
- Do not spray the moving parts of any machinery, electric motors and switchgear.
- Remove heavily contaminated clothing immediately and wash before re-use.
- Do not apply directly to surfaces on which food is stored, prepared or eaten.
- Protect food, food-preparing equipment and eating utensils from contamination during application.
- Toxic to fish and other aquatic life. Do not contaminate ponds, waterways or ditches with chemical or used container.
- Keep out of reach of children.
- Keep only in original container, tightly closed, in a safe place.
- Wash out used container thoroughly and dispose of safely.
First Aid measures in case of exposure

Contact with skin
Take off all contaminated clothing immediately. Wash with soap and plenty of water. Apply Vitamin E cream or simple lotions. When symptoms persist or in all cases of doubt, seek medical advice immediately.

Contact with eyes
Rinse immediately with plenty of water and seek advice from an ophthalmologist.

In case of inhalation
Remove to fresh air. Keep patient at rest. If symptoms persist, call a physician.

In case of ingestion
Wash out mouth with water. Do not induce vomiting. Keep patient at rest. Seek medical advice immediately.

Local treatment
Initial treatment should be symptomatic and supportive.

After eye contact
Instillation of local anaesthetic drops e.g. 1% Amethocaine Hydrochloride eye drops. Give Analgesics as necessary.

Systemic treatment
Endotracheal intubation should be done and gastric lavage performed, followed by administration of charcoal. Monitoring of respiratory and cardiac functions ECG - monitoring (Electrocardiogram). Check for pulmonary oedema in event of inhalation. Keep airway clear, administer artificial respiration if necessary.

Against convulsions
Give diazepam: for adults 5-10 mg intravenously as necessary until fully sedated; for children 2.5 mg i.v. There is no antidote. Contraindication: atropine. Contraindication: derivatives of adrenaline Recovery: spontaneous.

Bayer Environmental Science

Bayer Environmental Science SAS
16, rue Jean Marie Leclair - CP 106
F-69266 Lyon - France
Tel : +33 (0)4 72 85 43 21
Fax : +33 (0)4 72 85 46 32
www.bayercropscience.com

A Business Group of Bayer CropScience

Reslin® is a registered trade mark of Bayer - (c) copyright of Bayer.