

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** CLOAK<sup>®</sup> Herbicide  
**EPA Reg. No.:** 71368-83  
**Synonyms:** Mixture of Metribuzin and Chlorimuron Ethyl  
**Product Type:** Herbicide

**Company Name:** Nufarm Inc.  
 11901 S. Austin Avenue  
 Alsip, IL 60803

**Telephone Numbers:** For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,  
 Call CHEMTREC Day or Night: 1-800-424-9300  
 For Medical Emergencies Only, Call 1-877-325-1840

**Date of Issue:** September 30, 2013      **Supersedes:** July 11, 2012  
**Sections Revised:** 1

## 2. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance and Odor:** Beige colored granule with a mild odor.

**Warning Statements:** Keep out of reach of children. WARNING. Causes substantial but temporary eye injury. Do not get in eyes or on clothing.

**Potential Health Effects:**

**Likely Routes of Exposure:** Inhalation, eye and skin contact.

**Eye Contact:** Causes substantial but temporary eye injury.

**Skin Contact:** Slightly toxic and slightly irritating based on toxicity studies.

**Ingestion:** Slightly toxic based on toxicity studies.

**Inhalation:** Low inhalation toxicity.

**Medical Conditions Aggravated by Exposure:** Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

See Section 11: TOXICOLOGICAL INFORMATION for more information.

**Potential Environmental Effects:**

Metribuzin is slightly toxic to fish, moderately toxic to freshwater invertebrates and moderately toxic to birds on an acute oral basis. Based on current data, chlorimuron ethyl is practically non-toxic to fish, waterfowl and upland game birds.

See Section 12: ECOLOGICAL INFORMATION for more information.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Metribuzin	21087-64-9	64.3
Chlorimuron ethyl	90982-32-4	10.7
Other Ingredients Including: Kaolin Clay and related minerals	1332-58-7	25.0

**4. FIRST AID MEASURES**

**If in Eyes:** Hold eye open and rinse slowly and gently with water for 15 to 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 on Skin or Clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 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. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

**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 center or doctor for further treatment advice.

**5. FIRE FIGHTING MEASURES**

**Flash Point:** Not applicable

**Autoignition Temperature:** Not applicable

**Flammability Limits:** Not applicable

**Extinguishing Media:** Use extinguishing media suitable for surrounding materials. Dry chemical, carbon dioxide, foam, water spray or fog.

**Special Fire Fighting Procedures:** Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

**Unusual Fire and Explosion Hazards:** If water is used to fight fire or cool containers, dike to prevent runoff contamination of municipal sewers and waterways.

**Hazardous Decomposition Materials (Under Fire Conditions):** May produce oxides of carbon and nitrogen.

**National Fire Protection Association (NFPA) Hazard Rating:**

**Rating for this product: Health: 1    Flammability: 1    Reactivity: 0**

Hazards Scale: 0 = Minimal    1 = Slight    2 = Moderate    3 = Serious    4 = Severe

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:** Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

**Environmental Precautions:** Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

**Methods for Containment:** Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

**Methods for Cleanup and Disposal:** Avoid creation of dusty conditions. If dry, sweep or scoop up material and place into container for disposal. If wet, pump any free liquid into an appropriate closed container. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

**Other Information:** Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

**7. HANDLING AND STORAGE**

**Handling:**

Do not get in eyes or on clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and water. 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.

**Storage:**

Store product in original container only. Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in a cool, dry place. Do not contaminate water, food, or feed by storage or disposal.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Engineering Controls:**

Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

**Personal Protective Equipment:**

**Eye/Face Protection:** To avoid contact with eyes, wear face shield, goggles or safety glasses with front, brow and temple protection. An emergency eyewash or water supply should be readily accessible to the work area.

**Skin Protection:** To avoid contact with skin, wear long pants, long-sleeved shirt, socks, shoes and chemical-resistant gloves made of any waterproof material. An emergency shower or water supply should be readily accessible to the work area.

**Respiratory Protection:** Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

**General Hygiene Considerations:** Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

**Exposure Guidelines:**

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Metribuzin	NE	NE	5	NE	mg/m <sup>3</sup>
Chlorimuron Ethyl	NE	NE	NE	NE	
Kaolin Clay	15 (T) 5 (R)	NE	2.0 (R)	NE	mg/m <sup>3</sup>

T = Total Dust  
R = Respirable Fraction

NE = Not Established

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance and Odor:** Beige colored granule with a mild odor.

<b>Boiling Point:</b>	Not applicable	<b>Solubility in Water:</b>	Dispersible
<b>Density:</b>	30 pounds/cubic foot	<b>Specific Gravity:</b>	Not applicable
<b>Evaporation Rate:</b>	Not applicable	<b>Vapor Density:</b>	Not applicable
<b>Freezing Point:</b>	Not applicable	<b>Vapor Pressure:</b>	Not applicable

**pH:** 5 - 6 (1% solution)      **Viscosity:** Not applicable

**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.

## 10. STABILITY AND REACTIVITY

**Chemical Stability:** This material is stable under normal handling and storage conditions.

**Conditions to Avoid:** Excessive heat. Do not store near heat or flame.

**Incompatible Materials:** Strong bases, ketones and aldehydes

**Hazardous Decomposition Products:** Under fire conditions may produce oxides of carbon and nitrogen.

**Hazardous Reactions:** Hazardous polymerization will not occur.

## 11. TOXICOLOGICAL INFORMATION

### Toxicological Data:

Data from laboratory studies on this product are summarized below:

**Oral:** Rat LD<sub>50</sub>: >5,000 mg/kg

**Dermal:** Rat LD<sub>50</sub>: >5,000 mg/kg

**Inhalation:** Rat 4-hr LC<sub>50</sub>: >2.15 mg/L

**Eye Irritation:** Rabbit: Severely irritating

**Skin Irritation:** Rabbit: Slightly irritating

**Skin Sensitization:** Not a contact sensitizer in guinea pigs following repeated skin exposure.

**Subchronic (Target Organ) Effects:** Repeated overexposure to metribuzin may cause effects to body weight gains, cholesterol levels, liver and thyroid. Repeated overexposure to chlorimuron-ethyl may cause effects to liver and blood.

