



SAFETY DATA SHEET

Section 1. Identification of the material and the supplier

Product: **Argosy**
Chemical name of active: Blend of diflufenican and bromoxynil in a suitable solvent system.
Product Use: Herbicide
Restriction of Use: Refer to Section 15

New Zealand Supplier: ADAMA New Zealand Ltd
Address: Level 1/93 Bolt Road
Tahunanui, 7011, Nelson
Telephone: +64 3 543 8275
Email: nzorders@adama.com

**Emergency Telephone: 0800 764 766 (National Poison Centre)
0800 734 607 (24hr Emergency Response)**

Date of SDS Preparation: 9 August 2023

Section 2. Hazards Identification

This substance is hazardous according to the Hazardous Substances (Hazard Classification) Notice 2020

HSNO Approval No: HSR100855

Pictograms



Signal Word: **DANGER**

HSNO Classification	Hazard Code	Hazard Statement
Flammable liquid Category 4	H227	Combustible liquid.
Acute oral toxicity Category 4	H302	Harmful if swallowed.
Acute inhalation toxicity Category 4	H332	Harmful if inhaled.
Aspiration hazard Category 1	H304	May be fatal if swallowed and enters airways
Skin irritation Category 2	H315	Causes skin irritation.
Eye irritation Category 2	H319	Causes serious eye irritation.
Skin sensitisation Category 1	H317	May cause an allergic skin reaction.
Reproductive toxicity Category 1	H360	May damage fertility or the unborn child.
Specific target organ toxicity (repeated exposure) Category 2	H373	May cause damage to organs through prolonged or repeated exposure if swallowed.
Hazardous to the aquatic environment acute Category 1	H400	Very toxic to aquatic life.
Hazardous to the aquatic environment chronic Category 1	H410	Very toxic to aquatic life with long-lasting effects
Hazardous to soil organisms	H421	Very toxic to the soil environment.
Hazardous to terrestrial vertebrates	H432	Toxic to terrestrial vertebrates.

Prevention Code	Prevention Statement
P102	Keep out of reach of children.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe fumes, mist, vapours or spray.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid unintended release into the environment.
P280 + P281	Wear protective clothing and use personal protective equipment as detailed in Section 8.

Response Code	Response Statement
P101	If medical advice is needed, have product container or label at hand.
P301 + P310 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.
P302 + P313 + P333 + P352	IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.
P304 + P312 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
P305 + P313 + P337 + P338 + P351	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
P308 + P313	IF otherwise exposed or concerned: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before re-use.
P391	Collect spillage.

Storage Code	Storage Statement
P405	Store locked up.
P403	Store in a well-ventilated place.

Disposal Code	Disposal Statement
P501	Wherever possible completely use material by using according to label instructions. Dispose of unwanted product and wastes from spillages as hazardous substances in accordance with local and national regulations using a licensed waste disposal company. Triple rinse containers and add rinsate to spray tank before puncturing and offering for recycling or landfill. Do not allow product to enter waterways. Do not burn product or container.

Section 3. Composition / Information on Ingredients

Ingredients	Wt%	CAS NUMBER.
Bromoxynil octanoate	34	1689-99-2
Diflufenican	2.3	83164-33-4
N-methyl pyrrolidinone(NMP)	10 - 20	872-50-4
Ethoxylated nonyl phenol branched	5-10	68412-54-4
2-ethyl hexyl acetate	30 -40	103-09-3
Polydimethylsiloxane	0.005	63148-62-9

Section 4. First Aid Measures

Routes of Exposure:

If in Eyes	Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If on Skin	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.
If Swallowed	If swallowed, do NOT induce vomiting. Wash mouth with water and immediately contact a Poisons Information Centre (0800 764 766), or call a doctor.
If Inhaled	Remove person to fresh air. Remove contaminated clothing and loosen remaining clothing. Allow person to assume most comfortable position and keep warm. Keep at rest until fully recovered. Get medical advice if breathing becomes difficult.

Most important symptoms and effects, both acute and delayed**Symptoms:**

Ingestion: Harmful if swallowed. Because of the low viscosity of this product, it may directly enter the lungs if swallowed, or if subsequently vomited. Once in the lungs, it is very difficult to remove and can cause severe injury or death. This product is also a skin irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat.

Skin: Causes skin irritation. May cause an allergic skin reaction. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.

Inhalation: Harmful if inhaled.

Eyes: Causes serious eye irritation. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.

