Material Safety Data Sheet

MATERIAL SAFETY DATA SHEET
NUMBER 0001
Issue Date: February 23, 1998
Revised: July 8, 2002

1. Chemical Product and Company Identification

Hypermellose (Hydroxypropyl Methyl Cellulose)

(Synonyms: Demacol ®; Methocel K4M; Goniosol; Methyl Cellulose Propylene Glycol Ether; Hypermellose; Ultra Tears; ).

Company Identification

Exclusive Distributor for USA, Canada, and Puerto Rico
Blanver & PharmExcipient
777 Yamato Road Suite 116
Boca Raton, FL 33431-4406
Phone: (561) 862-0004
Fax: (561) 862-0879

Manufacturer
Derivados Macroquímicos S.A. de C.V. (“DEMACSA”)
Tecoyotitla 412
Col. Ex-Hacienda de Guadalupe Chimalistac C.P. 01050
México D.F., México

2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percentage</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroxypropyl Methyl Cellulose</td>
<td>99%</td>
<td>9004-65-3</td>
</tr>
<tr>
<td>Sodium Chloride</td>
<td>1%</td>
<td>7647-14-5</td>
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</tbody>
</table>

3. Hazards Identification

Emergency Overview

Odorless, white to off-white, fibrous or granular powder.
Spilled powder becomes slippery when wet.
Mayor health hazards: No significant target effects reported.
Physical hazards: Dust/air mixtures may ignite or explode.

Potential Health Effects

Eye Contact
Short Term Effects: Mechanical irritation.
Long Term Effects: No information is available.

Skin Contact
Short Term Effects: No information available.
Long Term Effects: No information available.

Ingestion
Short Term Effects: No information on significant adverse effects.
Long Term Effects: Diarrhea.

Inhalation
Short Term Effects: Irritation, chest pain.
Long Term Exposure: No information is available.

4. First Aid

Eyes: Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.

Skin: Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15 - 20 minutes). Get medical attention, if needed.

Ingestion: If vomiting occurs, keep head lower than hips to help prevent aspiration. Get medical attention, if needed.

Inhalation: Remove from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if necessary. Get medical attention.

5. Fire Fighting Measures

Fire and Explosion
Slight fire hazard when exposed to heat or flame. Dust/air mixtures may ignite or explode.
Extinguishing: media include regular dry chemical, carbon dioxide, water, regular foam.
For larger fires, use regular foam or flood with fine water spray.

Firefighting: Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Flash point: 190 °C / 374 °F

6. Accidental Release Measures

Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

7. Handling and Storage

Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances. Store in a tightly closed container. Store in a cool, dry place. Ventilation required. Use only with adequate exhaust ventilation. Follow an organized housekeeping plan. Keep floors and equipment clean.

8. Exposure Controls/Personal Protection

Exposure limits: No occupational exposure limits established.

Ventilation: Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

Eye protection: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Clothing: Wear appropriate chemical resistant clothing.

Gloves: Wear appropriate chemical resistant gloves.

Respirator: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any dust, mist and vapor respirator.
Any air-purifying respirator with a high-efficiency particulate filter.
Any powered air-purifying respirator with a dust, mist and fume filter.
Any powered air-purifying respirator with a high-efficiency particulate filter.

9. Physical and Chemical Properties

Physical state: Solid,
Color: White to off-white
Odor - Odorless
Boiling point - Not applicable
Melting point - Not available
Vapor pressure - Not applicable
Vapor density - Not applicable
Specific gravity - 0.4500 @ 20°C/4°C
Water solubility - 1 g/ml @ 20°C. Soluble in cold; insoluble in hot
pH - Not applicable
Odor threshold - Not available
Evaporation rate - Not applicable
Solvent Solubility - Soluble in most polar organic solvents; insoluble in alcohol,
chloroform and ether.

10. Stability and Reactivity

Stable at normal temperatures and pressure. Avoid heat, flames, sparks and other sources of
ignition. Avoid contact with incompatible materials.

