1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Cloak EX Herbicide**
EPA Reg. No.: 71368-84
Product Type: Herbicide

Company Name: Nufarm Americas Inc
11901 S. Austin Avenue
Alsip, IL 60803
1-800-345-3330

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

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:
Combustible Dust

HEALTH HAZARDS:

Eye Irritation	Category 2B
Carcinogen	Category 1A

ENVIRONMENTAL HAZARDS:

Aquatic Acute Toxicity	Category 1
Aquatic Chronic Toxicity	Category 1

SIGNAL WORD:
DANGER

HAZARD STATEMENTS:
May form combustible dust concentrations in air during processing. Causes eye irritation. May cause cancer by inhalation. Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:
Obtain special instructions before use. Do not use until all safety precautions have been read and understood. Wash hands thoroughly after handling. Wear protective gloves and eye protection. Avoid release to the environment.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention. If exposed or concerned: Get medical advice.

Collect spillage.

Store locked up.

Dispose of contents in accordance with local, state, and federal regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Chlorimuron Ethyl	90982-32-4	22.5 – 24
Tribenuron Methyl	101200-48-0	6.5 – 7.2
Kaolin	1332-58-7	46.2 – 49.2
Crystalline Silica (quartz)	14808-60-7	< 0.5
Titanium dioxide	13463-67-7	< 1.0
Silicon dioxide (chemically prepared)	112945-52-5	0.1
Other Ingredients	Trade Secret	Trade Secret

Synonyms: Mixture containing Chlorimuron ethyl (Ethyl 2-[[[[(4-chloro-6-methoxypyrimidin-2-yl) amino] carbonyl] amino] sulfonyl] benzoate) and Tribenuron methyl (methyl 2-[4-methoxy-6-methyl-1,3,5-triazin-2-yl(methyl)carbamoylsulfamoyl]benzoate)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for at least 15 minutes. Remove contact lenses, if present, 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 with plenty of water for several minutes. Call a poison control center or doctor for treatment advice.
If Swallowed: Call a poison control center or doctor 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 breathing is difficult, administer oxygen. If symptoms develop, get medical advice.
Most important symptoms/effects, acute and delayed: Mildly irritating to the eye. Slightly irritating to the skin. Inhalation of dust may cause respiratory irritation. Prolonged inhalation of dust may cause cancer.
Indication of immediate medical attention and special treatment needed, if necessary: Immediate medical attention should not be required.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.
Special Fire Fighting Procedures: Firefighters should wear NIOSH 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: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source, is a potential dust explosion hazard. If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.
Hazardous Decomposition Materials (Under Fire Conditions): May produce oxides of carbon, sulfur and nitrogen and hydrogen chloride.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8. Eliminate ignition sources.
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. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source, is a potential dust explosion hazard. 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:
Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

Avoid breathing dust. Avoid contact with eyes or 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. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen- deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.

Personal Protective Equipment:
Eye/Face Protection: To avoid contact with eyes, wear chemical goggles or shielded safety glasses. 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. washing facilities should be readily accessible to the work area.
Respiratory Protection: Not normally required. If dust, 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:

	OSHA		ACGIH		
Component	**TWA**	**STEL**	**TWA**	**STEL**	**Unit**
Chlorimuron Ethyl	NE	NE	NE	NE	
Tribenuron Methyl	NE	NE	NE	NE	
Kaolin	15 (T) 5 (R)	NE	2.0 (R)	NE	mg/m^3
Crystalline Silica (quartz)	10(R) %SiO2+2 30(T) %SiO2+2	NE	0.025 (R)	NE	mg/m3
Titanium dioxide	15 (T)	NE	10	NE	mg/m3
Silicon dioxide (chemically prepared)	15 (T) 5 (R)	NE	NE	NE	mg/m3
Other Ingredients	NE	NE	NE	NE	

NE = Not Established
T= Total Dust
R= Respirable Fraction

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	beige granular solid
Odor:	mild odor
Odor threshold:	No data available
pH:	6.28 (1% w/w dispersion in DIW)
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	Not applicable due to product form
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	Not applicable
Relative density:	0.726 g / cc (tap)
Solubility(ies):	No data available
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Not applicable due to product form

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

Reactivity: Not reactive.
Chemical Stability: This material is stable under normal handling and storage conditions.
Possibility of Hazardous Reactions: Will not occur
Conditions to Avoid: Keep away from heat, sparks and open flame. Minimize dust generate and accumulation.
Incompatible Materials: Strong oxidizers, acids and bases.**Hazardous Decomposition Products:** Under fire conditions may produce oxides of carbon, sulfur and nitrogen and hydrogen chloride.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, Eye contact, Skin contact.
Symptoms of Exposure:
Eye Contact: Mildly irritating based on toxicity studies.
Skin Contact: Slightly toxic and slightly irritating based on toxicity studies.
Ingestion: Slightly toxic based on toxicity studies.
Inhalation: Low inhalation toxicity. Dust may be irritating to the respiratory system.
Delayed, immediate and chronic effects of exposure:
Prolonged inhalation of respirable dust may cause lung damage and increase the risk of cancer.

