MD-BOTH INDUSTRIES
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MATERIAL SAFETY DATA SHEET

Metasheen 1806
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Prepared by: Max Hui

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Identity
Product Name: **Metasheen 1806**
Product type: Aluminum powder dispersed in isopropyl alcohol

Company
MD-Both Industries
40 Nickerson Rd.
Ashland, MA 01721
Phone: (508) 881-4100

Emergency Telephone Number: CHEMTREC 800-424-9300 24 hours everyday

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
Isopropyl alcohol*	67-63-0	90
Aluminum	7429-90-5	10

*synonyms: isopropyl alcohol, 2-propanol

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Gray paste with alcoholic odor.
Vapor from paste may form combustible mixture with air.
Aluminum powder may be ignited by static discharge and burn at extremely high temperature.
Once suspended in air forming a dust cloud, it is readily ignited and highly explosive.
Do not use water to clean up spills. Use non-sparkling tools for clean up or natural bristle broom.
Reacts violently with halogenated hydrocarbons, alkalis, and oxidizers

to produce heat.
Aluminum is a nuisance dust.

Ratings
Health: 2--moderate
Flammability: 3--high
Reactivity rating: 1--slight
Contact rating: 2--moderate

Potential Health Effects

Eye
Can cause eye irritation. Symptoms include stinging, tearing, redness,.and swelling of eyes.

Skin
May cause mild skin irritation. Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, drying and cracking of skin, and skin burns. Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

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

Inhalation
Breathing of vapor or mist is possible. Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms usually occur at air concentrations higher than the recommended exposure limits (See Section 8)

Symptoms of Exposure
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), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness), low blood pressure, mild, temporary changes in the liver, effects on heart rate, respiratory depression (slowing of the breathing rate), loss of coordination, confusion, lung edema (fluid buildup in the lung tissue), kidney damage, coma.

Target Organ Effects
Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: mild, reversible liver effects.

Developmental Information
This material (or a component) has been shown to cause harm to the fetus in laboratory animal studies. Harm to the fetus occurs only at exposure levels that harm the pregnant animal. The relevance of these findings to humans is uncertain.

Cancer Information

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, the National Toxicology Program, or the Occupational Safety and Health Administration.

Other Health Effects
No data

Primary Route(s) of Entry
Inhalation, Skin absorption, Skin contact, Eye contact.

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.

Swallowing
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, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. if person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

Note to Physicians Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: skin, lung (for example, asthmalike conditions), kidney.

5. FIRE FIGHTING MEASURES

Flash Point
53.0 F (11.6 C) TCC

Explosive Limit
Lower 2.0; upper 12.0

Autoignition Temperature
750.0 F (398.8 C)

Hazardous Products of Combustion
May form: carbon dioxide and carbon monoxide, aluminum oxide

Fire and Explosion Hazards
Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

Extinguishing Media
Dry sand, carbon dioxide, dry chemical. Do not use halogenated extinguishing agents or water. If solvent has completely burned out, a powder fire may result. For powder fires, surround fire with dry sand. Avoid draft and allow fire to burn itself out. Wear self-contained breathing apparatus for fighting fires. Extinguish or contain with dry sand or low pressure powder extinguishers specifically formulated for metal fires. In the very early stages of a fire, carbon dioxide extinguishers may be used, however, extreme care must be taken as aluminum powder can cause explosive dust clouds.

Fire Fighting Instructions
Vapors from paste may form explosive mixture with air. Dust clouds may be ignited by static discharge and burn at extremely high temperature. Aluminum dust is explosive over a fairly wide range of mass loadings, depending on particle size, surface area, and other factors. Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turnout gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

6. ACCIDENTAL RELEASE MEASURES

Leak and Spill Procedures:
All spills should first be cleaned by scooping and mild brushing.
Cleaning should be done with a soft brush or sponge, and pickup should be with non-sparking conductive scoops. Synthetic fiber bristle brush and plastic, or other non-conductive scoops should not be used because of their tendency to accumulate strong static charges. Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks, etc.). Persons not wearing protective equipment should be excluded from the area of the spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading. Remaining paste may be taken up with sand or shoveled into containers. Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities, as required, that the spill has occurred. Vapors from paste may form explosive mixtures with air. If solvents evaporate from paste, avoid action that would create a dust-laden cloud or cause powder to disperse in air. If vacuum cleaner is used, its piping, suction hose, and tools should be electrically conductive and should be grounded to prevent static electric sparks. Only vacuum cleaners specifically approved for use with reactive combustible metal dust should be used. Standard commercial

industrial vacuum cleaners should not be used, as they are not safe with combustible metals. The vacuum system's electrical equipment should be suitable for Class II, Group E and Class I, Group D locations.

