



Section 1 - Identification of The Material and Supplier

ADAMA Australia Pty Ltd,
Level 1, Building B
207 Pacific Highway St Leonards, NSW 2065
ACN 050 328 973

Telephone (02) 9431 7800 (office hours)
Emergency 1800 033 111 (24 hours)
Fax (02) 9431 7700

Chemical nature: Acifluorfen in water solution.
Trade Name: **Ardeo Herbicide**
Product Use: Agricultural herbicide for use as described on the product label.
Creation Date: **June, 2016**
This version issued: **September, 2022** and is valid for 5 years from this date.
Poisons Information Centre: Phone 13 11 26 from anywhere in Australia

Section 2 - Hazards Identification

Statement of Hazardous Nature

SUSMP Classification: S6

ADG Classification: Class 9: Miscellaneous Dangerous Goods.

UN Number: 3082, **ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.**



GHS Signal word: **WARNING**

Skin Corrosion /Irritation Category 2
Serious eye damage/eye irritation Category 2/2A
Hazardous to aquatic environment Short term/Chronic Category 1

HAZARD STATEMENT:

H315: Causes skin irritation.
H319: Causes serious eye irritation.
H410: Very toxic to aquatic life with long lasting effects.

PREVENTION

P102: Keep out of reach of children.
P262: Do not get in eyes, on skin, or on clothing.
P264: Wash contacted areas thoroughly after handling.
P273: Avoid release to the environment.
P280: Wear protective gloves, protective clothing and eye or face protection.

RESPONSE

P362: Take off contaminated clothing and wash before reuse.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313: If skin irritation occurs: Get medical advice.
P337+P313: If eye irritation persists: Get medical advice.
P391: Collect spillage.
P370+P378: Not combustible. Use extinguishing media suited to burning materials.

STORAGE

P410: Protect from sunlight.
P402+P404: Store in a dry place. Store in a closed container.
P403+P235: Store in a well-ventilated place. Keep cool.

DISPOSAL

P501: Dispose of contents and containers as specified on the registered label.

SAFETY DATA SHEET



Emergency Overview

Physical Description & colour: Clear yellow to red liquid.

Odour: Sweet odour.

Major Health Hazards: may cause serious damage to eyes, skin irritant.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, %	TWA (mg/m ³)	STEL (mg/m ³)
Acifluorfen as the sodium salt	62476-59-9	224g/L	not set	not set
Other non hazardous ingredients	secret	10-30	not set	not set
Water	7732-18-5	to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

Inhalation: No first aid measures normally required. However, if inhalation has occurred, and irritation has developed, remove to fresh air and observe until recovered. If irritation becomes painful or persists more than about 30 minutes, seek medical advice.

Skin Contact: Wash gently and thoroughly with warm water (use non-abrasive soap if necessary) for 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard. If irritation persists, repeat flushing and seek medical attention.

Eye Contact: Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.

Ingestion: If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.

Only small quantities of decomposition products are expected from this product at temperatures normally achieved in a fire. This will only occur after heating to dryness.

Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media: Not combustible. Use extinguishing media suited to burning materials.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade.

Flammability Class: Does not burn.

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective chemically resistant clothing including eye/face protection, gauntlets and self contained breathing apparatus. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. No special recommendations for clothing materials. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned below (section 8). Otherwise, not normally necessary.

SAFETY DATA SHEET



Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this SDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Some liquid preparations settle or separate on standing and may require stirring before use. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits	TWA (mg/m³)	STEL (mg/m³)
Exposure limits have not been established by SWA for any of the significant ingredients in this product.		

The ADI for Acifluorfen as the sodium salt is set at 0.015mg/kg/day. The corresponding NOEL is set at 1.5mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, June 2014.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Ventilation: This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

Eye Protection: Protective glasses or goggles must be worn when this product is being used. Failure to protect your eyes may lead to severe harm to them or to general health. Emergency eye wash facilities must also be available in an area close to where this product is being used.

