

MONSANTO

MATERIAL SAFETY DATA

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MANAGE® Turf Herbicide

MSDS NUMBER: S00012679

DATE: 3/9/2000

CHEMICAL FAMILY: Sulfonyl Urea

EPA Reg. No.: 524-465

MONSANTO COMPANY, 800 N. LINDBERGH BLVD., ST. LOUIS, MO 63167

FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT
Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico,
Canada, Alaska, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted)

For additional non-emergency information, call: 800-332-3111

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>COMPONENT</u>	<u>CAS No.</u>	<u>Weight %</u>
Active Ingredient:		
Halosulfuron-methyl; Methyl 6[[(4,6-dimethoxy-2-pyrimidinyl)-amino] carbonylaminosulfonyl]-4-chloro-1-methyl-1H-pyrazole-4-carboxylate	100784-20-1	75.0
Inert Ingredients:		
Kaolin clay*	1332-58-7	8 - 13
Silica, Amorphous precipitated*	112926-00-8	< 3.0
Other	+	9 - 14

* Hazardous chemical(s) under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

+ The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR: beige granules with a scorched vanilla odor

Keep out of reach of children.

CAUTION!

CAUSES EYE IRRITATION

HARMFUL IF SWALLOWED

POTENTIAL HEALTH EFFECTS

LIKELY ROUTES OF EXPOSURE: Inhalation and skin contact

EYE CONTACT: MANAGE® Turf Herbicide may cause pain, redness and tearing based on toxicity studies

SKIN CONTACT: MANAGE® Turf Herbicide is no more than slightly toxic or slightly irritating based on toxicity studies.

INHALATION: MANAGE® Turf Herbicide is no more than slightly toxic if inhaled based on toxicity studies.

INGESTION: MANAGE® Turf Herbicide is no more than slightly toxic based on toxicity studies. No significant adverse health effects are expected to develop if only small amounts (less than a mouthful) are swallowed.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: MANAGE® Turf Herbicide contains less than 1.0% sodium sulfite. In sulfite-sensitive individuals, skin reactions have been reported following dermal exposures, and respiratory reactions have been reported on ingestion of food, or on ingestion or inhalation of medications which contain related sulfiting agents (bisulfites or metabisulfites) as preservatives. Individuals with asthma may be more prone to these types of reactions.

Refer to Section 11 for toxicological information.

4. FIRST AID MEASURES

IF IN EYES: Immediately flush with water. Get medical attention.

IF SWALLOWED: Remove visible particles from mouth and rinse mouth thoroughly with water. Spit out rinse water. Swallow clean water to dilute. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF ON SKIN: immediate first aid is not likely to be required. However, this material can be removed with water. Wash heavily contaminated clothing before reuse.

IF INHALED: immediate first aid is not likely to be required. However, if symptoms occur, remove to fresh air. Remove material from eyes, skin and clothing.

NOTE: For additional human emergency first aid or treatment guidance, call collect, anytime, day or night (314) 694-4000.

5. FIRE FIGHTING MEASURES

FLASH POINT: None

METHOD: Tag Closed Cup

HAZARDOUS PRODUCTS OF COMBUSTION: CO, CO₂, NO_x

EXTINGUISHING MEDIA: In case of fire, use water (flood with water), dry chemical, CO₂, or alcohol foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known

FIRE FIGHTING EQUIPMENT: Fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

In case of spill, sweep, scoop or vacuum and remove. Flush residual spill area with water.

Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Flush residual spill area with water.

Refer to Section 13 for disposal information and Sections 14 and 15 for reportable quantity information.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with eyes or clothing. 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. Do not apply directly to water, to areas where surface water is present or to intertidal areas below mean high water mark. Do not contaminate water when disposing of equipment washwaters.

STORAGE: Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Keep outer pouch **TIGHTLY** sealed to prevent moisture from damaging any unused water soluble bags. Store under cool, dry conditions (below 120°F). Do not store under moist conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection: MANAGE® Turf Herbicide may cause slight eye irritation. Wear chemical safety goggles to prevent eye contact during operations such as mixing or transfer or other activities when there is potential for eye contact.

Skin Protection: Although MANAGE® Turf Herbicide does not present a significant skin concern, minimize skin contamination by following good industrial hygiene practice. Wash hands and contaminated skin thoroughly after handling. Applicators and other handlers must wear long-sleeved shirt and long pants and shoes plus socks. 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.

Respiratory Protection: This product is not likely to pose an airborne exposure concern when handled and used in accordance with label instructions.

Ventilation: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Exposure Guidelines:

Exposure Limits

MANAGE® Turf Herbicide

OSHA PEL

None established

ACGIH TLV

None established

Kaolin Clay	15 mg/m ³ 8-hr TWA	10 mg/m ³ total dust 8-hr TWA *
Kaolin Clay	5 mg/m ³ 8-hr TWA respirable fraction	
Amorphous Silica, Hydrated	6 mg/m ³ 8-hr TWA	10 mg/m ³ 8-hr TWA *

* value for dust containing <1% crystalline silica

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: beige granules
Odor: scorched vanilla
pH: 6.6 (1% solution)
Density: 41 lb./cu ft

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: This product should be stable for at least two years under normal conditions of warehouse storage. Store in a cool, well ventilated place away from foodstuffs, reducing agents and acids.

CONDITIONS TO AVOID: Store under cool, dry conditions (below 120°F). Do not store under moist conditions.