It is considered incompatible with oxidizing materials.
Oxidizers (Strong); Fire and explosion hazard.

Thermal decomposition products may include toxic oxides of carbon.

Will not polymerize.

11. Toxicological Information

Toxicity data:
Acute exposure: Was evaluated for ocular irritancy. 0.1 mg was instilled in eye or rabbit
resulting in slight reversible eye irritation.

Was applied full strength to rabbit skin. 10 applications were made in 14 days and 3
applications were made on abraded skin. Solid HPMC was non-irritating, and not absorbed
through the skin.
1.1% solution of HPMC was assessed for skin irritation in rabbits for a 24-hr. on both intact and abraded skin. Draize rating = 0.6 of possible 8.

LD_{50} Data:
LD_{50} oral in rats > 4 g/kg
LD_{50} i.p. in rats = 5200 mg/kg
LD_{50} i.p. mouse = 5 gm/kg
TDL_{50} continuous oral -rat = 2250 gm/kg/30 day(s)

Repeated Exposure:
HPMC was evaluated in a 90-day feeding study in rats and beagle dogs. Dogs were fed diet of 2, and 6% HPMC; rats were fed 0, 1, 3 and 10% HPMC. No evidence of toxicity was observed in rats or dogs based on observations of mortality, feed consumption, urinalysis, hematology and clinical chemistry and gross and microscopic evaluations. This study also looked at dogs and rats fed low viscosity HPMC in the diet at concentrations of 0, 1 and 5% for 90 days. No evidence if toxicity was observed. In another study growth was slowed in rats fed at diet containing 10 or 20% HPMC for 90 days. Similar results were observed when groups of 20 rats were fed a diet of 2, 10 and 25% for 30 days. Weight loss, early deaths and severe diarrhea was observed only at the 25% level.
In two dogs fed a diet containing 25 or 50 g HPMC daily for 30 days only the dog fed 50 g experienced weight loss, diarrhea and anemia.
Rabbits (6 per group) fed a diet of HPMC for 30 days at a concentration of 0, 2, 10, and 25% had no toxic effects.
This material has very low toxicity by the oral route.

Mutagenicity:
HPMC has not been tested in any standard mutagenicity assays. However, methyl cellulose, a similar cellulose derivative, was tested in the Ames assay, host mediated assays (in vivo and in vitro), cytogenetic assays (in vivo and in vitro) and a dominant lethal test. No mutagenic activity was demonstrated.

Chronic Toxicity/Carcinogenicity:
Rats fed a diet containing a 20 or 25% HPMC for one year showed no significant toxic effects other than a decreased growth rate. In two year study rats were fed 1, 5, and 20%, only the high dose rats showed reduced growth rate. No significant microscopic effects or tumors were observed. Dogs fed up to 3g/day of HPMC showed no toxic effects.

Reproductive Effects:
HPMC has not been evaluated in any standard reproduction test. However, hydroxypropyl cellulose a similar cellulose derivative has been tested in both rats and rabbits. One study in rats indicated there was an increase in fetal resorptions, gross and skeletal malformations after a 1 and 4% HPMC i. p. injection. In another study HPMC was administrated to rats and rabbits with gauze at 200 to 5000 mg/kg had no abnormalities, embryotoxic or
teratogenic observed. At the highest dose this study was 250 times the anticipated human exposure level. A review of 5 cellulose derivatives reported that no significant teratogenic or reproductive effects have been observed.

Other Effects and Information:
HPMC was evaluated for sensitization using the Magnusson Klignam guinea pig sensitization test and the Macquire method.
In both assays HPMC did not produce any responses indicative of sensitization.
Material is readily digested. In rats, given a single 500 mg/kg gauze dose, or 5 consecutive daily doses. Greater than 99% was recovered in the feces after a single dose and >97% after repeated administration.
A clinical study of a facial cleanser containing 1.1% HPMC was evaluated in 25 women for 14 days. Few subjects experienced irritation with this product and it was not found to be an skin irritant or a sensitizer.