Skin Protection: Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.

Protective Material Types: We suggest that protective clothing be made from the following materials: PVC.

Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above. Otherwise, not normally necessary.

Eyebaths or eyewash stations and safety deluge showers should, if practical, be provided near to where this product is being handled commercially.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Clear yellow to red liquid.
Odour:	Sweet odour.
Boiling Point:	Approximately 100°C at 100kPa.
Flash point:	Does not burn.
Upper Flammability Limit:	Does not burn.
Lower Flammability Limit:	Does not burn.
Autoignition temperature:	Not applicable - does not burn.
Freezing/Melting Point:	Below 0°C.
Volatiles:	Water component.
Vapour Pressure:	2.37 kPa at 20°C (water vapour pressure).
Vapour Density:	As for water.

SAFETY DATA SHEET



Specific Gravity:	1.18 at 20°C
Water Solubility:	Completely soluble in water.
pH:	No data.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	As for water.
Coeff Oil/water distribution:	No data
Particle Characteristics:	Not applicable to liquids.

Section 10 – Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

Conditions to Avoid: Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

Incompatibilities: bases, oxidising agents.

Fire Decomposition: Only small quantities of decomposition products are expected from this product at temperatures normally achieved in a fire. This will only occur after heating to dryness. Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. May form hydrogen chloride gas, other compounds of chlorine. May form hydrogen fluoride gas and other compounds of fluorine. Sodium compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: This product will not undergo polymerisation reactions.

Section 11 - Toxicological Information

Local Effects:

Target Organs: There is no data to hand indicating any particular target organs.

Classification of Hazardous Ingredients

Ingredient	Health Hazard Statement Codes
Acifluorfen-sodium	H302, H315, H318, H410
<ul style="list-style-type: none">Acute toxicity - category 4Skin irritation - category 2Eye damage - category 1Hazardous to the aquatic environment (acute) - category 1Hazardous to the aquatic environment (chronic) - category 1	

Potential Health Effects

Chronic toxicity: Male and female rats fed high daily doses for 4 weeks showed decreased food consumption and increased liver and kidney weights. In a 1-year study of rats fed lower doses, both sexes experienced decreased body weight and increased liver weight. In a 2-year study, beagle dogs fed high daily doses of acifluorfen showed irregular heart rhythms. In addition, there were some blood changes and an increase in liver and kidney weights.

Reproductive effects: No adverse effects were observed in rodents or their offspring when the parents were fed daily doses of acifluorfen well below lethal levels. Body weights, food consumption, fertility, and pregnancy were comparable in both treated and untreated animals. However, in another rat study, at higher doses, both parents and offspring suffered kidney lesions and death. This suggests that levels high enough to cause toxicity in the mother are needed to affect reproduction.

Teratogenic effects: Acifluorfen may have teratogenic effects at high doses. In one study, rats were given high doses of sodium acifluorfen through a stomach tube during the critical periods of pregnancy. At these doses, body weights of the foetuses were lower, and bone development was delayed. Teratogenic effects in humans are unlikely at expected exposure levels.

Mutagenic effects: Various mutagenesis assays of acifluorfen products on both bacteria and mammalian cells indicate that they do not cause mutations.

Carcinogenic effects: One study of mice fed high doses of acifluorfen for 18 months showed decreases in body weight and increases in both benign and malignant liver tumours. These data are not sufficient to characterize the carcinogenicity of acifluorfen.

SAFETY DATA SHEET



Organ toxicity: In addition to being a skin and eye irritant, acifluorfen affects the weight and functions of the liver, heart, and kidneys at high doses.

Fate in humans and animals: No data are currently available.

Acifluorfen: LD₅₀ Oral, Rat 2025 (male); 1370 (female)mg/kg

LD₅₀ Dermal, Rabbit >2000mg/kg

LC₅₀ Inhalation, Rat >6.9mg/L/4hr

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA.

NTP: No significant ingredient is classified as carcinogenic by NTP.

