



## Safety Data Sheet

**Material Name: Emisshield® Metal PM-2**  
(US Patent 7,105,047 and Other Patents Pending)

SDS ID: emisshield-025

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### Section 1 - PRODUCT AND COMPANY IDENTIFICATION

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**Material Name**

Emisshield® Metal PM-2 (US Patent 7,105,047 and Other Patents Pending)

**Product Use**

High emissivity liquid aqueous dispersion for use in industrial applications on metal substrates

**Restrictions on Use**

None known.

**Details of the supplier of the safety data sheet**

Emisshield  
2000 Kraft Drive, Suite 2600  
Blacksburg, VA 24060

Phone: 540-961-0999

Emergency Phone #: 540-633-6761

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### Section 2 - HAZARDS IDENTIFICATION

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This product is a liquid aqueous dispersion which when applied to metals dries and forms a unique high emissivity surface.

**Classification in accordance with paragraph (d) of 29 CFR 1910.1200.**

Acute Toxicity - Oral - Category 3 Do not ingest this product. Do not breath the dry dust from this product without appropriate protection

Skin Corrosion/Irritation - Category 2

Serious Eye Damage/Eye Irritation - Category 1

Specific Target Organ Toxicity - Repeated Exposure - Category 1 ( kidneys,respiratory system,lungs )

**GHS Label Elements**

**Symbol(s)**



**Signal Word**

Danger

**Hazard Statement(s)**

Harmful if swallowed or if dried powder residue from the dried product is inhaled.

Causes severe skin burns and eye damage.

May cause cancer only if dried material (silica) is ingested.

Causes damage to organs if ingested.



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Causes damage to organs through prolonged or repeated oral exposure.

### Prevention

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Wear protective gloves/protective clothing/eye protection/face protection.

Do not breathe dust.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

### Response

IF EXPOSED: Call a doctor/physician; consult with a Poison Center. External exposure will not necessitate calling a Poison Center.

IF SWALLOWED: Rinse mouth vigorously and immediately. Do NOT induce vomiting. Immediately call a doctor or a Poison Center.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Seek medical advice/attention if you feel unwell after any exposure.

Specific treatment (see label)

### Storage

Store locked up.

### Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations

### Statement of unknown toxicity

100% of the mixture consists of ingredient(s) of unknown acute toxicity

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

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CAS#	Component Name	Percent
14808-60-7	Quartz	25-45
1344-09-8	Sodium silicate	10-20

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## Section 4 - FIRST AID MEASURES

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### Description of Necessary Measures

IF exposed: Call a doctor/physician or Poison Center. Wash affected surfaces with abundant amounts of water.

### Inhalation

Move person to fresh air and keep comfortable for breathing. Seek medical attention or call a Poison Center.



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### **Skin**

Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a doctor.

### **Eyes**

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention immediately. Do not rub eyes.

### **Ingestion**

Get immediate medical attention. Do NOT induce vomiting.

### **Most Important Symptoms/Effects**

#### **Acute**

Harmful if swallowed. Causes severe skin and eye irritation.

#### **Delayed**

Dried powder may cause cancer if inhaled. May cause respiratory system damage, kidney damage, liver damage.

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## **Section 5 - FIRE FIGHTING MEASURES**

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### **Extinguishing Media**

#### **Suitable Extinguishing Media**

Use extinguishing agents appropriate for surrounding fire. The aqueous dispersion is not flammable

#### **Unsuitable Extinguishing Media**

None known.

### **Special Hazards Arising from the Chemical**

The product itself does not burn.

### **Hazardous Combustion Products**

Not combustible.

### **Advice for firefighters**

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

### **Fire Fighting Measures**

Move container from fire area if it can be done without risk. Dike for later disposal.

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## **Section 6 - ACCIDENTAL RELEASE MEASURES**

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### **Personal Precautions, Protective Equipment and Emergency Procedures**

Wear personal protective clothing and equipment, see Section 8.

### **Methods and Materials for Containment and Cleaning Up**

Stop leak if possible without personal risk. Absorb with earth, sand or other non-combustible material and transfer to container.

### **Environmental Precautions**

Avoid release to the environment.



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### Section 7 - HANDLING AND STORAGE

#### Precautions for Safe Handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. The material is an aqueous dispersion. Avoid contact with skin and eyes. Use this material with adequate ventilation. Wash thoroughly after handling. Wear protective gloves/projective clothing/eye protection/face protection. Do not eat, drink or smoke when using this product.

#### Conditions for Safe Storage, Including any Incompatibilities

Store locked up. Keep away from incompatible materials. Keep container tightly closed. Do not freeze.

#### Incompatible Materials

Hydrofluoric acid, metal salts, Strong alkali, strong mineral acids

### Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

#### Component Exposure Limits

Quartz	14808-60-7
ACGIH:	0.025 mg/m3 TWA respirable fraction
NIOSH:	0.05 mg/m3 TWA respirable dust
	50 mg/m3 IDLH respirable dust
OSHA (US):	((30)/(%SiO <sub>2</sub> + 2) mg/m3 TWA) total dust; ((250)/(%SiO <sub>2</sub> + 5) mppcf TWA) respirable fraction; ((10)/(%SiO <sub>2</sub> + 2) mg/m3 TWA) respirable fraction
Mexico:	0.1 mg/m3 TWA LMPE-PPT respirable dust

#### Biological Limit Values

There are no biological limit values for any of this product's components.

#### ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

#### Engineering Controls

Provide adequate ventilation. Ensure compliance with applicable exposure limits.

#### Individual Protection Measures, such as Personal Protective Equipment

##### Eye/face protection

Wear splash resistant safety goggles with a faceshield.