7. HANDLING AND STORAGE

Handling

Container should be bonded and grounded for transfers to avoid static sparks. Use non-spark type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty due to product residue. Observe all warnings and precautions listed for the product. Handle in No Smaking areas only.

Storage

Store in a clean dry place, at a temperature below 120 F. Keep the container covered at all times other than for removing product. Do not store in areas containing flammable liquids or other combustible materials. Store in No smoking area only.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection

Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative. Maintain eye wash fountain and quick drench facilities in work area.

Skin Protection

Wear resistant gloves (consult your safety equipment supplier)., To prevent repeated or prolonged skin contact, wear impervious clothing and boots

Respiratory Protections

If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in the absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines

Components

ISOPROPANOL (67-63-0)
OSHA VPEL 400.000 ppm TWA
ACGIH TLV 400.000 ppm TWA
ALUMINUM (7429-90-5)
OSHA: 5 mg/m3 respirable TWA
ACGIH: 5 mg/m3 fume TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point
(for product) 180.0 F (82.2 C) @ 760 mmHg

Vapor Pressure
(for product) 33.000 mmHg @ 68.00 F

Specific Vapor Density
2.070 @ AIR=1

Specific Gravity
0.83 @ 60.00 F

Percent Volatiles
90.0 %

Volatile Organic Compounds (VOC)
90.0 %

Evaporation Rate
1.6 (butyl acetate = 1.0)

Appearance
Grayish silver paste

Odor
Slight

pH
No data

Freezing Point
-128.0 F (-88.8 C)

Solubility in Water
Solvent component is totally miscible/soluble in water

10. STABILITY AND REACTIVITY

Chemical Stability
Stable under normal conditions of use. Stable under 120 F.

Conditions of Reactivity:
When heated, aluminum powder oxidizes at a temperature dependent rate. It reacts violently with halogenated hydrocarbons, with oxidizers to produce heat, and with water to slowly generate heat and hydrogen. It reacts with mineral acids and strong alkalis to form hydrogen gas.

Hazardous Polymerization
Product will not undergo hazardous polymerization.

Hazardous Decomposition
May form: carbon dioxide and carbon monoxide, aluminum oxide.

Incompatibility
Avoid contact with: acetaldehyde, strong acids or alkalis, chlorine, ethylene oxide, isocyanates strong oxidizing agents

TOXICOLOGICAL INFORMATION

Inhalation rat LC50: 200 g/m3; oral rat LD50: 5620 mg/kg; skin rabbit LD50: >20 ml/kg. Investigated as a mutagen.

Cancer List:

Ingredient	NTP carcinogen, Known	NTP carcinogen, Anticipated	IAPC
Isopropyl alcohol	No	No	No
Aluminum	No	No	

ECOLOGICAL INFORMATION

No data

13. DISPOSAL CONSIDERATION

Waste Management Information This material is not listed as a hazardous waste RCRA.
Dispose of in accordance with all applicable local, state and federal regulations.

14. TRANSPORT INFORMATION

DOT Shipping name/Hazard Code:
Under DOT 49 CFR, this product is classified as a flammable liquid, N.O.S.(aluminum paste contains isopropyl alcohol), class 3, packing group II, UN1210.

15. REGULATORY INFORMATION

OSHA Process Safety Standard
This material is not known to be hazardous as defined by OSHA's Highly Hazardous Process Safety Standard, 29 CFR 1910.119

TSCA

The intentional ingredients of this product are listed.

CERCLA Reportable Quantity:
N/A

SARA Title III
This product contains the following chemicals in greater than the minimus quantities which are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

Component	Maximum %
Aluminum (reportable only in dust or mist forms)	10.0
Isopropyl alcohol	90.0

State and Local Regulations
California Proposition 65
None

New Jersey
The following components are listed on the special Health Hazard Substance List (SHHSL): None
The following components are listed on the special Health Hazard Substance List (EHSL):
Aluminum, CAS number 7429-90-5, maximum % = 10.0

Pennsylvania
The following components are listed as Special Hazardous Substances: None
The following substances are listed as Environmental Hazards:
Aluminum, CAS number 7429-90-5, maximum % = 10.0
Isoropyl alcohol, CAS number 67-63-0, maximum % = 90.0

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.