Safety Data Sheet

VEXTRA® FLVB SERIES

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Names/Synonyms:	VEXTRA®-Woven para-aramid/meta-aramid/fiber glass, treated with vermiculite and black, in various forms - cloth, tapes, blankets, tubing, etc
Product Identification:	FLVB series.
Chemical Name/Synonyms:	poly(terephthaloylchloride/p-phenylenediamine) /poly(isophthaloylchloride/m-phenylenediamine) /continuous filament fiber glass treated with with $(Li,K)\cdot(Mg, Ca, K, Fe^{11})_3(Si, Al, Fe^{111})_4O_{10}(OH)_2\cdot H_2O$, pigmented wth carbon black and modified with silicone binders - para-aramid/meta-aramid/fibrous glass, glass fibers treated with vermiculite and pigmented black.
Manufacturer's Name:	Auburn Manufacturing, Inc P. O. Box 220 Mechanic Falls, ME 04256 207/402-3838

2. HAZARDS IDENTIFICATION

OSHA HCS Status: Product is not a hazardous chemical as defined by OSHA Standard 29 CFR 1910.1200

Precautionary Statements:

P281: Wear personal protective equipment as required
P302: If on skin, wash with mild soap and running water
P304: If inhaled, move individual to fresh air. Seek medical attention if irritation persists
P305: If in eyes, flush eyes at least 15 minutes; seek medical attention if irritation persists

Hazard Statements: N/A

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Abstracts Service Number: N/A

Hazardous Ingredients	Weight %	OSHA-PEL	ACGIH-TLV	OTHER
Poly(terephthaloylchloride/ p-phenylenediamine)/para-aramid	proprietary	a.	a.	---------
Poly(isophthaloylchloride/ m-phenylenediamine) /meta-aramid	proprietary	a.	a.	---------
Fiberglass, continuous filament	proprietary	b.	5 mg/ m^3.8 hr TWA (inhalable) 1 fiber/cm^3 8-hr TWA (respirable) (NIOSH)	3 x 10^6 fibers/m^3 10-hr TWA
N,N-dimethylacetamide DMAC	<1.0%	10 ppm	10 ppm	----------
N-methyl-2-pyrrolidone NMP	< 2.0	----------none established----------		
Vermiculite, $(Li,K)\cdot(Mg, Ca, K, Fe^{II})_3(Si, Al, Fe^{III})_4O_{10}(OH)_2\cdot H_2O$	proprietary	5 mg/m^3 TWA respirable dust	10 mg/ m^3 TWA total dust	none established
Inorganic fillers	proprietary	5 mg/m^3 TWA respirable dust	10 mg/ m^3 TWA total dust	none established
Carbon Black	<1.0%	not known	3.5 mg/m^3	none known
Nonhazardous Ingredients				
Sizing/finish	proprietary	----------none established----------		
Water	proprietary	----------		
Binders for pigments	proprietary	----------none established----------		

3. COMPOSITION / INFORMATION ON INGREDIENTS (CON'T)

a. OSHA has not established a specific PEL (Permissible Exposure Limit) for para-aramid or meta-aramid nor has the American Conference of Governmental Industrial Hygienists (ACGIH) established a TLV (Threshold Limit Value). They are considered to be "particulate not otherwise regulated" (PNOR) and are covered under the OSHA nuisance dust PEL's of 5 mg/m^3 for the respirable dust fraction and 15 mg/m^3 for the total dust fraction for an 8-hr TWA (Time Weighted Average).

IARC rated p-aramid fibrils as "non-classifiable as to its carcinogenicity for animals and for humans": Class III. However, it is strongly recommended not to exceed 2 RFP/ml as 8 hour TWA, with a concentration of 2.5 RFP/ml (15 min.) as a ceiling value. RFP (respirable, fiber-shaped particulates) are fragments with diameters less than 3μm, lengths up to 100 μm and a length/diameter ratio of at least 3:1.

b. OSHA has not established a specific PEL for fibrous glass. It is considered to be a "particulate not otherwise regulated" (PNOR) and is covered under the OSHA nuisance dust PEL's of 5 mg/m^3 for the respirable dust fraction and 15 mg/m^3 for the total dust fraction for an 8-hr TWA (Time Weighted Average).

4. FIRST AID MEASURES

Inhalation: Move individual to fresh air. Seek medical attention if irritation persists.

Skin Contact: Wash with mild soap and running water. Use a washcloth to help remove fibers. To avoid further irritation do not rub or scratch irritated areas. Rubbing or scratching may force fibers into the skin. Seek medical attention if irritation persists.

