1. IDENTIFICATION

Product name:	**TRIFLUREX® HFP**
Chemical name of active ingredient(s):	Trifluralin: (α,α,α-trifluro-2, 6-dinitro-N, N-dipropyl-*p*-toluidine)
Registrant/Manufacturer:	Makhteshim Agan of North America, Inc. 4515 Falls of Neuse Road, Suite 300 Raleigh, NC 27609 Phone: 919-256-9300
For fire, spill, and/or leak emergencies, contact Infotrac:	Phone: 1-800-535-5053
For medical emergencies and health and safety inquiries, contact Prosar:	Phone: 1-877-250-9291

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS NO.	%	OSHA PEL	ACGIH TLV	OTHER	NTP/IARC/OSHA (Carcinogen)
Trifluralin	1582-09-8	42.78	NE	NE	NA	IARC: 3*
Inert Ingredients, Total, Including:		57.22				
Aromatic hydrocarbons	64742-94-5	49.2	525 mg/m^3 (TWA)	525 mg/m^3 (TWA)	NA	NA
Contains Naphthalene	91-20-3	7.0	50 mg/m^3 (TWA)	52 mg/m^3 (TWA)	NA	NTP: 2** IARC: 2B***

*IARC: Group 3 – The agent is unclassifiable as to carcinogenicity to humans.
**NTP: Group 2 – Substances or groups of substances, which may reasonably be anticipated to be carcinogens.
***IARC: Group 2B – The agent is possibly carcinogenic to humans.
NE=Not Established. NA=Not Available.

3. HAZARDS IDENTIFICATION

PHYSICAL PROPERTIES

Appearance: Clear deep orange liquid
Odor: Aromatic

EMERGENCY OVERVIEW: CAUTION. Harmful if swallowed. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling.

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause moderate eye irritation. Corneal injury is unlikely.

SKIN: Short single exposure may cause slight skin irritation. May cause drying or flaking of skin. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.

INGESTION: Single dose oral toxicity is low. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. If aspirated (liquid enters the lung), may cause lung damage or even death due to chemical pneumonia.

INHALATION: Single exposure to vapors is not likely to be hazardous.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

For trifluralin, in animals, effects have been reported on the following organs: blood, kidney, and liver. For the solvent, in animals, effects have been reported on the following organs: lungs, stomach, thyroid gland, and urinary tract. Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.

4. FIRST AID

IF ON SKIN OR CLOTHING:

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

IF SWALLOWED:
- Call a poison control center or doctor immediately for treatment advice.
- Do not induce vomiting unless told to by a poison control center or doctor.
- Do not give any liquid to the person.
- Do not give anything by mouth to an unconscious or convulsing person.

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 center 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 mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-877-250-9291 for emergency medical treatment information.
NOTE TO PHYSICIAN: This product may pose an aspiration pneumonia hazard. Contains petroleum distillate.

5. FIRE FIGHTING MEASURES

FLASH POINT: 225 °F (107.2° C)
METHOD USED: PMCC
FLAMMABLE LIMITS (data based on solvent, 77°F, 25°C)
LFL: 1.8% approximately
UFL: 11.8% approximately
HAZARDOUS COMBUSTION PRODUCTS: Hazardous combustion products may include but are not limited to: nitrogen oxides, carbon monoxide, carbon dioxide and fluorinated hydrocarbons.
EXTINGUISHING MEDIA: Use water, CO_2, or dry chemicals.
FIRE-FIGHTING INSTRUCTIONS: Dense smoke emitted when burned without sufficient oxygen. Keep people away. Isolate fire area and deny unnecessary entry. Closed containers may explode due to pressure buildup when subjected to excessive heat or intense fire. Containers exposed to intense heat from fires should be kept cool with water to prevent container weakening or rupture. Move container from fire area if this is possible without hazard. Contain firewater run-off if possible. Firewater run-off if not contained may cause environmental damage.
PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCUBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves).

6. ACCIDENTAL RELEASE MEASURES

ACTION TO TAKE FOR SPILLS/LEAKS: Use non-reactive absorbent material to contain and clean-up small spills. Prohibit use of hot or sparking equipment in immediate area. Prevent runoff.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Use only as directed on the label.
PRECAUTIONS TO BE TAKEN IN STORAGE: Store in original container only. Avoid freezing. Store above 40°F. If frozen, poor weed control may result. Do not store near heat or open flame. Do not contaminate water, food, or feed by storage.

STORAGE TEMPERATURE (MIN/MAX):
Minimum: 40° F (4.4° C). Do not allow product to freeze.
Maximum: Avoid exposure to excessive heat. Do not store near heat or open flame.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use a NIOSH approved air-purifying respirator.
SKIN PROTECTION: Wear long-sleeved shirt, long pants, shoes plus socks. Wear coveralls if necessary for early entry.
HAND PROTECTION: Chemical-resistant gloves, such as barrier laminate or Viton ≥14 mils.
EYE/FACE PROTECTION: Use chemical goggles.