##### Skin Protection

Wear water resistant apron, boots and gloves.

##### Respiratory Protection

A NIOSH approved respirator with a dust, mist, and fume filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits or when symptoms have been observed that are indicative of overexposure.

##### Glove Recommendations

Wear appropriate chemical resistant gloves.



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### Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	dark gray to black slurry	<b>Physical State</b>	liquid
<b>Odor</b>	Mild odor	<b>Color</b>	Gray black
<b>Odor Threshold</b>	Not available	<b>pH</b>	11.3 +/- 0.4
<b>Melting Point</b>	Not available	<b>Boiling Point</b>	100 °C
<b>Freezing point</b>	0 °C (32°F)	<b>Evaporation Rate</b>	Not available
<b>Boiling Point Range</b>	100°C (212°F)	<b>Flammability (solid, gas)</b>	Not flammable
<b>Autoignition</b>	Not available	<b>Flash Point</b>	Not available
<b>Lower Explosive Limit</b>	Not available	<b>Decomposition</b>	Not available
<b>Upper Explosive Limit</b>	Not available	<b>Vapor Pressure</b>	17.5 mmHg (at 20 °C)
<b>Vapor Density (air=1)</b>	Not available	<b>Specific Gravity (water=1)</b>	1.45 +/- 0.2
<b>Water Solubility</b>	In soluble	<b>Partition coefficient: n-octanol/water</b>	Not available
<b>Viscosity</b>	Not available	<b>Solubility (Other)</b>	Not available
<b>Density</b>	Not available	<b>Molecular Weight</b>	Not available

### Section 10 - STABILITY AND REACTIVITY

#### Reactivity

No reactivity hazard is expected.

#### Chemical Stability

Stable under normal conditions of use.

#### Possibility of Hazardous Reactions

Will not polymerize.

#### Chemical Stability: Conditions to Avoid

None identified.

#### Incompatible Materials

Hydrofluoric acid, metal salts, strong alkali, mineral acids



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### Hazardous decomposition products

None

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## Section 11 - TOXICOLOGICAL INFORMATION

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### Information on Likely Routes of Exposure

#### Inhalation

Dry powder or dispersed aqueous particles in the air may cause respiratory tract irritation.

#### Skin Contact

Causes severe irritation.

#### Eye Contact

Causes serious eye damage.

#### Ingestion

Harmful if swallowed.

#### Acute and Chronic Toxicity

#### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Quartz (14808-60-7)

Oral LD50 Rat 500 mg/kg

Sodium silicate (1344-09-8)

Oral LD50 Rat 1153 mg/kg

#### Immediate Effects

Harmful if swallowed. Causes severe skin burns and eye damage. May cause respiratory tract irritation.

#### Delayed Effects

Inhalation of the **dried powder** may cause cancer. May cause respiratory system damage, kidney damage, lung damage. Prolonged exposure to silica (in the dried powder) can lead to silicosis. Pulmonary tuberculosis, respiratory insufficiency, and acute pulmonary infection.

#### Irritation/Corrosivity Data

Causes severe skin burns and eye damage.

#### Respiratory Sensitization

No information available for the product.

#### Dermal Sensitization

No information available for the product.

#### Component Carcinogenicity

Quartz	14808-60-7
ACGIH:	A2 - Suspected Human Carcinogen
IARC:	Monograph 100C [2012]; Monograph 68 [1997] (Group 1 (carcinogenic to humans))
NTP:	Known Human Carcinogen (Select Carcinogen)
DFG:	Category 1 (causes cancer in man, alveola fraction)



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OSHA:	Present (respirable size)
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### Germ Cell Mutagenicity

No information available for the product.

### Tumorigenic Data

No data available

### Reproductive Toxicity

No information available for the product.

### Specific Target Organ Toxicity - Repeated Exposure

kidneys, lungs, respiratory system if exposed to the dried powder only

### Aspiration hazard

No information available for the product.

### Medical Conditions Aggravated by Exposure

No data available.

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## Section 12 - ECOLOGICAL INFORMATION

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### Component Analysis - Aquatic Toxicity

Sodium silicate	1344-09-8
Fish:	LC50 96 h Lepomis macrochirus 301 - 478 mg/L; LC50 96 h Brachydanio rerio 3185 mg/L [semi-static]

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## Section 13 - DISPOSAL CONSIDERATIONS

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### Disposal Methods

Dispose of contents/container in accordance with local/regional/national/international regulations.

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## Section 14 - TRANSPORT INFORMATION

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### US DOT Information

UN/NA #: Not Regulated

### IATA Information:

UN#: Not regulated

### TDG Information:

UN#: Not regulated



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### Section 15 - REGULATORY INFORMATION

#### U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

#### SARA Section 311/312 (40 CFR 370 Subparts B and C)

**Acute Health:** Yes **Chronic Health:** Yes **Fire:** No **Pressure:** No **Reactivity:** No

#### U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Quartz	14808-60-7	No	Yes	Yes	Yes	Yes

**The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):**

**WARNING!** This product contains a chemical known to the state of California to cause cancer

Quartz	14808-60-7
Carc:	carcinogen , initial date 10/1/88 (airborne particles of respirable size)

#### Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

Quartz	14808-60-7
	1 %

#### Component Analysis - Inventory

Quartz (14808-60-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No

Sodium silicate (1344-09-8)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No

### Section 16 - OTHER INFORMATION





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### HMIS Rating

Health: 3\* Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard

### NFPA Ratings

Health: 3 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

### Summary of Changes

Updated SDS: 09/26/2015

### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

### Other Information

#### Disclaimer:

Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.