Eye Contact: Flush eyes with flowing water for at least 15 minutes. Seek medical attention if irritation persists.

Ingestion: N. A. (Not Applicable)

5. FIRE FIGHTING MEASURES

Extinguishing Media: Water, foam, carbon dioxide, dry chemical

Special Fire-Fighting Instructions: Wear self contained breathing apparatus.

Unusual Fire and Explosion Hazards: Meta-aramid fibers is inherently flame resistant; however, if combustible materials are collected on meta-aramid constructions, such as filter media, and exposed to an ignition source, these materials may ignite. Further, the presence of noncombustible dusts such as copper oxide, iron oxide, and lead oxide can negate the inherent flame resistance of meta-aramid. If material ignites, toxic and irritating gases will be emitted. (See Section 10)

5. FIRE FIGHTING MEASURES (CON'T)

An accumulation of p-aramid dust and fly in sufficient concentration could present a fire risk. Para-aramid dust particles are potentially explosive (Class ST 1): keep all sources of ignition away from those areas where concentrations may occur. Take into account the possible effects of an electrostatic charge.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO TAKE FOR SPILLS (Use Appropriate Safety Equipment/PPE):
For solid product, not applicable.
For dusts and fibers generated during fabrication, vacuum and containerize.

7. HANDLING, STORAGE AND DISPOSAL

Handling: See Section 8.

Storage: No special precautions necessary.

Disposal: Dispose in accordance with federal, state and local regulations as a solid nonhazardous waste. DMAC in wastewater streams contributes to the Biological Oxygen Demand (BOD) but is readily biodegradable in conventional biological sewage treatment systems. Wastewater containing DMAC should be disposed of in accordance with state and local regulations for wastewater discharges.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: General dilution ventilation and/or local exhaust ventilation should be provided, as necessary, to maintain exposures below PEL's or TLV's. **Adequate ventilation must be provided at elevated temperatures.**

Respiratory Protection: A properly fitted NIOSH/MHSA approved disposable dust respirator such as the 3M model 8210 or model 9900 (in high humidity environments) or equivalent should be used when: high dust levels are encountered; the level of glass fibers in the air exceeds the OSHA permissable exposure limits; or if irritation occurs. Use respiratory protection in accordance with your company's respiratory protection program and OSHA regulations under 29 CFR 1910.134.

Eye Protection: Safety glasses, goggles or face shields should be worn whenever fiberglass materials are being handled.

Protective Clothing: Wear loose fitting, long sleeved shirt that covers to the base of the neck, and long pants. Skin irritation from exposure to fiberglass is known to occur chiefly at pressure points such as around the neck, wrist and waist. Wear gloves when handling product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (CON'T)

Work/Hygienic Practices: Handle in accordance with good industrial hygiene and safety practices:

- = Avoid unnecessary exposure to dusts and fibers
- = Remove fibers from skin after exposure
- = Be careful not to rub or scratch irritated areas. Rubbing or scratching may force the fibers into the skin. The fibers should be washed off. Use of barrier creams can, in some instances, be helpful.
- = Use vacuum equipment to remove fibers and dusts from clothing. **COMPRESSED AIR SHOULD NEVER BE USED**. Always wash work clothes separately and wipe out the washer/sink in order to prevent loose glass fibers from getting on other clothes.
- = Keep the work area clean of any dusts and fibers generated during fabrication. Use vacuum equipment to clean up dusts and fibers. Avoid sweeping or using compressed air as these techniques resuspend dusts and fibers into the air.
- = Have access to safety showers and eye wash fountains.
- = For professional use only. **Keep out of children's reach.**

Exposure Limits (TLVS): N/A

9. PHYSICAL AND CHEMICAL PROPERTIES

Melting Point (Softening): Thermal degradation with loss of product strength begins above 300^{o}C (572^{o}F)

Boiling Point (^{o}C): NA (Not Applicable)

Specific Gravity : N.M. (Not Meatured)

Percent Volatile: N.M.

Vapor Pressure: (mm Hg): N/A

Vapor Density (Air = 1): N/A

Evaporative Rate (Ethyl Ether = 1): N/A

Solubility in Water: Not soluble

Appearance and Odor: Black colored solid with no odor.

pH: N/A

Relative Density: N/A

Upper/Lower Flammability or Exposure Limits: N/A

Freezing Point: N/A

Flash Point: N/A

Partition coefficient (n-octanol/water): N/A

Auto Ignition Temperature: N/A

9. PHYSICAL AND CHEMICAL PROPERTIES (CON'T)

Decomposition Temperature: N/A Viscosity: N/A

10. STABILITY AND REACTIVITY

Stability (Conditions to Avoid): Heating material above 250°C will rapidly volatilize NMP, **Adequate ventilation must be provided.**

Stabilizers: N/A

Incompatibility (Materials to Avoid): None known.

