



NUFARM AGRICULTURE INC.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUPPLIED BY:

Nufarm Agriculture Inc.
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MANUFACTURED BY:

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PRODUCT:**RIVAL 10G Superflow Granular Herbicide (RIVAL 10G)****PCP NUMBER:**

18926

DATE PREPARED:

April 26, 2011

PREPARER:

Nufarm Agriculture Inc.; Regulatory Affairs & Research Department

CHEMICAL FAMILY/USE:

Herbicide

FORMULA:

$C_{13}H_{16}F_3N_3O_4$

CHEMICAL SYNONYMS:

Trifluralin; α,α,α -trifluoro-2,6-dinitro-*N,N*-dipropyl-*p*-toluidine; 2,6-dinitro-*N,N*-dipropyl-4-(trifluoromethyl)=benzenamine.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	Wt. %	CAS NO.
Trifluralin	8-12	1582-09-8
Montmorillonite clay	88-92	70892-59-0
Crystalline silica (as component of montmorillonite clay)	<5	14808-60-7

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Product is a grey/green granular clay, with an aromatic odour. May cause eye irritation. Dust may cause respiratory irritation. Product is toxic to aquatic organisms.

EFFECTS OF ACUTE EXPOSURE:

INGESTION: Unlikely to cause injury if ingested in small amounts.

SKIN CONTACT: Unlikely to cause skin irritation.

INHALATION: Vapours are unlikely due to physical properties of the product. Frequent inhalation of dust may cause upper respiratory tract irritation.

EYE CONTACT: May cause eye irritation.

MEDICAL CONDITIONS AGGRAVATED: None known.

SUBCHRONIC (TARGET ORGAN) EFFECTS: None specified.

CHRONIC EFFECTS/CARCINOGENICITY: Trifluralin is not considered to be a carcinogen. Formation of renal calculi has been noted in chronic feeding studies in rats. The effect was demonstrated as reversible in dogs.

The clay component may contain up to 5% crystalline silica (quartz). Chronic inhalation of crystalline silica may lead to silicosis, a form of disabling pulmonary fibrosis. IARC has concluded there is limited evidence of the carcinogenicity of crystalline silica to humans.



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REPRODUCTIVE TOXICITY: Not considered to interfere with reproduction.

DEVELOPMENTAL TOXICITY: Not considered to interfere with fetal development.

GENOTOXICITY: Not considered to be mutagenic.

PRINCIPLE ROUTES OF EXPOSURE: Eye contact. Skin absorption. Inhalation. Oral ingestion.

TOXICOLOGICALLY SYNERGISTIC MATERIALS: None known.

OTHER: None known.

4. FIRST AID MEASURES

If swallowed: Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

NOTE TO PHYSICIAN: No specific antidote. Treat based on sound judgment of physician and individual reactions of patient. Overexposure to materials other than this product may have occurred.

5. FIRE FIGHTING MEASURES

FLASH POINT:NAp.

CONDITIONS OF FLAMMABILITY: When heated, this material may emit noxious vapours.

FLAMMABLE LIMITS IN AIR - Upper (%):NA.

FLAMMABLE LIMITS IN AIR - Lower (%):NA.

AUTOIGNITION TEMPERATURE:NA.

SENSITIVITY TO MECHANICAL IMPACT (Y/N):NA. No sensitivity expected based on similar products.

SENSITIVITY TO STATIC DISCHARGE:NA.

EXTINGUISHING MEDIA: Water, water mist, foam or dry chemical.

SPECIAL FIREFIGHTING PROCEDURES: Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting chemical fires. Minimize and contain water runoff.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Use safety equipment and procedures appropriate to the size of the spill. Keep unnecessary people away. Contain and sweep up material of small spills. Do not vacuum up material to prevent generation of fine dust. For large spills outdoors, cover to protect from moisture, and contain the spill area to prevent spread or dispersion. Avoid contamination of natural waters and sewers. Contain all affected material in a closed, labeled container for proper disposal. Isolate from other waste materials. Clean contaminated area such as hard surfaces with detergent and water,



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collecting cleaning solution for proper disposal. Large spills to soil or similar surfaces may necessitate removal of top soil.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep away from food and feed products. Store in a cool, dry area. Do not store under direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

Hazardous Ingredients	TWA*	ACGIH TLV	STEL	Units
Crystalline silica	N/E	0.1	N/E	%

*8-hour TWA unless otherwise noted

ENGINEERING CONTROLS: Use in a well ventilated area. General ventilation with a good source of make-up air recommended as minimum for indoor situations. Ventilation should be adequate to maintain air concentrations below exposure guidelines.

RESPIRATORY PROTECTION EQUIPMENT: Use an approved dust mask or respirator if ventilation is not adequate or in dusty atmospheres.

