

Trifluralin 480

Issued: July, 2010

Section 1: SUBSTANCE IDENTIFICATION AND SUPPLIER

Trade Name:	UNITED FARMERS TRIFLURALIN 480 SELECTIVE HERBICIDE
Substance:	Trifluralin is a dinitroaniline compound.
Product Use:	Agricultural herbicide for use as described on the product label.
Company Identification:	Ravensdown Fertiliser Co-operative Limited - Incorporated in New Zealand
Address:	2 Birksgate Rd Rous Head North Fremantle, WA 6160
Customer Centre:	1800 624 122
Poisons Information Centre:	13 1126 in Australia, 0800 764 766 in New Zealand
Emergency Telephone Number:	For specialist advice call 1800 705 766 (24hr) (Emergencies Only)
Transport Emergency:	IN AN EMERGENCY, DIAL 000 - FIRE or POLICE

Section 2: HAZARD IDENTIFICATION

Statement of Hazardous Nature:	This product is classified as: Hazardous according to the criteria of NOHSC Australia. Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.		
Risk Phrases:	R22	Harmful if swallowed.	
	R65	Harmful: May cause lung damage if swallowed.	
	R36/38	Irritating to eyes and skin.	
Safety Phrases:	S20	When using, do not eat or drink.	
	S46	If swallowed, contact a doctor or Poisons Information Centre immediately and show this MSDS or label.	
	S24/25	Avoid contact with skin and eyes.	
	S36/37	Wear suitable protective clothing and gloves.	

Section 3: COMPOSITION INFORMATION

INGREDIENTS	CAS No	Conc,%	TWA (mg/m ³)	STEL (mg/m ³)
Trifluralin	1582-09-8	48	not set	not set
Liquid hydrocarbon			not set	not set
Other non hazardous ingredients	secret	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 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 should not be exceeded for more than 15 minutes and should not be repeated for 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

Emergency Overview

Physical Description & Colour:	Orange coloured liquid.
Odour:	Hydrocarbon odour.
Major Health Hazards:	Pure Trifluralin is practically nontoxic to test animals by oral, dermal, or inhalation routes of exposure. The oral LD ₅₀ for technical Trifluralin in rats is greater than 10,000 mg/kg, in mice is greater than 5000 mg/kg, and in dogs, rabbits, and chickens, is greater than 2000 mg/kg. Irritating to eyes and skin, harmful if swallowed, if aspirated, may cause lung damage.
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 MSDS 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:	Quickly and gently blot away excess liquid. Wash gently and thoroughly with warm water (use nonabrasive 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 20 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:	This product is classified as flammable. 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. Fire decomposition products from this product are likely to be toxic and corrosive if inhaled. Take appropriate protective measures.
Extinguishing Media:	Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog. Avoid the use of water jets.
Fire Fighting:	If a significant quantity of this product is involved in a fire, call the fire brigade.
Flash point:	>63°C
Upper Flammability Limit:	No data.
Lower Flammability Limit:	No data.
Autoignition temperature:	No data.
Flammability Class:	Flammable

Section 6: ACCIDENTAL RELEASE MEASURES

Spills and Disposal:	Wear appropriate protective clothing. Exclude non-essential people from the area. Contain spill and absorb with inert material such as soil, sand or absorbent granules and place in a sealable waste container. Dispose of waste safely in an approved landfill.
Protective Clothing:	For appropriate personal protective equipment see section 8.
Environmental Precaution:	Prevent from entering drains, waterways or sewers. If spill does enter waterways contact local authority.

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 MSDS 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 CONTROL/PERSONAL PROTECTION

The following Australian Standards will provide general advice regarding safety clothing and equipment:
 Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

Exposure Limits:	Exposure limits have not been established by NOHSC for any of the significant ingredients in this product. The ADI for Trifluralin is set at 0.02mg/kg/day. The corresponding NOEL is set at 2.5mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Dec 2004.
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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:	No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that vapours and mists are minimised.
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Eye Protection:	Protective glasses or goggles 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.
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: rubber, 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 be provided near to where this product is being used.	