ADDITIONAL PROTECTIVE MEASURES: Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

USER SAFETY RECOMMENDATIONS:
Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENGINEERING CONTROLS: Refer to product label.
EXPOSURE GUIDELINES: Refer to Section 2.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES
Appearance: Clear deep orange liquid
Odor: Aromatic
PHYSICAL STATE: Liquid (23°C)
CHEMICAL FORMULA: $C_{13}H_{16}F_3N_3O_4$
MOLECULAR WEIGHT: 335.50
RELATIVE DENSITY: 1.1225
pH: 5.59 (25°C)
VISCOSITY: 13.4873 mm^2/s (cSt) (22°C)
OXIDATION/REDUCTION: Neither an oxidizing nor reducing agent
FLAMMABILITY-FLASH POINT: None when heated up to 225°F.

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions
MATERIALS TO AVOID: Avoid contact with strong oxidizers.
CONDITIONS TO AVOID: Avoid freezing. Avoid exposure to excessive heat. Do not store near heat or open flame.
HAZARDOUS REACTIONS: Hazardous polymerization will not occur
HAZARDOUS DECOMPOSITION PRODUCTS: May include but are not limited to carbon dioxide, carbon monoxide, nitrogen oxides, and fluorinated hydrocarbons.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY/IRRITATION STUDIES:

Oral:	LD_{50}: between 500 and 5,000 mg/kg (rat) (male and female)
Dermal:	LD_{50}: >5000 mg/kg (rat) (male and female)
Inhalation:	LC_{50}: > 2.03 mg/l (rat) (male and female)
Skin irritation:	Moderately irritating (rabbit)
Eye irritation:	Mildly irritating (rabbit)
Sensitization:	Not a contact sensitizer (guinea pig)

MUTAGENICITY: For the major component(s), in-vitro mutagenicity studies were negative. For the active ingredient, animal mutagenicity studies were predominantly negative. For the solvent, animal mutagenicity studies were negative.

CARCINOGENICITY: Contains naphthalene, which has caused cancer in some laboratory animals. A low incidence of urinary tract tumors was seen in one strain of rat in one chronic study of five 2-year studies on trifluralin conducted in rats; trifluralin is not anticipated to be a carcinogenic risk to man.

TERATOLOGY (Birth Defects): Trifluralin did not cause birth defects; other fetal effects occurred only at doses toxic to the mother.

REPRODUCTIVE EFFECTS: Trifluralin did not interfere with reproduction in animal studies.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL HAZARDS: This pesticide is extremely toxic to freshwater marine and estuarine fish and aquatic invertebrates including shrimp and oyster. Do not apply in a manner, which will directly expose canals, lakes, streams, ponds, marshes, or estuaries to aerial drift. Do not contaminate water when disposing of equipment washwaters. For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark.

13. DISPOSAL CONSIDERATIONS:

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.

PRODUCT DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Dispose of product containers, waste containers, and residues according to label instructions and local, state, and federal health and environmental regulations.

14. TRANSPORT INFORMATION:

DOT CLASSIFICATION:

UN 3082, Environmentally hazardous substance, liquid, n.o.s. (trifluralin), 9, PGIII, RQ

INTERNATIONAL TRANSPORTATION:

MO (vessel): UN 3082, Environmentally hazardous substance, liquid, n.o.s. (trifluralin), 9, PGIII, Marine Pollutant, RQ

IATA (air): UN 3082, Environmentally hazardous substance, liquid, n.o.s. (trifluralin), 9, PGIII, RQ

15. REGULATORY INFORMATION:

SARA TITILE III:

SARA (302):	Not applicable
SARA (311/312):	Immediate (acute) health hazard Delayed (chronic) health hazard
SARA (313):	Trifluralin CAS #: 1582-09-8 (42.78%) Naphthalene CAS #: 91-20-3 (7%)

California Proposition 65: This product contains a component (Naphthalene) known to the State of California to cause cancer.

CERCLA Reportable Quantity (RQ): Trifluralin 10 lbs. (23 lbs. product; 2.5 gallons product)

RCRA CLASSIFICATION: Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

TSCA STATUS: The ingredients of this product are listed on the TSCA inventory or are exempt.

16. OTHER INFORMATION:

NFPA HAZARD RATINGS:

HEALTH:	2	0	MINIMAL
FLAMMABILITY:	1	1	SLIGHT

REACTIVITY:	1	2	MODERATE
		3	HIGH
		4	SEVERE

MSDS DATE: 11-10-08. Supersedes MSDSs dated: 10-16-06, 9-21-06 and 11-11-02; Changes made to Sections 3, 13, 14 and 15.

The information contained herein is given in good faith and is believed to be correct, but no warrant, express or implied, is made. Consult Makhteshim Agan of North America, Inc. for further information.