Health Effects
Inhalation:
Hydroxypropyl Methyl Cellulose:
Acute Exposure.- Dusts may cause irritation of the nose and throat and cause coughing and chest discomfort.
Chronic Exposure.- No data available.

Skin:
Hydroxypropyl Methyl Cellulose:
Acute Exposure.- No data available.
Chronic Exposure.- No data available.

Eye:
Hydroxypropyl Methyl Cellulose:
Acute Exposure.- Dusts may cause mechanical irritation.
Chronic Exposure.- No data available.

Ingestion:
Hydroxypropyl Methyl Cellulose:
Acute Exposure.- Has been reported not to be absorbed from the gastrointestinal tract, however, a mild laxative effect has been reported. Large quantities may cause intestinal obstruction or stomach concretions.
Chronic Exposure.- Essentially all hydroxypropyl methyl cellulose fed to human subjects was eliminated within 96 hours following single doses of 3.0-8.9 gm at least 1 week apart. Animals fed with doses containing 3% or less experienced no adverse effects. Higher levels produced malnutrition due to excessive bulk, but caused no organic damage. Diarrhea and depression of red blood cells was reported in one dog.

12. Ecological Information

Not available
13. Disposal Considerations

Dispose in accordance with all applicable regulations.

14. Transport Information

No classification assigned
LAND TRANSPORT ADR/RID: No classification assigned.
AIR TRANSPORT IATA/ICAO: No classification assigned.
MARITIME TRANSPORT IMDG: No classification assigned.

15. Regulatory Information

U.S. REGULATIONS:
TSCA INVENTORY STATUS: Y

TSCA 12 (b) Export Notification: Not listed.
CERCLA Section 103 (40 CFR302.4): N
SARA Section 302 (40 CFR355.30): N
None of the chemicals in this material have an RQ.
None of the chemicals in this product have a TPQ.
SARA Section 304 (40 CFR355.40): N
SARA Section 313 (40 CFR372.65): N
SARA Hazard Categories, SARA SECTIONS 311/312 (40 CFR370.21):
Acute: N
Chronic: N
Fire: N
Reactive: N
Sudden Release: N
STATE REGULATIONS:
California Propositions 65: N
EUROPEAN REGULATIONS:
EC NUMBER: Not assigned.
GERMAN REGULATIONS:
WATER HAZARD CLASS (WGK): 1 (Self Classification by manufacturers and Distributors).

16. Other Information

Additional Information:
No additional information available.
The following label hazard ratings are recommended for containers of Hydroxypropyl Methyl Cellulose:

NFPA
Fire 1
Health 1
Reactivity 0
Specific Hazard: None

REFERENCES:
MSDS Hydroxypropyl Methyl Cellulose, OHS11284, CAS 9004-65-3,
MDL data bank, revision date December 09 de 1997.
Section 2: Composition/Information on Ingredients
Section 3: Hazard Identification
Section 4: First Aid
Section 5: Fire Fighting Measures
Section 6: Accidental Release Measures
Section 7: Handling and Store
Section 8: Exposure Controls/Personal Protection
Section 9: Physical and Chemical Properties
Section 10: Stability and Reactivity
Section 11: Toxicological Information (Health Effects)
Section 12: Ecological Information
Section 13: Disposal Considerations
Section 14: Transport Information
Section 15: Regulatory Information

Toxicity Evaluation of: Hydroxypropyl Methyl Cellulose
Section 11: Toxicological Information (Toxicity Data)

ANIQ - SETIQ
Section 1: Chemical Product and Company identification
Section 2: Composition/Information on Ingredients
Section 9: Physical and Chemical Properties (Results of Data)

American National Standard Institute
Material Safety Data Sheets Preparation
for Hazardous Industrial Chemicals
11 West 42nd Street
New York, New York 10036
MSDS Example No. 4