Hazardous Decomposition Products: Sizings or binders may decompose in a fire. Primary decomposition products include carbon monoxide, carbon dioxide, small amounts of hydrogen cyanide and other hydrocarbons and water.

Hazardous Polymerization: Will not occur.

Flash Point (°F): N/A (Not Applicable)

Auto Ignition Temperature (°F): N/A

Flammability Limits (%): LEL: N/A UEL: N/A

11. TOXICOLOGICAL INFORMATION

Primary Routes of Exposure: Inhalation and skin contact.

Health Hazards (Including acute and chronic effects and symptoms of overexposure):

ACUTE:

Inhalation: Inhalation of dusts and fibers may result in irritation of the upper respiratory tract (mouth, nose and throat).

Skin Contact: Skin contact with dusts and fibers may produce itching and temporary mechanical irritation.

Eye Contact: Eye contact with fibers and dusts may produce temporary mechanical irritation.

Ingestion: Temporary mechanical irritation of the digestive tract. Observe individual. If symptoms develop, consult a physician.

CHRONIC: See carcinogenicity section below. There are no known health effects associated with chronic exposure to this product.

11. TOXICOLOGICAL INFORMATION (CON'T)

CARCINOGENICITY:

Hazardous Ingredients:	Listed as carcinogen by: ACGIH	IARC	NTP	OSHA
Fiberglass continuous filament	No	No*	No	No
Poly(isophthaloylchloride/ m-phenylenediamine) meta-aramid	-----see note a. below----			
Poly(terephthaloylchloride/p-phenylenediamine) para-aramid (see note b. below)	No	No	No	No
N,N-dimethylacetamide DMAC	-----see note a. below-----			
N-methyl-2-pyrrolidone NMP	No	No	No	No
Vermiculite	N.A. (Not Applicable)	N.A.	N.A.	N.A.
Inorganic fillers	N.A. (Not Applicable)	N.A.	N.A.	N.A.
Carbon Black	N.A.	note c	N.A.	N.A.

*IARC: In June, 1987 the International Agency for Research on Cancer (IARC) categorized fiberglass continuous filaments as not classifiable with respect to human carcinogenicity (Group 3). The evidence from human as well as animal studies was evaluated by IARC as insufficient to classify fiberglass continuous filaments as a possible, probable, or confirmed cancer causing material.

a. Meta-aramid fibers may contain less than 1% residual DMAC. A two-week subchronic test in which mice were exposed to DMAC via inhalation showed liver and testicular effects at high exposure concentrations (300, 500 and 700 ppm). No adverse effects were observed at 100 ppm.

b. Repeated and prolonged inhalation of excessive concentrations of para-aramid respirable fibers may cause permanent lung injury. Short-term inhalation studies in rats and hamsters with an extended follow-up of up to nine months have demonstrated that p-aramid RFP are not biopersistent. Long p-aramid RFP are quickly transversely broken into smaller fragments and then removed from the lung. However, extremely high amounts of inhaled p-aramid RFP may inhibit the clearance mechanisms. Inhalation of high concentrations of RFP causes pulmonary inflammation in rats and hamsters; lifelong exposure to concentrations of 100 and 400 RFP/ml caused pulmonary fibrosis in rats. Only minimal fibrosis was seen at 25 RFP/ml. The fibrosis was largely reversible after cessation of exposure. No malignant tumors resulted from the lifelong inhalation tests in rats. Instead, proliferative cystic tissue changes were observed in rats after exposure to particulates. They occur mainly in (female) rats and have never been observed in human beings. These cysts were subject of scientific debate for an extended period of time,

11. TOXICOLOGICAL INFORMATION (CON'T)

but current consensus holds that they are not malignant and that their occurrence in animals have no relevance to humans. Intraperitoneal injections of excessive amounts of p-aramid RFP caused only a non-significant increase in the observed number of mesotheliomas. The validity of the intraperitoneal test for the prediction of carcinogenicity is questionable.

c. Carbon black is classified as Group 2B, substances possibly carcinogenic to humans by toxicity test.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with a history of chronic respiratory or skin conditions that are aggravated by mechanical irritants may be at increased risk for worsening their condition from exposure during use of the product.

12. ECOLOGICAL INFORMATION

N/A

13. DISPOSAL CONSIDERATIONS

See Section 8 (if applicable)

14. TRANSPORT INFORMATION

N/A

15. REGULATORY INFORMATION

N/A

16. OTHER INFORMATION

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