MSDS NO: T055-00000-009
Revision: 11/26/02

Metaullics
MOLTEN METAL SYSTEMS

Material Safety Data Sheet

Pipeliner and Laminated Tube

Other names: Pipe and Elbow Liners; MET; MSL; T-30, T-30L, T-30R, T-30LR Fiberfrax Laminates and Tubes; vitreous aluminosilicate fibers, silica bonded ceramic fibers; refractory ceramic fiber (RCF); man-made vitreous fiber (MMVF).

Section I

Manufacturer's Name:	Metaullics Systems Co. L.P.	Metaullics Telephone: (440) 349-8800
Manufacturer's Address:	31935 Aurora Road	or: (800) 638-2859
	Solon, OH 44139	Chemtrec Telephone: (800) 424-9300
HMIS Health: 1		
HMIS Flammability: 0		
HMIS Reactivity: 0		

Section II: Hazardous Ingredients/Identity Information

Components	CAS No.	Respirable Fraction OSHA PEL*	Respirable Fraction ACGIH TLV*	Nuisance Particulate OSHA PEL*	Nuisance Particulate ACGIH TLV*	%
Aluminosilicate Fiber	142844-00-6					20 - 45
Acrylic Latex	MIXTURE					2 - 5
Silicon Dioxide	7631-86-9	6		6	10	50 - 75

* in units of mg/m^3

	RCRF**
Aluminosilicate Fiber	0.5 fiber/cc 8 hr TWA

****NOTE:** Pending the results of long term health effects studies, airborne exposures should be controlled at or below the Refractory Ceramic Fiber Coalition Recommended Exposure Guidelines.

Section III: Physical/Chemical Characteristics

Boiling Point:	NA	**Specific Gravity (H_20=1):**	2.37
Vapor Pressure (mm Hg):	NA	**Melting Point:**	1149 C
Vapor Density (air=1):	NA	**Evaporation Rate:**	NA
Solubility in Water:	Insoluble		
Appearance and Odor:	White with yellow or brown cast and odorless.		

Section IV: Fire and Explosion Hazard Data

Flash Point (method used)	Flammable Limits	LEL	UEL
None		N/A	N/A

Extinguishing Media: ANY

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards:
Fires involving used/inventoried product may give off carbon monoxide, carbon dioxide, oxides of nitrogen, and small amounts of aromatic and aliphatic hydrocarbons from the decomposition of the binder.

Section V: Reactivity Data

Stability:	Unstable		Conditions to avoid:
	Stable	X	Contact with strong acids and oxidizing agents.

Incompatibility:
Soluble in hydroflouric acid, phosphoric acid, and concentrated alkali.

Hazardous Decomposition or Byproducts:
Following sustained high temperatures (>1800 F), it is possible for portions of the exposed RCF to devitrify into mullite or crystalline phase silica (cristobalite or quartz). Chronic exposure to respirable crystalline silica may lead to lung disease. IARC says that crystalline silica is carcinogenic to humans (Group 1). OSHA has adopted a PEL of 0.05 mg/m^3. Use proper controls and respiratory protection.
Thermal decomposition of binder from fires or first heat of product may release vapors of smoke, carbon monoxide, oxides of nitrogen, and small amounts of aromatic and aliphatic hydrocarbons. Use adequate ventilation or other precautions to eliminate exposure to vapors resulting from thermal decomposition of binder.

Hazardous	Will Occur		Conditions to avoid:
Polymerization	Will Not Occur	X	None.

Section VI: Health Hazard Data

Routes of Entry:	Inhalation	Skin	Ingestion
	X	X	

Health Hazards (Acute & Chronic):
Slightly to moderately irritating to skin and eyes.
Studies to date have not identified any incidence of respiratory disease. Long term, high dose exposure to rodent respirable fiber has resulted in the development of fibrosis, lung cancer, and mesothelioma in rats and hamsters.

