



Infosafe No™ 3NUM7      Issue Date : April 2011      ISSUED by NUFARMNZ

Product Name **SEQUENCE**

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name** SEQUENCE  
**Product Code** 00611  
**Product Type** Selective herbicide  
**Company Name** Nufarm NZ  
**Address** 6 Manu Street, Otahuhu  
Auckland 2024 New Zealand  
**Emergency Tel.** 0800 651 911  
**Telephone/Fax Number** Tel: 0-9-270 4157  
Fax: 0-9-270 4159  
**Email** www.nufarm.co.nz  
**Recommended Use** A selective post emergent herbicide for grass weed control in broadleaf crops and forestry.  
**Other Information** This SDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

## 2. HAZARDS IDENTIFICATION

**Hazard Classification** Not classified as Dangerous Goods according to the LTSA New Zealand.  
**Risk Phrase(s)**  
**Other Information** 3.1D flammable liquid, 6.1E acute toxicant, 6.3A skin irritant, 6.9B target organ toxicant, 8.3A eye corrosive, 9.1C aquatic toxicant, 9.2A soil toxicant, 9.3C terrestrial vertebrate toxicant  
TOXICITY  
Harmful - may be harmful if swallowed, inhaled or absorbed through the skin. May cause skin irritation. May cause liver damage from repeated oral exposure at high doses.  
CORROSIVE  
Danger - may cause eye damage.  
FLAMMABLE  
Warning - combustible liquid.  
ECOTOXIC  
Harmful to aquatic organisms with long-lasting effects.  
Selective herbicide - very toxic to some plant species.  
Harmful to terrestrial vertebrates.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical Characterization** Liquid  
**Ingredients**

<u>Name</u>	<u>CAS</u>	<u>Proportion</u>
Clethodim	99129-21-2	240 g/L
Aromatic Hydrocarbon	64742-94-5	>60%

## 4. FIRST AID MEASURES

**First Aid Measures** For advice contact the National Poisons Centre 0800 POISON (0800 764 766) or a doctor immediately. Begin artificial respiration if the victim is not breathing. Use mouth-to-nose rather than mouth-to-mouth. Obtain medical attention.  
**Inhalation** Remove patient to fresh air. Lay down and keep warm and rested. If breathing is shallow or has stopped ensure airway is clear and apply resuscitation. Seek medical assistance immediately.  
**Ingestion** Never give anything by mouth to an unconscious person. If swallowed do NOT induce vomiting. For advice, contact the National Poisons Centre (0800 764 766). Seek medical assistance immediately.  
**Skin** Immediately flush body and clothes with large amounts of water. Remove contaminated clothing and footwear. Wash affected areas with soap and water.



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**Eye** If a large area is affected seek medical assistance. Do not scrub the skin. Flush eyes with plenty of water for 15 minutes holding eyelids open if necessary. Seek medical assistance.

**First Aid Facilities** Facilities storing or utilizing this material should be equipped with an eyewash facility and safety shower.

**Advice to Doctor** If vomiting occurs, solvent present may cause pulmonary pneumonitis. Provide basic first aid measures, decontaminate individual and treat symptomatically. Probable mucosal damage may contraindicate the use of gastric lavage.

## 5. FIRE FIGHTING MEASURES

**Suitable Extinguishing Media** Water fog, foam, carbon dioxide or dry chemical.

**Hazards from Combustion Products** If involved in a fire, it may emit oxides of sulphur, nitrogen and carbon, and toxic chlorine compounds. Especially in extreme heat.

**Special Protective Equipment for fire fighters** Full protective clothing and self-contained breathing apparatus.

**Specific Methods** Keep up wind. Do not allow washings to reach sewage or effluent systems. Take precaution to prevent formation of explosive mixture. Keep away from sources of ignition. No smoking, keep container tightly closed. Product of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Decontaminated personal protective equipment and fire fighting equipment before reuse.

**Specific Hazards** Combustible liquid. Flashpoint = 67.5°C

**Unsuitable Extinguishing Media** Do not use water in a jet.

**Other Information** Location Certificate: Not applicable  
Hazardous Atmosphere Zone: Not applicable  
Number of Fire Extinguishers: 2 for 500L or more

## 6. ACCIDENTAL RELEASE MEASURES

**Spills & Disposal** Wear protective clothing. Clear area of unprotected personnel. Eliminate all ignition sources and naked lights. Use non-sparking utensils. Contain spill and absorb with sand, soil or absorbent granules. If spill does enter waterways contact the local authority. Collect in an appropriate sealable container for disposal in an approved landfill. Prevent material from coming into contact with Class 1, 2, 3.2, 4 or 5 substances. Wash area with water and detergent and absorb with inert material. Dispose of waste safely in an approved landfill.