Chronic: May cause damage to organs through prolonged or repeated exposure. May damage fertility or the unborn child.

Section 5. Fire Fighting Measures

Hazard Type	This product is classified as a combustible product. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances.
Hazardous thermal (de)composition products	Fire decomposition products from this product are likely to be toxic and corrosive if inhaled. Take appropriate protective measures.
Suitable Extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon Dioxide.

Precautions for firefighters and special protective clothing	If a significant quantity of this product is involved in a fire, call the fire brigade. There is little danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is full fire kit and breathing apparatus.
HAZCHEM CODE	3Z

Section 6. Accidental Release Measures

Wear full protective clothing including eye/face protection. All skin areas should be covered. Use impermeable gloves with care. 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. It should be fitted with a type G cartridge, suitable for agricultural chemicals. Otherwise, not normally necessary.

Environmental precautions

Do not allow into any sewer, on the ground or into any body of water. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

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. Dispose of according to Local Regulations.

Section 7. Handling and Storage

Precautions for Handling:

- Keep out of reach of children.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat, sparks, open flames or hot surfaces. No smoking.
- Do not breathe fumes, mist, vapours or spray.
- Wash hands thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing should not be allowed out of the workplace.
- Avoid unintended release into the environment.
- Wear protective clothing and use personal protective equipment as detailed in Section 8.

Precautions for Storage:

- Store away from incompatible materials listed in Section 10.
- Keep away from children.
- Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.
- 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.
- As a substance with Aquatic Ecotoxicity Classifications, storage of Argosy must be carried out in such a manner as to prevent contamination of waterways. It is recommended that The New Zealand Standard for the Management of Agrichemicals (NZS8409) is followed.

WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

Substance	TWA		STEL	
	ppm	mg/m ³	ppm	mg/m ³
1-Methyl-2-pyrrolidone (skin) [872-50-4]	25	103	75	309

Workplace Exposure Standard – Time Weighted Average (WES-TWA). The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure. Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). The 15-minute average exposure standard. Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply. Workplace Exposure Standards and Biological Exposure Indices NOV 2017 9TH EDITION.

Engineering Controls

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

The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Personal Protection Equipment

Eyes	Protective glasses or goggles conforming to EN166 should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.
Hands and Skin	Prevent skin contact by wearing impervious nitrile gloves (min 0.4mm thickness), clothes and, preferably an apron. Make sure that all skin areas are covered.
Respiratory	Wear respirator with an organic vapours and gas filter mask (protection factor 10) conforming to EN140 type A or equivalent.
General	Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being used.

Appearance	Clear yellow to dark brown liquid.
Odour	Characteristic aromatic solvent odour
Odour Threshold	Not applicable
pH	Not applicable
Boiling Point	Not applicable
Melting Point	Not applicable
Flash Point	>65°C
Flammability	Not applicable
Upper and Lower Exposure Limits	1% - 7%
Vapour Pressure	4.25 x 10 ⁻³ mPa @ 25°C (Diflufenican)
Specific Gravity	1.090-1.105 at 20°C
Bulk Density	Not applicable
Relative Density	Not applicable
Solubilities	Emulsifiable.
Auto-ignition Temperature	450°C
Octanol/water partition coefficient	4.9 (Diflufenican) (log P octanol/water)

Section 10. Stability and Reactivity

Stability of Substance	This product is stable under normal conditions.
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. This product will not undergo polymerisation reactions.
Conditions to Avoid	Elevated temperatures Heat asnd source of ignition such as , flames and sparks.
Incompatible Materials	Strong acids, Strong bases, Oxidizing agents
Hazardous Decomposition Products	Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. Hydrogen fluoride gas and other compounds of fluorine. Water, bromine compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Section 11 Toxicological Information

Acute Effects:

Swallowed	Harmful if swallowed. Because of the low viscosity of this product, it may directly enter the lungs if swallowed, or if subsequently vomited. Once in the lungs, it is very difficult to remove and can cause severe injury or death. This product is also an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat.
Dermal	Not applicable.
Inhalation	Harmful if inhaled.
Eye	Causes severe eye irritation. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.
Skin	Causes skin irritation. May cause an allergic skin reaction. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased. May cause sensitisation by skin contact.