Carcinogenicity	NTP	IARC Monographs	OSHA Regulated
	reasonably anticipated carcinogen	2b	
		ACIGH - A2 Suspected Human Carcinogen	

Signs and Symptoms of Exposure:
Abrasive to skin & may cause irritation. Repeated or prolonged skin contact may cause allergic skin reaction such as itching, redness, and inflammation.
Fibers may be abrasive to eye. Prolonged contact may cause damage to the outer surface of the eye.
If inhaled in sufficient quantities, may cause respiratory tract infection. Symptoms include scratchiness of the nose or throat, cough, or chest discomfort.
Ingestion is not normal route of exposure, but may cause gastrointestinal disturbances including nausea, vomiting, or pain.

Medical Conditions Generally Aggravated by Exposure:
Persons with pre-existing medical conditions, including dermatitis, asthma, or chronic lung disease may be aggravated by exposure. Individuals who are atopic (history of allergies) may experience greater amounts of skin and respiratory irritation.

Emergency and First Aid Procedures:
Thermal burns require immediate medical attention.
If inhaled, remove person from source of exposure. Get medical attention if irritation persists.
If eye contact, flush with large amounts of water for 15 minutes. Eyelids should be held away from the eyeball. Do not rub eyes. Get medical attention.
If skin contact, remove contaminated clothing. Wash area of contact with soap and

water. Do not rub or scratch exposed skin. Using a skin cream or lotion after washing may help. If gastrointestinal irritation occurs, relocate individual to a dust free environment. Get medical attention if symptoms persist.
Notes to Physicians: This product contains abrasive ceramic dust and particles. Skin and respiratory effects are the result of mechanical irritation; exposure does not result in allergic manifestations.

Section VII: Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: Use vacuum suction with HEPA filters to clean up spilled material. Use wet sweeping or a dust suppressant where sweeping is necessary.
Waste Disposal Method: Disposal must be in accordance with federal, state, and local regulations. The material, as supplied, when discarded or disposed of, is not a hazardous waste.
Precautions to Be Taken in Handling and Storing: Handle ceramic fiber with caution. Minimize airborne dusts by avoiding the unnecessary disturbance of materials. Prolonged exposure to high temperatures increases the relative friability of alumino-silicate fibers. **Removal and clean up after service may result in exposure to mixture of crystalline silica (a known carcinogen) and vitreous aluminosilicate fiber.** During removal, the exposed material should be misted frequently with water to minimize dust. Use only enough water to wet the insulation.
Other Precautions: Product packaging may contain product residue. Do not reuse.

Section VIII: Control Measures

Respiratory Protection:	NIOSH/OSHA protection if exposure limits are exceeded or irritation is experienced. Evaluation should be done on a case by case basis by a qualified Industrial Hygenist. **Suppliers' Recommendations:** < 0.5 f/cc — User preference based on conditions. 0.5 - 5.0 f/cc — Half-face, air purifying respirator, P100 cartridge 5.0 - 25 f/cc — Full-facepiece, air purifying respirator, P100 cartridge or PAPR > 25 f/cc — Full-facepiece PAPR or supplied air respirator with continuous flow If concentrations are unknown, use half-face air purifying respirator with P100 cartridge.			
Ventilation:	**Local Exhaust:**	Use as needed to maintain exposure below exposure limits.		
	Mechanical:	Dust suppressing control technologies such as point of generation dust collection, down draft work stations, emissions controlling tooling designs, and materials handling equipment may be used to minimize airborne fiber emissions.		
	Special:	None.	**Other:**	None.
Protective Gloves:	Impervious gloves to prevent contact.			
Eye Protection:	Wear safety glasses or chemical goggles to prevent eye contact with dust. Do not wear contact lenses unless goggles are also worn. Have eye wash available.			
Other Protective Clothing or Equipment:	Wear regularly cleaned protective work clothing and head covering.			
Work/Hygenic Practices:	Shower and change into street clothes after work if possible.			