**Carcinogenicity / Chronic Health Effects:** Prolonged overexposure to metribuzin may affect liver, kidney, thyroid and blood chemistry. Metribuzin did not cause cancer in laboratory animal studies. Prolonged overexposure to chlorimuron ethyl may affect liver and blood chemistry. Chlorimuron ethyl did not cause cancer in laboratory animal studies. Inhalation of excessive amounts of kaolin dust may produce coughing, sneezing and nasal irritation.

**Reproductive Toxicity:** There was no evidence of reproductive toxicity in a 2-generation reproductive study in rats treated with metribuzin. Offspring at the highest dose exhibited reduced body weight gains starting at day 14 lactation, an age correlating with the consumption of treated diets. Reproductive data for chlorimuron ethyl in rats show nutritional and organ effects in offspring only at levels which produce other toxic effects in the adult animal. There were no effects on fertility or lactation indices in rats.

**Developmental Toxicity:** In animal studies, metribuzin did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother. For chlorimuron ethyl, exposure of pregnant rabbits caused developmental delays in the fetus at maternally toxic doses. However, studies in rats produced no evidence of developmental toxicity.

**Genotoxicity:** The metribuzin mutagenicity studies, taken collectively, demonstrate that metribuzin is not genotoxic or mutagenic. Tests have shown that chlorimuron ethyl does not cause genetic damage in bacterial or mammalian cell cultures, or in animals.

**Assessment Carcinogenicity:** None listed with ACGIH, IARC, NTP or OSHA.

See Section 2: HAZARDS IDENTIFICATION for more information.

<b>12. ECOLOGICAL INFORMATION</b>
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**Ecotoxicity:**

Data on Metribuzin Technical:

96-hour LC <sub>50</sub> Bluegill:	76 mg/l	Bobwhite Quail Oral LD <sub>50</sub> :	169 mg/kg
96-hour LC <sub>50</sub> Rainbow Trout:	76 mg/l	Bobwhite Quail 8-day Dietary LC <sub>50</sub> :	>4,000 ppm
48-hour EC <sub>50</sub> Daphnia:	4 mg/l	Mallard Duck 8-day Dietary LC <sub>50</sub> :	>5,000 mg/kg

Data on Chlorimuron Ethyl Technical:

96-hour LC <sub>50</sub> Bluegill:	100 mg/l	Bobwhite Quail 8-day Dietary LC <sub>50</sub> :	>5,620 ppm
96-hour LC <sub>50</sub> Rainbow Trout:	>1,000 mg/l	Mallard Duck 8-day Dietary LC <sub>50</sub> :	>5,620 ppm
48-hour EC <sub>50</sub> Daphnia:	>10 mg/l	Mallard Duck Oral LD <sub>50</sub> :	>2,510 mg/kg

**Environmental Fate:**

Based on available data, the primary routes of degradation of metribuzin and its primary degradates are microbial metabolism and photolytic degradation on soil. These compounds will be available for leaching to ground water and runoff to surface water in many use conditions because they are not volatile. Once in ground water, metribuzin is expected to persist due to its stability to hydrolysis and the lack of light penetration. Conversely, residues of metribuzin are not likely to persist in clear, well-mixed, shallow surface water with good light penetration since parent metribuzin degrades rapidly by aqueous photolysis. Microbial degradation of chlorimuron-ethyl is fairly slow in all soil pH values with an average half-life of 7 to 8 weeks. Chlorimuron ethyl persists longer in high pH soils. Mobility and movement in soils is determined by the amount of herbicide adsorbed to the soil and is dependent on the soil pH and organic matter content. Chlorimuron ethyl is more highly adsorbed to organic matter at lower pHs. Photodegradation is not an important degradation mechanism.

<b>13. DISPOSAL CONSIDERATIONS</b>
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**Waste Disposal Method:**

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**Container Handling and Disposal:**

**For Plastic Containers:** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container half full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after flow begins to drip. Repeat this procedure two more times.

**For Fiber Sacks:** Nonrefillable container. Do not reuse or refill this container. Completely empty sack by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then offer for recycling, if available, or dispose of sack in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**For Fiber Drums with Liners:** Nonrefillable container. Do not reuse or refill this container. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then offer for recycling, if available, or dispose of liner in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**For Paper and Plastic Bags:** Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then offer for recycling, if available, or dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**14. TRANSPORTATION INFORMATION**

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this MSDS.

**DOT**

Non Regulated

**IMDG**

Non Regulated

**IATA**

Non Regulated

**15. REGULATORY INFORMATION****U.S. Federal Regulations:**

**TSCA Inventory:** This product is exempted from TSCA because it is solely for FIFRA regulated use.

**SARA Hazard Notification/Reporting:**

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

Immediate

**Section 313 Toxic Chemical(s):**

Metribuzin (CAS No. 21087-64-9) 64.3% by weight in product

Chlorimuron ethyl (CAS No. 90982-32-4) 10.7% by weight in product

**Reportable Quantity (RQ) under U.S. CERCLA:**

None

**RCRA Waste Code:**

None

**State Information:**

Other state regulations may apply. Check individual state requirements.

**California Proposition 65:** Not listed

**16. OTHER INFORMATION**

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This MSDS 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-accepted label.

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