



MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: <h1 style="text-align: center;">FR-106</h1>		HMIS CODES: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Health</td> <td style="width: 50%; text-align: right;">1</td> </tr> <tr> <td>Fire</td> <td style="text-align: right;">0</td> </tr> <tr> <td>Reactivity</td> <td style="text-align: right;">0</td> </tr> <tr> <td>Personal Protection</td> <td style="text-align: right;">E</td> </tr> </table>		Health	1	Fire	0	Reactivity	0	Personal Protection	E
Health	1										
Fire	0										
Reactivity	0										
Personal Protection	E										
Product Use: <p style="text-align: center;">Fire Retarded Polyamide Powder for Sintering</p>											
Manufacturer's Name: <p style="text-align: center;">Advanced Laser Materials, LLC.</p>		Supplier's Name: <p style="text-align: center;">Advanced Laser Materials, LLC.</p>									
Street Address: <p style="text-align: center;">3115 Lucius McCelvey</p>		Street Address: <p style="text-align: center;">3115 Lucius McCelvey</p>									
City: <p style="text-align: center;">Temple</p>	State: <p style="text-align: center;">Texas</p>	City: <p style="text-align: center;">Temple</p>	State: <p style="text-align: center;">Texas</p>								
Postal Code: <p style="text-align: center;">76504</p>	Information phone: <p style="text-align: center;">(254) 773-3080 M-F, 8:00 a.m – 5:00 p.m.</p>	Postal Code: <p style="text-align: center;">76504</p>	Information phone: <p style="text-align: center;">(254) 773-3080 M-F, 8:00 a.m – 5:00 p.m.</p>								
Date MSDS Prepared: <p style="text-align: center;">2 Feb 09</p>		MSDS Prepared by: <p style="text-align: center;">R B Booth</p>	Phone Number: <p style="text-align: center;">(254) 773-3080</p>								

SECTION 2 – HAZARDS IDENTIFICATION

Route of Entry:									
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
X	Skin Contact	□	Skin Absorption	X	Eye Contact	X	Inhalation	□	Ingestion
Emergency Overview: <p>Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Dust can be irritating to the respiratory tract. Irritating, but will not permanently injure eye tissue. Repeated exposure may cause skin dryness or cracking. High levels of product dust in the atmosphere may present a dust explosion hazard. Take precautionary measures against static discharges. All metal parts of the transfer, mixing and processing equipment must be grounded.</p>									
OSHA Regulatory Status: <p style="text-align: center;">N.T.P. carcinogen: No I.A/R.C carcinogen: No OSHA regulated: No</p>									
Potential Health Effects: <p>Inhalation Health Risk and Symptoms of Exposure – Treat powder as a nuisance dust. Keep dust level below 3mg/m³ for respirable fraction and 10mg/m³ for total dust (ACGIH/TWA) OSHA PEL 6mg/m³. Exposure may cause respiratory irritation.</p> <p>Eye Contact Health Risk and Symptom of Exposure – Particulates may cause mechanical eye irritation. Irritation, but will not permanently injure eye tissue. Low hazard for usual industrial or commercial handling.</p> <p>Skin Cont Health Risk and symptoms of Exposure – Repeated exposure may cause skin dryness or cracking.</p> <p>Ingestion Health risk and Symptoms of Exposure –</p>									



Health injuries are not known or expected under normal use. Low hazard for usual industrial or commercial handling.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients <i>(specific)</i>	%	CAS Number	LD ₅₀ of Ingredient <i>(specify species and route)</i>	LC ₅₀ of Ingredient <i>(specify species)</i>
None				

SECTION 4 – FIRST AID MEASURES

Skin Contact:	For skin irritation, wash skin with soap and water. Seek medical attention if redness, swelling, itching, or burning occurs.
Eye Contact:	Flush with copious amounts of water for at least 15 minutes. If redness, swelling, itching, burning or visual disturbances occur.
Inhalation:	If cough, shortness of breath or other breathing problems occur, move to fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.
Ingestion:	If swallowed, induce vomiting immediately as directed by medical personnel. Do not give anything by mouth to an unconscious person.
Instructions for Physicians:	No specific advice. Treat according to symptoms present.

SECTION 5 – FIRE FIGHTING MEASURES

Flammability:	If yes, under which conditions?	
Yes X No	OSHA Flammability class:	
Means of Extinction:	Carbon Dioxide, dry chemical, foam or fine water spray.	
Special fire Fighting Procedures:	Wear self-contained breathing apparatus and protective clothing approved by NIOSH. Watch footing on floors and stairs because of possible melting and spreading of material. Use spray to keep containers cool.	
Unusual fire and explosion hazards:	When powder is suspended in air, this product could be FLAMMABLE/EXPLOSIVE. In these circumstances, keep away from heat, sparks and open flames. See section 7 "HANDLING AND STORAGE" for suggestions on how to use this product under such conditions. Also, refer to NFPA Bulletin 654, "Prevention of Fire and Dust Explosions in the Chemical, Die, Pharmaceutical, and Plastics Industries, for safe handling procedures.	
Flashpoint (°C) and Method:	Upper Flammable Limit: (% by volume)	Lower Flammable Limit: (% by volume)
>350	Not flammable	Not flammable
Autoignition Temperature (°C):	Explosion Data – Sensitivity to Impact:	Explosion Data – Sensitivity to Static Discharge:
Not determined	None	Not established
Hazardous Combustion Products:		
Oxides of carbon and nitrogen, hydrogen bromide		



SECTION 6 – ACCIDENTAL RELEASE MEASURES

Leak and Spill Procedures:

Wear recommended personal protective equipment. Remove ignition sources. Sweep up with minimum of dusting. Keep away from heat or flame. Collect in containers (e.g. fiberboard drums or cartons). Consult a regulatory specialist to determine appropriate state or local reporting requirements.