**Personal Protection** For appropriate personal protective equipment (PPE), refer Section 8.

**Environmental Precautions** This product is a herbicide and spills can damage crops, pastures and desirable vegetation. Prevent from entering drains, waterways or sewers. Use earthen bunds or absorbent bunding to prevent spreading of spillage.

## 7. HANDLING AND STORAGE

**Precautions for Safe Handling** Keep away from naked flame. Do not store or use near heat or flame. Avoid skin and eye contact and inhalation of spray mist. This product must not be applied onto or into water.

**APPROVED HANDLER:** This product must be under the control of an approved handler when it is applied in a wide dispersive manner, or used by a commercial contractor.

**RECORD KEEPING:** Records of use as described in NZS 8409 Management of Agrichemicals must be kept if 3L or more of Sequence is applied within 24 hours.

**TRACKING:** Is not required

**BEWARE:** Spray drift hazard. Apply this product carefully. Spray drift may



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--------------------	-------------------------	--------------------

Product Name **SEQUENCE**

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<b>Conditions for Safe Storage</b>	cause serious damage to other desirable plants. Keep out of reach of children. Do not store near heat or flame. Do not store with HSNO Class 1, 2, 3.2, 4 or 5 substances. Store in original container tightly closed, in a well-ventilated area, as cool as possible, away from sources of ignition and foodstuffs. Do not store for prolonged periods in direct sunlight. Store in accordance with NZS 8409 Management of Agrichemicals. Stores containing 100L are subject to signage, 1000L of SEQUENCE require secondary containment and more than 1000L require emergency response plans. Stores exceeding 500 litres of this substance must have at least 2 fire extinguishers.
<b>Corrosiveness</b>	Corrosive to eyes.
<b>Other Information</b>	Always read the label and any attached leaflet before use. Aggregate Storage Volume Thresholds: When stored with substances of the same hazard classification the aggregate quantity must be considered. For full details refer to the current NZS8409 Management of Agrichemicals and the HSNO Regulations.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>National Exposure Standards</b>	No exposure limits (WES, TEL or EEL's) have been specifically assigned for this product.
<b>Engineering Controls</b>	Handle in well ventilated areas, generally natural ventilation is adequate.
<b>Personal Protective Equipment</b>	Avoid skin and eye contact and inhalation of spray mist. When opening the container, preparing spray and using the prepared spray wear safety goggles, chemically resistant gloves, cotton overalls buttoned to the neck and wrist, and boots.
<b>Hygiene Measures</b>	Do not eat, drink or smoke while using. Remove protective clothing and wash hands and face thoroughly before meals and after work. Wash protective clothing daily after work.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Form</b>	Liquid
<b>Appearance</b>	Amber liquid
<b>Odour</b>	Aromatic
<b>Solubility in Water</b>	Water dispersible
<b>Specific Gravity</b>	0.96
<b>pH Value</b>	4-7
<b>Vapour Pressure</b>	<1x10 <sup>-2</sup> mPa @ 20°C (clethodim)
<b>Flash Point</b>	67.5°C
<b>Flammability</b>	Combustible
<b>Other Information</b>	(EC) Emulsifiable concentrate

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## 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	When stored appropriately this product should show no significant degradation for 2 years from the date of manufacture.
<b>Conditions to Avoid</b>	Avoid oxidising agents, acids and alkalis. Avoid high temperatures.
<b>Hazardous Decomposition Products</b>	Hazardous decomposition products are not expected to form during normal storage.
<b>Hazardous Polymerization</b>	Hazardous polymerisation will not occur.
<b>Other Information</b>	Clethodim is not stable at extreme pH or temperature, or to exposure to UV light.

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## 11. TOXICOLOGICAL INFORMATION

Infosafe No™ 3NUM7	Issue Date : April 2011	ISSUED by NUFARMNZ
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 Product Name **SEQUENCE**