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical Description & colour:	Orange coloured liquid.
Odour:	Hydrocarbon odour.
Boiling Point:	183-210°C at 100kPa
Freezing/Melting Point:	No specific data. Liquid at normal temperatures.
Volatiles:	No specific data. Expected to be low at 100°C.
Vapour Pressure:	No data.
Vapour Density:	No data.
Specific Gravity:	Approx 1.08-1.10 at 20°C
Water Solubility:	Emulsifiable.
pH:	No data.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	No data.
Coeff Oil/water Distribution:	No data.
Autoignition temp:	No data.

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:	Strong acids, strong bases, strong oxidising agents.
Fire Decomposition:	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. Hydrogen fluoride gas and other compounds of fluorine. Water. 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

Potential Health Effects

Inhalation:

Short Term Exposure: Available data indicates that this product is not harmful. However product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.

Skin Contact:

Short Term Exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. However product is a skin irritant. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.

Eye Contact:

Short Term Exposure: This product is an eye irritant. 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.

Ingestion:

Short Term Exposure: Significant oral exposure is considered to be unlikely. 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. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.

Carcinogen Status:

NOHSC: No significant ingredient is classified as carcinogenic by NOHSC.
NTP: No significant ingredient is classified as carcinogenic by NTP.
IARC: Trifluralin is Class 3 - unclassifiable as to carcinogenicity to humans. See the IARC website for further details.

Classification of Hazardous Ingredients:	Ingredient	Risk Phrases
	Trifluralin	Conc>=1%: Xn; R40; R43
Acute toxicity:	Pure Trifluralin is practically nontoxic to test animals by oral, dermal, or inhalation routes of exposure. The oral LD ₅₀ for technical Trifluralin in rats is greater than 10,000 mg/kg, in mice is greater than 5000 mg/kg, and in dogs, rabbits, and chickens, is greater than 2000 mg/kg. However, certain formulated products that contain Trifluralin may be more toxic than the technical material itself. The dermal LD ₅₀ for technical Trifluralin in rabbits is greater than 2000 mg/kg. The 1-hour inhalation LC ₅₀ for technical Trifluralin in rats is greater than 2.8 mg/L. Nausea and severe gastrointestinal discomfort may occur after eating Trifluralin. Trifluralin does not cause skin irritation. When applied to the eyes of rabbits, Trifluralin produced slight irritation, which cleared within 7 days. Skin sensitization (allergies) may occur in some individuals. Inhalation may cause irritation of the lining of the mouth, throat, or lungs.	
Chronic toxicity:	Prolonged or repeated skin contact with Trifluralin may cause allergic dermatitis. The administration of 25 mg/kg/day to dogs for 2 years resulted in no observed toxicity. In another study of beagle dogs, toxic effects were observed at 18.75 mg/kg/day. These included decreased red blood cell counts and increases in methaemoglobin, total serum lipids, triglycerides, and cholesterol. Trifluralin has been shown to cause liver and kidney damage in other studies of chronic oral exposure in animals.	
Reproductive effects:	The reproductive capacity of rats fed dietary concentrations of Trifluralin as high as 10 mg/kg/day was unimpaired through four successive generations. Trifluralin administered to pregnant rabbits at doses as high as 100 mg/kg/day, and to rats at doses as high as 225 mg/kg/day, produced no adverse effect on either the mothers or offspring. Loss of appetite and weight loss followed by miscarriages were observed when pregnant rabbits were fed high doses of 224 or 500 mg/kg/day. Foetal weight decreased and there was an increase in the number of foetal runts at the 500 mg/kg/day dosage. It is unlikely effects on reproduction will be produced in humans at expected exposure levels.	
Teratogenic effects:	No abnormalities were observed the offspring of rats fed doses as high as 10 mg/kg/day for four generations. Studies in the rat and rabbit show no evidence that Trifluralin is teratogenic. The highest doses tested in these studies were 1000 mg/kg/day in rats and 500 mg/kg/day in rabbits. Trifluralin does not appear to be teratogenic.	
Mutagenic effects:	No evidence of mutagenicity was observed when Trifluralin was tested in live animals, and in assays using bacterial and mammalian cell cultures.	
Organ toxicity:	Liver, kidney, and thyroid damage appear to be the main toxic effects in chronic animal studies.	
Carcinogenic effects:	In a 2-year study of rats fed 325 mg/kg/day, the highest dose tested, malignant tumours developed in the kidneys, bladder, and thyroid. However, more data are needed to characterize its carcinogenicity.	
Fate in humans and animals:	Trifluralin is not readily absorbed into the bloodstream from the gastrointestinal tract; 80% of single oral doses administered to rats and dogs was excreted in the faeces.	