See the Regulatory Information section (#15) regarding reporting requirements.

SECTION 7 – HANDLING AND STORAGE

Handling Procedures and Equipment:

Always wear recommended personal protective equipment. Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dusts, processing fumes or vapors. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Do not create a dust cloud by using a brush or compressed air. Take precautionary measures against static discharge. All metal parts of the transfer, mixing and processing equipment must be grounded. Avoid spillage which can cause very slippery conditions on floors. Use good personal hygiene and housekeeping.

Static Electricity and Fine Particles

Electrostatic charges of non-conductive materials are a natural phenomenon ranging from harmless to a nuisance to a hazard, depending on the degree of charging and the environment where the discharge takes place. In the case of fine particle polymers and waxes, very high levels of static electricity develop in their manufacture, transportation and handling. These products, being poor conductors of electricity, can and will hold a static charge for long periods of time. With this in mind, a great deal of care should be exercised when handling this type of product. The generation of static electricity cannot be prevented because its intrinsic origins are present at every particle interface. Some common sense approaches to the hazards involved with static electricity are as follows:

- Use only conductive equipment and keep all components grounded and bonded to the same vessel in order to equalize any potential charge.
- Avoid a flammable condition by the use of inert gases in the container.

Good housekeeping is of prime importance. The building and equipment should be designed to eliminate shelves and ledges and similar places where materials can accumulate.

The above are only suggestions and should not be taken as recommended practices in your establishment. A more detailed discussion and recommended practices can be found in NFPA 77 issued by the National Fire Protection Association Inc. in 1988.

Storage Requirements:

Store in cool, dry place. This material is not hazardous under normal storage conditions

SECTION 8 – EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Limits (nuisance dusts):

ACGIH TLV inhalable = 10 mg/m ³	OSHA PEL total dusts = 15 mg/m ³
ACGIH TLV respirable = 3 mg/m ³	OSHA PEL respirable = 5 mg/m ³



Specific Engineering Controls *(such as ventilation, enclosed process)*

Use adequate ventilation to maintain exposures below occupational limits. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.

Respiratory Protection -
Use a NIOSH approved dust respirator with powdered polymers.

Ventilation –
Face velocity greater than 60cfm (adequate to capture dust or fumes).

Skin Protection –
Use impervious gloves to avoid repeated/prolonged skin contact with powder. Other protective garments as necessary.

Eye Protection –
Wear eye/face protection. Safety glass with side-shields. Goggles.

Other Protective Equipment or Clothing -
As needed to prevent repeated/prolonged contact.

Work / Hygienic Practices –
Handle in accordance with good industrial hygiene and safety practice. Wash skin thoroughly with soap and warm water after handling and before smoking, eating, or applying makeup. If clothes become contaminated, change to clean clothing.

Personal Protective Equipment:

Gloves Respirator Eye Footwear Clothing Other

If checked, specify type:
Impervious gloves, NIOSH respirator, chemical goggles and protective clothing as necessary.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Powder	Odor and Appearance: none, white	Odor Threshold (ppm):
Specific Gravity: 1.0-1.2 g/cc	Vapor Density (air = 1): Not established	Vapor Pressure (mmHg): Not established
Evaporation Rate: Not established	Boiling Point (°C): Not established	Melting Point (°C): >80 deg.C
PH: Not applicable	Coefficient of Water/Oil Distribution:	[Solubility in Water]: Negligible

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability: Yes No If no, under which conditions?

Incompatibility with Other Substances: Yes No If yes, which ones?
Acids, strong oxidizing agents.
Stable under normal conditions.

Conditions to avoid:
Extreme heat, sparks and open flame

Hazardous Decomposition Products:
Oxides of carbon, nitrogen, hydrogen bromide



SECTION 11 – TOXICOLOGICAL INFORMATION

No data available.

SECTION 12 – ECOLOGICAL INFORMATION

Ecological Profile:

No data available.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal:

Dispose of in accordance with Federal, State and Local regulations.

SECTION 14 – TRANSPORT INFORMATION

Special Shipping Information:

PIN:

TDG:

DOT regulated:

Not regulated

IMO:

ICAO:

SECTION 15 – REGULATORY INFORMATION

TSCA:

OSHA:

This product is listed on the TSCA Inventory.

SERA TITLE III:

CLEAN WATER ACT:

Section 311/312 – Immediate/Acute Health (irritant): No
- Delayed (chronic) Health: No
- Fire: No
- Reactive: No
- Sudden Release of Pressure: No

WHMIS CLASSIFICATION:

SECTION 16 – OTHER INFORMATION

None

This material Safety Data Sheet (MSDS) is presented in good faith, based on currently available information, and is accurate to the best of our knowledge. The user is solely responsible for: 1) following all instructions, recommendations and directions; 2) deciding whether this product or the information about this product is suitable for its use; 3) providing this MSDS and all other information about this product to any subsequent users; 4) meeting all applicable health and safety standards and regulations; and 5) ensuring that no patent infringement occurs.

No liability is assumed and no representations or warranties, either expressed or implied, are made with respect to the information or the product to which the information refers.