<b>Inhalation</b>	High vapour concentrations of the solvent while handling the concentrate are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, and may have other central nervous system effects.
<b>Ingestion</b>	Amounts swallowed incidental to normal handling procedures and use are not expected to cause injury. If aspirated into the lung, e.g. from vomiting, the presence of solvent may result in chemical pneumonitis or other lung damage.
<b>Skin</b>	Will irritate the skin. Prolonged contact with the concentrate can cause defatting of the skin and may result in dermatitis.
<b>Eye</b>	Will irritate the eyes. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Symptoms may include pain, tears, swelling, redness, and blurred vision.
<b>Chronic Effects</b>	Chronic exposure can cause damage to the liver. Increased liver weights and anaemia have been observed in animals exposed to clethodim technical.
<b>Reproductive Toxicity</b>	No such effects have been observed in the absence of maternal toxicity.
<b>Mutagenicity</b>	The weight of evidence indicates that clethodim does present a mutagenic risk.
<b>Carcinogenicity</b>	Data indicates no carcinogenic effects.
<b>Acute Toxicity - Oral</b>	LD50 (rat) = 1,360mg/kg for clethodim
<b>Acute Toxicity - Dermal</b>	LD50 (rat) = > 5,000mg/kg for clethodim
<b>Acute Toxicity - Inhalation</b>	LC50 (rat, 4hr) = >3.9mg/L total aerosol for clethodim
<b>Eye Irritation</b>	The product is an eye irritant.
<b>Skin Irritation</b>	The product is a skin irritant.
<b>Skin Sensitisation</b>	Not a sensitiser in the Buehler Guinea pig sensitisation test.
<b>Subchronic/Chronic Toxicity</b>	Target organ toxicant = liver
<b>Other Information</b>	The Australian Acceptable Daily Intake (ADI) for clethodim for a human is 0.01 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 1 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Comm. Dept. of Health and Ageing Office of Chemical Safety, 'ADI List', March 2010).

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Avoid contamination of any water supply with chemical or empty container.
<b>Persistence / Degradability</b>	In soil, aerobic DT50 1-3 days, Kd 0.08-1.6 (5 soil types)
<b>Bioaccumulative Potential</b>	Not bioaccumulative (clethodim)
<b>Short Summary of Assessment of Environmental Impact</b>	In animals, clethodim metabolises to the sulphoxide and sulfone. In plants, clethodim metabolises to the sulphoxide, sulfone and S-methyl sulfoxide.
<b>Acute Toxicity - Fish</b>	Rainbow trout: 96-hour LC50 = 19 mg/L for clethodim
<b>Acute Toxicity - Daphnia</b>	Daphnia magna 48-hour EC50 = 20.2 mg/L for clethodim
<b>Acute Toxicity - Algae</b>	Marine diatom: EC50 5d = 33 mg/L for clethodim
<b>Acute Toxicity - Other Organisms</b>	Bobwhite quail oral LD50 = >2,000mg/kg for clethodim Mallard duck (dietary) LD50 = >6000ppm for clethodim Worm LC50 = 454mg/kg soil for clethodim Bees: LD50 (contact) >100µg/bee for Clethodim

## 13. DISPOSAL CONSIDERATIONS



Infosafe No™ 3NUM7	Issue Date : April 2011	ISSUED by NUFARMNZ
--------------------	-------------------------	--------------------

Product Name **SEQUENCE**

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<b>Product Disposal</b>	Dispose of product only by using according to the label, or at an approved landfill.
<b>Container Disposal</b>	Triple rinse empty container and add rinsate to the spray tank. Recycle empty container. Otherwise crush and bury in a suitable landfill.

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#### 14. TRANSPORT INFORMATION

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<b>Transport Information</b>	It is good practice not to transport agricultural chemical products with food, food related materials and animal feedstuffs.
<b>Other Information</b>	Do not carry more than 1L of SEQUENCE on a passenger service vehicle. Segregation: Check the latest Land Transport Rule Dangerous Goods Rule 45001 for additional information. Sea transport may require additional segregation. Refer NZS5433 sea segregation for details.

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#### 15. REGULATORY INFORMATION

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<b>National and or International Regulatory Information</b>	Registered pursuant to the ACVM Act 1997, No. P8239 See <a href="http://www.nzfsa.govt.nz/acvm/">www.nzfsa.govt.nz/acvm/</a> for registration conditions Approved pursuant to the HSNO Act 1996, Approval Code HSR100460 See <a href="http://www.ermanz.govt.nz">www.ermanz.govt.nz</a> for approval controls
<b>Packaging &amp; Labelling</b>	WARNING - combustible liquid HARMFUL * CORROSIVE * ECOTOXIC - keep out of reach of children
<b>Hazard Rating Systems</b>	NFPA/HMIS: 3-2-1

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#### 16. OTHER INFORMATION

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<b>Contact Person/Point</b>	IN AN EMERGENCY, DIAL 111 - FIRE OR POLICE 24Hr Tollfree Emergency No: 0800 651 911 24Hr Emergency No: National Poisons Centre Phone: 0800 764 766
<b>Revisions Highlighted</b>	The SDS was reviewed due to formulation change. HSNO data has changed.
<b>Other Information</b>	Supersedes SDS issued September 2010 ...End Of MSDS...

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