INCOMPATIBILITY WITH OTHER MATERIALS: None

HAZARDOUS DECOMPOSITION PRODUCTS: None known

HAZARDOUS POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

Data from Monsanto studies with MANAGE® Turf Herbicide indicate the following:

Oral LD ₅₀ (Rat):	1287 mg/kg,	Slightly Toxic	FIFRA Cat. III
Dermal LD ₅₀ (Rat):	>5,000 mg/kg,	Practically Nontoxic	FIFRA Cat. IV
Eye Irritation (Rabbit):		Moderately Irritating	FIFRA Cat. III
Skin Irritation (Rabbit):		Slightly Irritating	FIFRA Cat. IV
Acute Inhalation (Rat, 4-hr):	>5.7 mg/l,	Practically Nontoxic	FIFRA Cat. IV

Not regulated under DOT Regulations

Dermal Sensitization (G. Pig): MANAGE® Turf Herbicide is not considered a dermal sensitizer in guinea pigs.

COMPONENTS:

Data from laboratory studies conducted by Monsanto and from the available literature on the components of MANAGE® Turf Herbicide:

Halosulfuron-methyl

Halosulfuron-methyl, the active herbicidal ingredient in MANAGE® Turf Herbicide, is considered to be practically nontoxic orally or by inhalation and no more than slightly toxic dermally. It is slightly irritating to eyes and essentially nonirritating to the skin. Halosulfuron-methyl did not produce skin allergy in the guinea pig.

Following 90 day repeated exposure to Halosulfuron-methyl in the feed, rats showed decreased weight gain, slight biochemical alterations, and effects on the kidneys and liver (NOEL 400 ppm). Dogs similarly treated showed decreased body weight gains, decreased cholesterol and effects on the kidney and blood (NOEL 10 mg/kg). Rats treated 21 days with Halosulfuron-methyl by skin application showed no adverse effects considered related to treatment (NOEL >1000 mg/kg). The NOEL's in the chronic toxicity studies in rats, mice and dogs were: 2500 ppm and 1000 ppm for males and females in the 2-year rat feeding study, 3000 ppm and 7000 ppm for males and females in the 18-month mouse feeding study, and 1 mg/kg/day and 10 mg/kg/day for males and females in the 1-year dog capsule study. Treatment-related effects noted in one or more of the chronic studies included decreased weight gain, minor changes in several clinical chemistry and hematology parameters, and histopathological changes of the kidneys, liver and, possibly, thymus and epididymis. Halosulfuron-methyl did not produce tumors in mice or rats following long term (18-24 month) dietary exposures. Developmental toxicity, including resorptions, decreased pup weights and malformations, was observed in the presence of maternal toxicity in rats given Halosulfuron-methyl orally during pregnancy (NOEL 250 mg/kg). Decreased maternal weight gain and an increase in post-implantation loss was seen in rabbits given Halosulfuron-methyl during pregnancy (NOEL 50 mg/kg). Reduced parental and pup weights were noted in male and female rats given Halosulfuron-methyl for two successive generations (NOEL 800 ppm); there were no adverse effects on reproduction or fertility. Halosulfuron-methyl produced no genetic changes in a series of standard tests using animals or animal cells.

Kaolin Clay (containing <1% crystalline silica)

MANAGE® Turf Herbicide contains up to 8-13% kaolin clay. Inhalation of excessive amounts of kaolin dust may produce coughing, sneezing and nasal irritation. Long-term overexposure to kaolin dust may cause respiratory difficulties, such as decreased lung capacity.

Silica, Hydrated Amorphous

MANAGE® Turf Herbicide contains less than 3% silica gel (amorphous silica). Inhalation of silica dust can cause drying of mucous membranes of the eyes, nose and throat (due to absorption of moisture and oils) which may result in irritation and occasional nose bleeds. Repeated exposure to silica gel has not been reported to have significant adverse health effects in workers. However, persons with breathing problems or lung disease may be at an increased risk. Laboratory studies in animals exposed by inhalation to silica gel have shown no adverse effects.

12. ECOLOGICAL INFORMATION

Monsanto Company has not conducted ecotoxicity and biodegradation tests with this product. However, ecotoxicity data is available for the active ingredient of this product, halosulfuron-methyl.

48-hr EC50 Daphnia magna: >107 mg/L; Practically Nontoxic
96-hr LC50 Bluegill sunfish: >118 mg/L; Practically Nontoxic
96-hr LC50 Rainbow trout: >131 mg/L; Practically Nontoxic
5-day EC50 Algae (Selenastrum capricornutum): 0.0041 mg/L; Very Highly Toxic

13. DISPOSAL CONSIDERATIONS

Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied foil pouch and cardboard box retains vapor and product residue. Observe all labeled safeguards until containers are destroyed. Do not reuse foil pouch or box. Completely use water soluble bags in application equipment. Then dispose of empty foil pouch and cardboard box in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

This product should not be dumped, spilled, rinsed or washed into sewers or public waterways.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

This product is not hazardous under the applicable DOT, ICAO/IATA, or IMDG regulations.

15. REGULATORY INFORMATION

SARA Hazard Notification:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): immediate, delayed

Section 313 Toxic Chemical(s): None

Hazardous Chemical(s) Under OSHA Hazard Communication Standard (29 CFR 1910.1200):

Halosulfuron-methyl, CAS Reg. No. 100784-20-1; Silica, Amorphous Precipitated, CAS Reg. No. 112926-00-8;

Kaolin Clay, CAS Reg. No. 1332-58-7; See Section 2 for more information

Reportable Quantity (RQ) under U.S. CERCLA: Not Applicable

TSCA Inventory: All components are on the US EPA's TSCA Inventory List

16. OTHER INFORMATION

REASON FOR REVISION: Corrected EPA reg. No.

Supersedes MSDS dated: 1/5/2000

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

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