Chronic Effects:

Carcinogenicity	Not applicable.
Reproductive Toxicity	May damage fertility or the unborn child.
Germ Cell Mutagenicity	Not applicable.
Aspiration	May be fatal if swallowed and enters airways.
STOT/SE	Not applicable.
STOT/RE	May cause damage to organs through prolonged or repeated exposure.

Acute toxicity:

Technical Bromoxynil has an oral LD₅₀ of 190 mg/kg in rats, an LD₅₀ of 260 mg/kg in rabbits, and an LD₅₀ of 63 mg/kg in guinea pigs, indicating moderate acute toxicity. The dermal LD₅₀ of Bromoxynil is greater than 2000 mg/kg in rabbits. The compound is a slight eye irritant but it is not a skin irritant in rabbits. However, when in contact with abraded skin, Bromoxynil may produce a mild irritation.

Chronic toxicity:

In one documented case of chronic exposure (about 1 year) of humans to Bromoxynil, workers showed symptoms of weight loss, fever, vomiting, headache, and urinary problems. Studies have shown that Bromoxynil has no effect on rats given dietary doses of 15 and 50 mg/kg/day for 90 days. Doses up to 5 mg/kg/day for 2 years had no impact on blood chemistry or urine.

Reproductive effects:

No changes in reproduction were noted in female rats fed 15 mg/kg/day of Bromoxynil over three generations. This suggests that Bromoxynil does not cause reproductive effects.

Teratogenic effects:

Bromoxynil is a suspected teratogen. The compound produced birth defects in rats at oral doses above 35 mg/kg. Toxic effects included abnormal rib formation and reduced foetal weight. Newborn rabbits had birth defects when Bromoxynil was administered to pregnant mothers at doses above 30 mg/kg. In the rabbit, birth defects included changes in bone formation in the skull and hydrocephaly.

Mutagenic effects:

No data are currently available.

Carcinogenic effects:

Rats fed Bromoxynil at low levels of 5 mg/kg and below did not develop any cancer related effects.

Organ toxicity:

No data were available regarding the target organs affected by Bromoxynil.

Fate in humans and animals:

No Bromoxynil was present in the milk or faeces of cows 9 days after exposure to low doses of the herbicide. Less than 20% of the compound was excreted in urine as the parent compound.

Diflufenican:

NOAEL: rat = 500 ppm or 25 mg/kg/day (2 years); mice = 500 ppm or 60-73 mg/kg/day (2 years) NOEL : dog = 100 mg/kg/day

Chronic toxicity

Mutagenicity: Not mutagenic

Reproduction toxicity NOEL (rat) = 200 ppm (3 generation)

Teratogenicity: NOEL (rat) > 1,000 mg/kg/day

NOEL (rabbit) > 1,000 mg/kg/day

Section 12. Ecotoxicological Information

Persistence and degradability	No data available
Bioaccumulation	No data available
Mobility in Soil	No data available
Other adverse effects	No data available

Diflufenican:

Mobility Low mobility.

Persistence/degradability Half-life time (t1/2): 105-210 days.

Ecotoxicity:

Birds: Bobwhite quail LD₅₀ > 2,150 mg/kg

Mallard duck LD₅₀ > 4,000 mg/kg

Fish: LC₅₀ (96 hours) rainbow trout = 56-100 mg/L

carp = 105 mg/L

Algae > 10 mg/L

LC₅₀ (48 hours) daphnia > 10 mg/L

Birds: Low toxicity.

Bees: Not toxic.

Bromoxynil:

Breakdown in soil and groundwater:

Bromoxynil has a low persistence in soil. In sandy soil, the half-life is about 10 days but is pH dependent (see below). Degradation in clay was slower, with half of the Bromoxynil degraded to its metabolites in about a 2-week period at 25°C. The persistence of the compound is also slightly longer in peat field soils than in the sandy soils. The evidence suggests that, while Bromoxynil is broken down by some soil bacteria, it may inhibit the action of other bacteria that promote the formation of nitrite by a process called nitrification.

Half-life in soils: 34.1 at pH 5, 11.7 days at pH 7, 1.7 days at pH 9.

Breakdown in water: No data are currently available.

Breakdown in vegetation: The herbicide works by disrupting the plants' ability to produce energy for cell-related activities. It is not readily translocated throughout the plant once it has been absorbed.

Section 13. Disposal Considerations

Disposal Method: Dispose of this product only by using according to the label or at an approved landfill. Container Disposal: Triple rinse container and add rinsate to spray tank. Empty containers and product should not be burnt. Dispose of container in a suitable landfill or take to an Agrecovery collection site. Do not use container for any other purpose.



