

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**Product Name:** PURESTAND<sup>®</sup> Selective Herbicide  
**EPA Reg. No.:** 71368-38  
**Synonyms:** Metsulfuron Methyl: Methyl 2-[ [ [ (4-methoxy-6-methyl-1,3,5-triazin-2-ly) amino]carbonyl]amino] sulfonyl]benzoate  
**Product Type:** Herbicide  
  
**Company Name:** Nufarm, Inc.  
 150 Harvester Drive, Suite 200  
 Burr Ridge, IL 60527  
  
**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:** July 24, 2012 **Supersedes:** June 22, 2009  
**Sections Revised:** 4, 13

**2. HAZARDS IDENTIFICATION**

**Emergency Overview:**  
**Appearance and Odor:** Light brown granules with slight odor.  
**Warning Statements:** Keep out of reach of children. CAUTION. Causes eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist.  
  
**Potential Health Effects:**  
**Likely Routes of Exposure:** Inhalation, eye and skin contact.  
**Eye Contact:** Slightly irritating based on toxicity studies.  
**Skin Contact:** Mildly toxic and non-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:**  
 Metsulfuron-methyl is practically non-toxic to fish, birds and bees.

See Section 12: ECOLOGICAL INFORMATION for more information.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

COMPONENT	CAS NO.	% BY WEIGHT
Metsulfuron-methyl	74223-64-6	60.0
Other Ingredients Including: Kaolin Clay and related minerals	1332-58-7	40.0



**4. FIRST AID MEASURES**

**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 on Skin:** 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 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 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.

**Note to Physician:** This product may pose an aspiration pneumonia hazard.

**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, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

**Hazardous Decomposition Materials (Under Fire Conditions):** May produce gases such as oxides of carbon, hydrogen, nitrogen and sulfur.

**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:** 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:**

Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

**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.

**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:** Not normally required. 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, shoes and socks. 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	
Metsulfuron Methyl	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:** Light brown granules with slight odor.

**Boiling Point:** Not applicable

**Solubility in Water:** Dispersible

**Density:** 1.398 g/ml

**Specific Gravity:** Not applicable

**Evaporation Rate:** Not applicable

**Vapor Density:** Not applicable

**Freezing Point:** Not applicable

**Vapor Pressure:** Not applicable

**pH:** 4.012

**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, sparks and flames.

**Incompatible Materials:** None reasonably foreseeable.

**Hazardous Decomposition Products:** Under fire conditions may produce gases such as oxides of carbon, hydrogen, nitrogen and sulfur.

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

**11. TOXICOLOGICAL INFORMATION****Toxicological Data:**

Data from laboratory studies conducted on a similar, but not identical, formulation:

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

**Dermal:** Rabbit LD<sub>50</sub>: >2,000 mg/kg

**Inhalation:** Rat 4-hr LC<sub>50</sub>: >5.3 mg/L

**Eye Irritation:** Rabbit: Slightly irritating

**Skin Irritation:** Rabbit: Non-irritating

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

**Subchronic (Target Organ) Effects:** Repeated overexposure to metsulfuron-methyl may cause decreased body weight gain and decreased liver weights.

**Carcinogenicity / Chronic Health Effects:** Prolonged overexposure to metsulfuron-methyl may cause body weight loss. There was no evidence of carcinogenicity in animal studies using metsulfuron-methyl. Inhalation of excessive amounts of kaolin dust may produce coughing, sneezing and nasal irritation.

**Reproductive Toxicity:** Animal tests with metsulfuron-methyl have not demonstrated reproductive effects.

**Developmental Toxicity:** Animal tests with metsulfuron-methyl have not demonstrated developmental effects.

**Genotoxicity:** There have been some positive and negative studies, but the weight of evidence is that metsulfuron-methyl is not mutagenic.

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

See Section 2: HAZARDS IDENTIFICATION for more information.

**12. ECOLOGICAL INFORMATION****Ecotoxicity:**

Data on Metsulfuron-methyl technical:

96-hour LC <sub>50</sub> Bluegill:	>150 mg/l	Bobwhite Quail 8-day Dietary LC <sub>50</sub> :	>5,620 ppm
96-hour EC <sub>50</sub> Rainbow Trout:	>150 mg/l	Mallard Duck 8-day Dietary LC <sub>50</sub> :	>5,620 ppm
48-hour EC <sub>50</sub> Daphnia:	>150 mg/l	Mallard Duck Oral LD <sub>50</sub> :	>2,510 mg/kg
72-hour EC <sub>50</sub> Green Algae	0.045 mg/l	Honey Bee Contact LD <sub>50</sub> :	>25 ug/bee

**Environmental Fate:**

Metsulfuron-methyl is relatively mobile in most soils, but will be retained longer in soils with higher percentages of organic matter. It is more mobile in alkaline soils than in acidic soils. Metsulfuron-methyl will degrade faster under acidic conditions, and in soils with higher moisture contents and higher temperature. Metsulfuron-methyl is stable to photolysis, but will break down in ultraviolet light. Half-life estimates in soil range from 14 to 180 days, with an average of 30 days. Metsulfuron-methyl is stable to hydrolysis at neutral and alkaline pHs. The estimated half-life in acidic water is 3 weeks.

**13. DISPOSAL CONSIDERATIONS****Waste Disposal Method:**

Do not contaminate water, food, or feed by disposal. 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:**

**Plastic Containers:** Non-refillable container. Do not reuse or refill this container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke. **For Fiber Sacks:** Non-refillable container. Do not reuse or refill this container. Completely empty fiber sack by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then dispose of sack in a sanitary landfill or by incineration if allowed by State and local authorities. **For Fiber Durms with Liners:** Non-refillable 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 application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities. If drum is contaminated or cannot be reused, dispose of in the same manner. **For Bags Containing Water Soluble Packets:** Non-refillable container. Do not reuse or refill this container. Do not reuse the outer box or the resealable plastic bag. When all water-soluble packets are used, the outer packaging should be clean and may be disposed of in a sanitary landfill or by incineration, or if allowed by State and local authorities, by open burning. If burned, stay out of smoke. If the resealable plastic bag contacts the formulated product in any way, the bag must be triple-rinsed with clean water. Add the rinsate to the spray tank and dispose of the outer wrap as described above. **For Metal Containers (non aerosol):** Non-refillable container. Do not reuse or refill this container. Triple rinse (or equivalent) the container. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. **For Paper and Plastic Bags)** (Non-refillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then 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**

UN 3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, NOS, (METSULFURON-METHYL), 9, III, MARINE POLLUTANT

**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):**

None

**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

<b>16. OTHER INFORMATION</b>
------------------------------

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.

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.

Purestand is a registered trademark of Nufarm Americas Inc.