PROTECTIVE GLOVES: Chemical-resistant gloves such as nitrile.

EYE AND FACE PROTECTION: Goggles or face shield.

OTHER PROTECTIVE EQUIPMENT: Long sleeved shirt, long pants, socks and shoes suggested as minimum work clothing.

Generally, a second layer such as coveralls is suggested for prolonged handling. Use other equipment appropriate to specific situation.

VENTILATION: Use only in well ventilated area.

9. PHYSICAL AND CHEMICAL PROPERTIES

NOTE: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

- BOILING POINT:**NAp.
- VAPOR PRESSURE:**NAp.
- VAPOR DENSITY (air = 1):**.....NAp.
- FREEZING POINT:**NAp.
- MELTING POINT:**NAp.
- PHYSICAL STATE:**.....Granule.
- ODOUR:**Aromatic.
- COLOUR:**.....Grey/green.
- ODOR THRESHOLD (ppm):**.....NAp.
- EVAPORATION RATE (butyl acetate = 1):**.....NAp.
- SPECIFIC GRAVITY (water = 1):**NAp.
- DENSITY @ 25°C:**650 kg/m³
- pH:**.....NA.



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SOLUBILITY IN WATER (20°C):.....Not soluble
COEFFICIENT OF WATER/OIL DISTRIBUTION:.....NA.

10. STABILITY AND REACTIVITY

STABILITY: Stable.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS THERMAL DECOMPOSITION/COMBUSTION PRODUCTS: Toxic smoke, carbon dioxide, carbon monoxide, oxides of nitrogen, fluorine compounds, and other potentially toxic combustion products may be present.

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with strong acids.

CONDITIONS TO AVOID: None known.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL LD₅₀ (mg/kg):.....>5000 (Rat)

ACUTE DERMAL LD₅₀ (mg/kg):NA.

ACUTE INHALATION LC₅₀ (mg/l):NA.

OTHER: May cause eye irritation (rabbit).

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

Data on trifluralin technical.

96-HOUR LC₅₀ (mg/L): 0.01-0.04 (Rainbow Trout)

96-HOUR LC₅₀ (mg/L): 0.02-0.09 (Bluegill)

48-HOUR EC₅₀ (mg/L): 0.56 (Daphnia)

ORAL LD₅₀ (mg/kg): >2000 (Bobwhite Quail)

DIETARY LC₅₀ (ppm): >5000 (Mallard Duck)

CHEMICAL FATE INFORMATION: Metabolism involves dealkylation of the amino group, reduction of the nitro group to an amino group, partial oxidation of the trifluoromethyl group to a carboxy group, and subsequent degradation to smaller fragments. DT₅₀ in soils ranges 57-126 days. Degradation is more rapid under anaerobic conditions. Trifluralin is absorbed by soil and resistant to leaching and lateral movement. In animals, trifluralin is eliminated in urine and faeces, thereafter, degradation is as in soils. Degradation in plants is as for soils.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Disposal should be made in accordance with federal, provincial and local regulations. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean up of spills.

Do not reuse container for any purpose. If applicable, return container in accordance with return program. If a non-reuseable bag, make the bag unsuitable for further use and dispose in accordance with provincial requirements.



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14. TRANSPORT INFORMATION

CANADIAN TDG DESCRIPTION (Road & Rail): Not regulated for transport by road/rail in Canada. Contact manufacturer for updates to transport information.

DOT Shipping Description: 100 pounds (45 kg) and greater: RQ ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9, UN3077, III (TRIFLURALIN) ERG GUIDE 171

U.S. Surface Freight Classification: COMPOUND, TREE OR WEED KILLING, NOI (NMFC 50320, SUB 2: CLASS 60)

15. REGULATORY INFORMATION

WHMIS HAZARD CLASS: N/E.

WHMIS TRADE SECRET: Exempt. (This product is regulated under the Pest Control Products Act - WHMIS exempt.)

CANADIAN INVENTORY: Trifluralin is listed on the Domestic Substances List (DSL).

HAZARD RATING SYSTEMS

HMIS: Not Available

National Fire Protection Association (NFPA®) Hazard Ratings:

Ratings for This Product		Key to Ratings	
1	Health Hazard	0	Minimal
1	Flammability	1	Slight
0	Instability	2	Moderate
		3	Serious
		4	Severe

16. OTHER INFORMATION

REVISIONS:

The following has been revised since the last issue of this MSDS: Section 1, 4, 14 revisions.

ADDITIONAL INFORMATION:

Abbreviations used throughout the MSDS are:

- NA = Not available
- NAp = Not applicable
- N/E = None Established.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Company references utilized in preparation of the MSDS.

END OF MSDS