Precautions: Do not allow product to enter waterways.

Disposal methods to avoid: Do not burn product or container.

Section 14 Transport Information

This product is classified as a Dangerous Good for transport in NZ; NZS 5433



Road and Rail Transport

UN No:	3082
Class-primary	9
Packing Group	III
Proper Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Air Transport

UN No:	3082
Class-primary	9
Packing Group	III
Proper Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Marine Transport

UN No: 3082
 Class-primary 9
 Packing Group III
 Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
 Marine Pollutant: Yes

Special Provisions:

If the product's individual container is below 5L/kg, it can be transported as a non-DG as long as the product packaging is still labelled as per DG requirements and the driver is given safety information in accordance with Chapter 3.4 of the UNRTDG.

Section 15 Regulatory Information**This substance is hazardous according to the Hazardous Substances (Hazard Classification) Notice 2020**

HSNO Approval Code: HSR100855

HSNO Classification: Flammable liquid Category 4, Acute oral toxicity Category 4, Acute inhalation toxicity Category 4, Aspiration hazard Category 1, Skin irritation Category 2, Eye irritation Category 2, Skin sensitisation Category 1, Reproductive toxicity Category 1, Specific target organ toxicity (repeated exposure) Category 2, Hazardous to the aquatic environment acute Category 1, Hazardous to the aquatic environment chronic Category 1, Hazardous to soil organisms, Hazardous to terrestrial vertebrates.

HSW (HS) Regulations 2017 and EPA Notices	Trigger Quantity
Certified Handlers	Not Required
Location Certificate	Not required
Tracking Trigger Quantities	Not required
Fire Extinguishers	500 L (2 extinguishers required)
Signage Trigger Quantities	100 L
Emergency Response Plan	100 L
Secondary Containment	100 L
Hazardous Property Controls Notice 2017	
HPC Notice Part 1	Hazardous Property Controls preliminary provisions
HPC Notice Part 3	Hazardous substances in a place other than a workplace
HPC Notice Part 4 Subpart A	Substances that are hazardous to the environment: Site and storage controls
HPC Notice Part 4 Subpart B	Use of substances that are hazardous to the environment
HPC Notice Part 4 Clause 47	Equipment for environmentally hazardous substances must be appropriate
HPC Notice Part 4 Clause 48	Record of application of agrichemicals
HPC Notice Part 4 Clause 52	Agrichemicals that are hazardous to the aquatic environment must not be applied to water
HPC Notice Part 4 Subpart C	Qualifications required for the application of substances that are hazardous to the environment
ACVM Act and Regulations	
Registered pursuant to the ACVM Act 1997, See www.foodsafety.govt.nz for registration conditions	P009651
For all further controls	Refer to EPA website (www.epa.govt.nz) for controls document – HSR100855

Product Name: Argosy
 Date of SDS: 9 August 2023

Issued by: Adama New Zealand Ltd
 Tel: 64 3 543 8275

www.adama.com

Glossary

ACVM	Agricultural Compounds and Veterinary Medicines Act 1997.
EC50	Median effective concentration.
EEL	Environmental Exposure Limit.
EPA	Environmental Protection Authority.
HSNO	Hazardous Substances and New Organisms Act 1996.
HSW	Health and Safety at Work Act 2015.
HSW (HS) Regulations	Health and Safety at Work (Hazardous Substances) Regulations 2017.
LC50	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD50	Lethal dose to kill 50% of test animals/organisms.
LEL	Lower explosive level.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
UEL	Upper Explosive Level.
WES	Workplace Exposure Limit.

References:

1. EPA Hazardous Substances (Safety Data Sheets) Notice 2017
2. Workplace Exposure Standards and Biological Exposure Indices Nov 2017 edition.
3. Assigning a hazardous substance to a HSNO Approval (Aug 2013).
4. Transport of Dangerous goods on land NZS 5433
5. HSW (Hazardous Substances) Regulations 2017

Disclaimer:

This document has been issued by Adama New Zealand Ltd and serves as their Safety Data Sheet ('SDS'). It is based on information concerning the product which is held by Adama New Zealand Ltd or has been obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. While Adama New Zealand Ltd have taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, Adama New Zealand Ltd accept no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS. The information herein is given in good faith, but no warranty, express or implied is made.

Issue Date: 9 August 2023

Review Date: 9 August 2028