N-Hance™ BF13 Cationic guar
™ Trademark, Ashland or its subsidiaries, registered in various countries
419702

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE
COMPANY/UNDERTAKING

<table>
<thead>
<tr>
<th>Ashland</th>
<th>Regulatory Information Number</th>
<th>1-800-325-3751</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.O. Box 2219</td>
<td>Telephone</td>
<td>614-790-3333</td>
</tr>
<tr>
<td>Columbus, OH 4321</td>
<td>Emergency telephone number</td>
<td>1-800-Ashland (1-800-274-5263)</td>
</tr>
</tbody>
</table>

Product name: N-Hance™ BF13 Cationic guar
™ Trademark, Ashland or its subsidiaries, registered in various countries

Product code: 419702
Product Use Description: No data

2. HAZARDS IDENTIFICATION

**Emergency Overview**

Appearance: solid, tan

WARNING! MAY FORM COMBUSTIBLE DUST-AIR MIXTURES. DUST MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION.

**Potential Health Effects**

**Exposure routes**

Inhalation, Skin contact, Eye Contact, Ingestion

**Eye contact**

Dust can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

**Skin contact**

May cause skin irritation. Symptoms may include redness, burning, and swelling of skin.

**Ingestion**

Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful.
Inhalation

This material is a dust or may produce dust. Prolonged or repeated breathing of this material may result in chronic bronchitis (inflammation of the airways of the lungs). Symptoms include coughing and shortness of breath. Symptoms are not expected at air concentrations below the recommended exposure limits, if applicable (see Section 8.).

Aggravated Medical Condition

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: lung (for example, asthma-like conditions)

Symptoms

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways). Exposure to this product (or a component) may cause an allergic reaction (narrowing of the air passages of the lungs resulting in difficult breathing, tightness in the chest, coughing and wheezing) in some sensitive individuals. Other symptoms of an allergic reaction may include itchy and watery eyes, runny and stuffy nose, sweating, flushing, hives, rapid heart rate, and lowered blood pressure.

Target Organs

No data

Carcinogenicity

Based on the available information, this material cannot be classified with regard to carcinogenicity. This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

Reproductive hazard

Based on the available information, risk to the fetus from maternal exposure to this material cannot be assessed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Components</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATIONIC GUAR GUM, MODIFIED</td>
<td>65497-29-2</td>
<td>&gt;=90-%&lt;=100%</td>
</tr>
</tbody>
</table>
4. FIRST AID MEASURES

Eyes
If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

Skin
Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention. Launder clothing before reuse.

Ingestion
Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

Inhalation
If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

Notes to physician
Hazards: No information available.
Treatment: No information available.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Water spray

Hazardous combustion products
Carbon dioxide and carbon monoxide, Hydrocarbons, Sodium oxides

Precautions for fire-fighting
Organic dusts at sufficient concentration can form explosive mixtures in air. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). Use water spray to
cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
For personal protection see section 8. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Avoid breathing dust. Material can create slippery conditions.

Environmental precautions
Do not flush into surface water or sanitary sewer system.

Methods for cleaning up
Sweep up or vacuum up spillage and collect in suitable container for disposal. Pick up and arrange disposal without creating dust.

Other information
Comply with all applicable federal, state, and local regulations.

7. HANDLING AND STORAGE

Handling
Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Avoid dust formation. This material is slippery when wet. Maintain good housekeeping. Do not permit dust layers to accumulate, for example, on floors, ledges, and equipment, in order to avoid any potential for dust explosion hazards. For further guidance on prevention of dust explosions, refer to National Fire Protection Association (NFPA) 654: “Standard for the Prevention of Fire and Dust Explosions, from the Manufacturing, Processing and Handling of Combustible Particulate Solids”. The material can accumulate static charge and can therefore cause electrical ignition of flammable atmospheres. Ensure all equipment is electrically grounded and bonded before beginning transfer operations.

Storage
Store in a cool, dry, ventilated area. Keep from freezing.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines
Contains no substances with occupational exposure limit values.

General advice
These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.
Avoid breathing dust.

Exposure controls
Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects. For exposures to dust, utilize the exposure limits for Particulates (insoluble) Not Otherwise Classified (PNOC). ACGIH TWA - 10 mg/m$^3$ inhalable fraction, 3 mg/m$^3$ respirable fraction. OSHA PEL - 15 mg/m$^3$ total dust, 5 mg/m$^3$ respirable fraction. Provide appropriate exhaust ventilation at places where dust is formed.

Eye protection
Wear safety glasses or chemical splash goggles when dust exposure is possible.

Skin and body protection
Wear normal work clothing including long pants, long-sleeved shirts and foot covering to prevent direct contact of the product with the skin. Launder clothing before reuse. If skin irritation develops, contact your facility health and safety professional or your local safety equipment supplier to determine the proper personal protective equipment for your use. Wear resistant gloves (consult your safety equipment supplier).