IARC: No significant ingredient is classified as carcinogenic by IARC.

Section 12 - Ecological Information

Effects on birds: Acifluorfen is practically nontoxic to mallards and is moderately toxic to bobwhite quail. The acute oral LD₅₀ of acifluorfen is 2821 mg/kg in mallards, and 325 mg/kg in bobwhite quail. The range in toxicity to these different species makes any generalizations about its overall toxicity to birds difficult.

Effects on aquatic organisms: Acifluorfen is slightly toxic to fish. The LC₅₀ values for the sodium salt are 31 mg/L in bluegill and 54 mg/L in rainbow trout. It has a low toxicity to crustaceans. The LC₅₀ (96-hour) in fiddler crabs is greater than 1000 mg/L, and is 150 mg/L in freshwater clams.

Effects on other organisms: Acifluorfen is nontoxic to bees.

Environmental Fate:

Breakdown in soil and groundwater: Acifluorfen is moderately persistent in soils. In one study, acifluorfen applied to a silt loam degraded with a half-life of 59 days. Microbial action accounts for the majority of the compound's loss from soil. No leaching of the chemical below 3 inches was observed.

Breakdown in water: Acifluorfen is stable in water; no degradation was observed in laboratory studies lasting up to 28 days. However, when it is exposed to sunlight, it degrades quickly. The half-life under continuous light was 92 hours in water. When it does degrade, the primary breakdown product tends to vaporize.

Breakdown in vegetation: In susceptible plants, such as common cocklebur and ragweed, acifluorfen is absorbed through the leaves and roots and is translocated only slightly. It works by inhibiting a critical plant enzyme. In acifluorfen resistant plants like soybeans, no acifluorfen movement from the treated leaves takes place because plants break down acifluorfen into a nontoxic form. High relative humidity favours herbicide penetration into the plant. High temperatures before and after spraying tend to increase susceptibility and death.

Section 13 - Disposal Considerations

Disposal: Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 <http://www.chemclear.com.au/> and for help with the disposal of empty drums, contact DrumMuster <http://www.drummuster.com.au/> where you will find contact details for your area.

Section 14 - Transport Information

Not subject to the ADG Code when transported by Road or Rail in Australia, in packages 500kg(L) or less; or IBCs, but classed as Dangerous by IATA and IMDG/IMSBC when carried by Air or Sea transport (see details below).

UN Number: 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Hazchem Code: •3Z

Special Provisions: 179, 274, 331, 335, AU01

Limited quantities: ADG 7 specifies a Limited Quantity value of 5 L for this class of product.

Dangerous Goods Class: Class 9: Miscellaneous Dangerous Goods.

Packing Group: III

Packing Instruction: P001, IBC03, LP01

Class 9 Miscellaneous Dangerous Goods shall not be loaded in the same vehicle or packed in the same freight container with Dangerous Goods of Class 1 (Explosives).

Section 15 - Regulatory Information

AIC: All of the significant ingredients in this formulation are compliant with AICIS regulations.

The following ingredient: Acifluorfen, is mentioned in the SUSMP.

SAFETY DATA SHEET



Section 16 - Other Information

This SDS contains only safety-related information. For other data see product literature.

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition
AIIC	Australian Inventory of Industrial Chemicals
CAS number	Chemical Abstracts Service Registry Number
IARC	International Agency for Research on Cancer
SWA	Safe Work Australia, formerly ASCC and NOHSC
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

Contact Points:

Call ADAMA on (02) 9431 7800 and ask for the technical manager.

Fax: (02) 9431 7700

Police and Fire Brigade:	Dial 000
Emergency contact:	1800 033 111 (24 hours)

If ineffective:

**Dial Poisons Information Centre
(13 11 26 from anywhere in Australia)**

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This SDS is prepared in accord with the SWA document "Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice" (July 2020) and GHS Revision 7
Copyright © Kilford & Kilford Pty Ltd, September, 2022.

<http://www.kilford.com.au/> Phone (02)8321 8866