Toxicological Data:
Data from laboratory studies conducted on this product:
Oral: Rat LD_{50}: >5,000 mg/kg
Dermal: Rabbit LD_{50}: >5,000 mg/kg
Inhalation: Rat 4 hr: > 2.03 mg/L (no mortalities at highest dose tested)
Eye Irritation: Rabbit: Mildly irritating (MMTS=16.3)
Skin Irritation: Rabbit: Slightly irritating (PDII=0.3)
Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to chlorimuron ethyl may cause effects to liver and blood. Repeated ingestion exposure to tribenuron methyl may cause body weight loss and effect liver and thyroid.
Carcinogenicity / Chronic Health Effects: Prolonged overexposure to chlorimuron ethyl may affect liver and blood chemistry. Chlorimuron ethyl did not cause cancer in laboratory animal studies. Repeated overexposure to tribenuron methyl may cause effects to body weight loss, alteration in clinical chemical parameters and testicular atrophy (considered to be biologically insignificant). Tribenuron methyl produced an increased incidence of

mammary tumors in female rats at dose levels also producing other significant effects. Inhalation of excessive amounts of kaolin dust may produce coughing, sneezing and nasal irritation. Inhalation of respirable titanium dioxide is suspected of causing cancer. Inhalation of respirable crystalline silica may cause silicosis and lung cancer.

Reproductive Toxicity: 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. For tribenuron methyl no reproductive effects were observed in rats.

Developmental Toxicity: 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. Development effects with tribenuron methyl occurred in the rat, but only at a dose level also toxic to the mother.

Genotoxicity: Tests have shown that chlorimuron ethyl does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. Tribenuron methyl did not produce genetic damage in bacterial or mammalian cell cultures or in animals.

Assessment Carcinogenicity:

This product contains substances that are considered to be probable or suspected human carcinogens as follows:

	Regulatory Agency Listing As Carcinogen			
Component	**ACGIH**	**IARC**	**NTP**	**OSHA**
Chlorimuron Ethyl	No	No	No	No
Tribenuron Methyl	No	No	No	No
Kaolin	A4	No	No	No
Crystalline Silica (quartz)	A2	1	K	No
Titanium dioxide	A4	2B	No	No
Silicon dioxide (chemically prepared)	No	No	No	No
Other Ingredients	No	No	No	No

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Chlorimuron Ethyl Technical:

96-hour LC_{50} Bluegill:	100 mg/l	Bobwhite Quail 8-day Dietary LC_{50}:	>5,620 ppm
96-hour LC_{50} Rainbow Trout:	>1,000 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>5,620 ppm
48-hour EC_{50} Daphnia:	>10 mg/l	Mallard Duck Oral LD_{50}:	>2,510 mg/kg

Data on Tribenuron Methyl Technical:

96-hour LC_{50} Bluegill:	>1,000 mg/l	Bobwhite Quail 8-day Dietary LC_{50}:	>5,620 ppm
96-hour EC_{50} Rainbow Trout:	>1,000 mg/l	Bobwhite Quail Oral LD_{50}:	>2,250 mg/kg
48-hour EC_{50} Daphnia:	720 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>5,620 ppm
72-hour EC_{50} Green Algae	0.011 mg/l	Honey Bee Contact LD_{50}:	>100 μg/bee

Environmental Fate:

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. Data suggestions that tribenuron methyl is weakly adsorbed in soil and that the adsorption is pH dependent, increasing in acidic soils. The average soil half-life for tribenuron methyl is 10 days. Hydrolysis of tribenuron-methyl is also strongly pH dependent. The solubility and stability of tribenuron methyl increases with increasing pH. Photodegradation in water and on soil is not an important degradation mechanism.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility. Contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional office for guidance.

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 or 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 or 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 SDS.

DOT

< 882 pounds per complete package
Non Regulated – See 49 CFR 173.132(b)(3) & 171.4(c)

≥ 882 pounds per complete package
UN 3077, Environmentally hazardous substance, solid, n.o.s., (Tribenuron-methyl), 9, III, MARINE POLLUTANT

IMDG

UN 3077, Environmentally hazardous substance, solid, n.o.s., (Tribenuron-methyl), 9, III, MARINE POLLUTANT

IATA

UN 3077, Environmentally hazardous substance, solid, n.o.s., (Tribenuron-methyl), 9, III

15. REGULATORY INFORMATION

EPA FIFRA INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION. Causes moderate eye irritation. Avoid contact with eyes or clothing. Wear protective eyewear. Wash thoroughly with soap and water after handling.

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):
Acute Health, Chronic Health, Fire Hazard
Section 313 Toxic Chemical(s):
Chlorimuron ethyl (CAS No. 90982-32-4) 22.5 – 24% by weight in product
Tribenuron-methyl (CAS No. 101200-48-0) 6.5 – 7.2% by weight in product

Reportable Quantity (RQ) under U.S. CERCLA:
None

RCRA Waste Code:

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.

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65: Warning: This product contains chemicals known to the State of California to cause cancer: titanium dioxide, crystalline silica, naphthalene..

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 1 **Flammability:** 2 **Reactivity:** 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

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

Although the information and recommendations set forth herein (hereinafter “Information”) are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

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