Section 12: ECOLOGICAL INFORMATION

This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

Effects on birds:	Trifluralin is practically nontoxic to birds. The LD ₅₀ in bobwhite quail is greater than 2000 mg/kg, as it is in female mallards and pheasants. These values are for the technical product.
Effects on aquatic organisms:	Trifluralin is very highly toxic to fish and other aquatic organisms. The 96-hour LC ₅₀ is 0.02 to 0.06 mg/L in rainbow trout, and 0.05 to 0.07 mg/L in bluegill sunfish. The 96-hour LC ₅₀ in channel catfish is approximately 1.4 to 3.4 mg/L. Variables such as temperature, pH, life stage, or size may affect the toxicity of the compound. Trifluralin is highly toxic to Daphnia, a species of small freshwater crustacean, with a 48-hour LC ₅₀ of 0.5 to 0.6 mg/L. The compound shows a moderate tendency to accumulate in aquatic organisms.
Effects on other organisms:	At exposure levels well above permissible application rates (100 mg/kg), Trifluralin has been shown to be toxic to earthworms. However, permitted application rates will result in soil residues of approximately 1 ppm Trifluralin, a level that had no adverse effects on earthworms. It is nontoxic to bees.

Environmental Fate **Breakdown in soil and groundwater:**

Trifluralin is of moderate to high persistence in the soil environment, depending on conditions. Trifluralin is subject to degradation by soil microorganisms. Trifluralin remaining on the soil surface after application may be decomposed by UV light or may volatilize. Reported half-lives of Trifluralin in the soil vary from 45 to 60 days to 6 to 8 months. After 6 months to 1 year, 80 to 90% of its activity will be gone. It is strongly adsorbed on soils and nearly insoluble in water. Because adsorption is highest in soils high in organic matter or clay content and adsorbed herbicide is inactive, higher application rates may be required for effective weed control on such soils.

Breakdown in vegetation: Trifluralin inhibits the growth of roots and shoots when it is absorbed by newly germinated weed seedlings. Trifluralin residues in crop plants will occur only in root tissues which are in direct contact with contaminated soil. Trifluralin is not translocated into the leaves, seeds, or fruit of most plants. On most crops, Trifluralin applied to the leaves has no effect, but on certain crops, such as tobacco and summer squash, leaf distortion may occur.

Section 13: DISPOSAL INFORMATION

Follow label advice for the disposal of empty containers, packaging and for the return of refillable containers.

Product Disposal: For the disposal of unwanted / unusable chemicals, seek advice from suppliers, local government, your local Waste Management Authority and consult ChemClear, 1800 008 182
<http://www.chemclear.com.au/>

Container Disposal: Where possible, used containers should be recycled after triple rinsing. Check with local suppliers and or DrumMUSTER <http://www.drummuster.com.au/>. Otherwise, bury at an authorised landfill. Before disposing of unwanted containers or used packaging on a property, ensure that all appropriate regulations, both Local and State Government, are observed. Significant penalties may apply.

Section 14: TRANSPORT INFORMATION

ADG Code: This product is not classified as a Dangerous Good. No special transport conditions are necessary unless required by other regulations.

UN Number: None allocated

SUSDP Classification: S5

ADG Classification: None allocated. Not a Dangerous Good under the ADG Code.

Section 15: REGULATORY INFORMATION

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations. The following ingredients: Liquid hydrocarbon, are mentioned in the SUSDP.

Section 16: OTHER INFORMATION

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

This MSDS supersedes all others and was reviewed: February, 2010

Please read all labels carefully before using product.

This MSDS is prepared in accord with the ASCC document "National Code of Practice for the Preparation of Material Safety Data Sheets"2nd Edition [NOHSC:2011(2003)]