Respiratory protection
A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES
Physical state | solid  
Form | granules, powder  
Colour | tan  
Odour | mild  
Boiling point/boiling range | no data available  
Melting point/range | no data available  
Sublimation point | no data available  
\( pH \) | 4 - 6 @ 1% (as aqueous solution)  
Flash point | not applicable  
Ignition temperature | no data available  
Evaporation rate | no data available  
Lower explosion limit/Upper explosion limit | no data available  
Particle size | no data available  
Vapour pressure | no data available  
Relative vapour density | no data available  
Density | No data  
Bulk density | No data  
Water solubility | slightly soluble  
Solubility(ies) | no data available  
Partition coefficient: n-octanol/water | no data available  
\( log \text{ Pow} \) | no data available  
Autoignition temperature | no data available  
Viscosity, dynamic | no data available  
Viscosity, kinematic | no data available  
Solids in Solution | no data available  
Decomposition temperature | no data available  
Burning number | no data available  
Dust explosion constant | no data available  
Minimum ignition energy | no data available

### 10. STABILITY AND REACTIVITY

**Stability**

Stable.

**Conditions to avoid**

Keep away from heat, flame, sparks and other ignition sources. Exposure to sunlight., UV light., Exposure to moisture.
Incompatible products
    Acids, Fluorine, Oxidizing agents

Hazardous decomposition products
    carbon dioxide and carbon monoxide, Hydrocarbons, Sodium oxides

Hazardous reactions
    Product will not undergo hazardous polymerization.

Thermal decomposition
    No data

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity
    LD 50 Rat: > 2,000 mg/kg

Acute inhalation toxicity
    CATIONIC GUAR GUM, MODIFIED: no data available

Acute dermal toxicity
    CATIONIC GUAR GUM, MODIFIED: no data available

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)
    Biodegradability: Slowly biodegradable

Bioaccumulation
    CATIONIC GUAR GUM, MODIFIED: no data available

Ecotoxicity effects

Toxicity to fish
    CATIONIC GUAR GUM, MODIFIED: no data available
Toxicity to daphnia and other aquatic invertebrates.
CATIONIC GUAR GUM, MODIFIED : no data available

Toxicity to algae
CATIONIC GUAR GUM, MODIFIED : no data available

Toxicity to bacteria
CATIONIC GUAR GUM, MODIFIED : no data available

Biochemical Oxygen Demand (BOD)
CATIONIC GUAR GUM, MODIFIED : no data available

Chemical Oxygen Demand (COD)
CATIONIC GUAR GUM, MODIFIED : no data available

Additional ecological information
CATIONIC GUAR GUM, MODIFIED : no data available

13. DISPOSAL CONSIDERATIONS

Waste disposal methods
For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution's Environmental Services Group at 800-637-7922.

14. TRANSPORT INFORMATION

REGULATION
<table>
<thead>
<tr>
<th>ID NUMBER</th>
<th>PROPER SHIPPING NAME</th>
<th>*HAZARD CLASS</th>
<th>SUBSIDIARY HAZARDS</th>
<th>PACKING GROUP</th>
<th>MARINE POLLUTANT / LTD. QTY.</th>
</tr>
</thead>
</table>
N-Hance™ BF13 Cationic guar
™ Trademark, Ashland or its subsidiaries, registered in various countries

U.S. DOT - ROAD
Not dangerous goods

U.S. DOT - RAIL
Not dangerous goods

U.S. DOT - INLAND WATERWAYS
Not dangerous goods

TRANSPORT CANADA - ROAD
Not dangerous goods

TRANSPORT CANADA - RAIL
Not dangerous goods

TRANSPORT CANADA - INLAND WATERWAYS
Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS
Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO
Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER
Not dangerous goods

MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES
Not dangerous goods

*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

15. REGULATORY INFORMATION
N-Hance™ BF13 Cationic guar
™ Trademark, Ashland or its subsidiaries,
registered in various countries419702

California Prop. 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SARA Hazard Classification
Acute Health Hazard
Fire Hazard

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

New Jersey RTK Label Information
CATIONIC GUAR GUM, MODIFIED 65497-29-2
WATER 7732-18-5

Pennsylvania RTK Label Information
CATIONIC GUAR GUM, MODIFIED 65497-29-2
WATER 7732-18-5

Notification status
US. Toxic Substances Control Act  y (positive listing)
Canada. Canadian Environmental Protection Act (CEPA).  y (positive listing)
Domestic Substances List (DSL). (Can. Gaz. Part II. Vol. 133)  y (positive listing)
Australia. Industrial Chemical (Notification and Assessment) Act  y (positive listing)
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand y (positive listing)
Japan. Kashin-Hou Law List y (positive listing)
Korea. Toxic Chemical Control Law (TCCL) List y (positive listing)
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act y (positive listing)
China. Inventory of Existing Chemical Substances y (positive listing)

<table>
<thead>
<tr>
<th></th>
<th>HMIS</th>
<th>NFPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
N-Hance™ BF13 Cationic guar
™ Trademark, Ashland or its subsidiaries,
registered in various countries419702

<table>
<thead>
<tr>
<th>Flammability</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical hazards</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Instability</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Specific Hazard</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).