

# Material Safety Data Sheet

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**LEWCO K-90**

**Natural Kevlar Sewing Thread**

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**Manufacturer's Name:** LEWCO Specialty Products, Inc.

6859 Renoir Avenue

Baton Rouge, LA 70806

(800) 221-6414

(225) 924-3221

TX & AR (800) 233-9755

Fax (225) 927-2918

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## SECTION I – Component Data

<b>Material</b>	<b>:</b>	<b>CAS Number</b>	<b>%</b>
Poly (terephthaloylchloride-p-phenylene diamine)	:	26125-61-1	> 89
Water, absorbed (pulp shipped as wet lap Contains up to 35% - 50%)	:	7732-18-5	≤ 7
Sodium sulfate	:	7757-82-6	< .01
: in KEVLAR pulp	:		< 2
: in other forms	:		< 2
Finish	:	None	< 2
Wax overlay, in addition to above, on yarn Types 960, 976 only	:	6474-43-4	< 10

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## SECTION II – Physical Data

<b>Melting Point:</b>	Does not melt
<b>Solubility in Water:</b>	Insoluble
<b>Color:</b>	Gold
<b>Odor:</b>	Odorless
<b>Specific Gravity:</b>	1.44
<b>Form:</b>	Solid – continuous multi-filament yarns, staple, cut floc, pulp fabric
<b>Percent Volatiles:</b>	< 9%, water and finish (< 50% water, <.5 % finish in wet lap)

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## SECTION II –Emergency and First Aid Procedures

**Inhalation** – Move individuals 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** – Not applicable.

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### **SECTION III – Hazardous Reactivity**

Instability: Stable at normal temperatures and storage conditions.  
Incompatibility: None reasonable foreseeable  
Polymerizations: Polymerization will not occur  
Decompositions: Heat generated by laser cutting of fabric of KEVLAR or of laminates containing KEVLAR generates a variety of toxic off gases, some of which may cause irritation of the respiratory tract.

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### **SECTION IV – Fire and Explosion Data**

KEVLAR fiber is inherently flame resistant, but can be ignited (limiting oxygen index = 29); Burning normally stops when the ignition source is removed. Pulp or dust accumulations may continue to smolder if once ignited.

Dust of KEVLAR does not present an explosion hazard.

**Fire and Explosive Hazards:** Burning KEVLAR produces combustion gases similar to those from wool – mostly carbon dioxide, water and oxides of nitrogen; however, carbon monoxide, small amounts of hydrogen cyanide and various other toxic gases are produced, depending on conditions of burning.

**Extinguishing Media:** Water, foam, carbon dioxide and dry chemical.

**Special Fire-Fighting Instructions:** In a sustained fire, self contained breathing apparatus should be worn.

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### **SECTION V – Health Hazard Data**

As shipped, KEVLAR aramid fiber products do not pose a hazard. KEVLAR staple and pulp contain a small amount of respirable fibers which may become airborne during opening, mixing, carding or regrinding waste products containing KEVLAR. When mechanically working KEVLAR fiber or materials containing KEVLAR in operations such as cutting, machining, grinding, crushing or sanding, airborne respirable fibers may be formed. Repeated and prolonged inhalation of excessive concentration of respirable fibers may cause permanent lung injury.

#### **ANIMAL DATA**

Oral ALD: > 7500 mg/kg in rats

KEVLAR fiber is not a skin irritant, is untested for eye irritancy and is not a skin sensitizer in animals. By ingestion, the fiber has very low acute oral toxicity with no deaths observed in animal feeding studies at dose levels up to the maximum, 7500 mg/kg. In a two week inhalation study (1983) respirable KEVLAR fibers at concentrations of 1000-2000 fibers per cubic centimeter caused mild nonprogressive fibrosis (lung scarring that shrinks with cessation of exposure), and nonspecific effects such as weight loss and irritation, but no effects at concentrations of 400 fibers per cubic centimeter. A two year inhalation study (1985) with KEVLAR pulp (refined to increase its respirable content) showing mild fibrosis at concentrations of 25 fibers per cubic centimeter and lung tumors (cystic keratinizing squamous cell carcinomas) in some rats in the group exposed to respirable fibers at concentrations of 100 fibers per cubic centimeter. This is a unique type of tumor not found in humans and may be indicative of a nonspecific biological response to the respirable material rather than an indication of KEVLAR toxicity. No lung tumors and no fibrosis were seen in animals exposed to 2.5 respirable fibers per cubic centimeter for two years. At no concentrations were fibers found to have migrated beyond the lung and associated lymph system. Abdominal cavity tumors have been observed in two studies where rats were administered KEVLAR by intraactivity injection. For additional details, see References.

## HUMAN DATA

Skin sensation has not been observed in human skin tests. The mechanical action of the fibers may cause slight skin irritation at clothing binding points and mild irritation of the eyes and nasal passages. Overexposure to the respirable fibers by inhalation may cause mild and temporary upper respiratory irritation with discomfort or cough. Based on animal testing, prolonged and repeated exposure to excessive concentrations may cause permanent lung damage.

**Workplace Exposure Measurements:** measured levels of airborne respirable fibrils from handling and processing KEVLAR pulp and filament yarn are typically 0.3 fibrils/CC or less, 8-Hour Time Weighted Average (TWA). The normally low airborne dust levels result from the inherent tendency of KEVLAR fibrils to clump together – they have high surface static charges and their branched shapes readily interlock. Staple spinning operations, with their high potential for fiber abrasion can produce levels of 1 – 3 fibrils/CC unless air handling is well designed and maintained. In all processing of KEVLAR, the use of compressed air to clean equipment can temporarily increase the airborne fibril concentrations markedly. Equipment should be vacuumed or wiped instead.

### **Carcinogenicity:**

None of the components in this material is listed by IARC, NTP, OSHA or ACGIH as a carcinogen. See Animal Data discussed above.

### **Exposure Limits for KEVLAR ARAMIS FIBER – DUPONT**

AEL*	(DuPont)	:	2 respirable fibers/cc (8-Hr. TWA)
TLV**	(ACGIH)	:	None established
PEL	(OSHA)	:	None established

\* AEL is DuPont's Acceptable Exposure Limit.

\*\* TLV is a registered trademark of the American Congress of Governmental Industrial Hygienists

### **Other Applicable Exposure Limits:**

#### **Exposure Limits for KEVLAR Dust**

AEL*	(DuPont)	:	5 mg/m <sup>3</sup> , Total Dust
TLV**	(ACGIH)	:	None Established
PEL	(OSHA)	:	None Established

#### **Particulates Not Otherwise Regulated**

PEL	(OSHA)	:	15 mg/m <sup>3</sup> , Total Dust
		:	5 mg/m <sup>3</sup> , Respirable Dust

### **Safety Precautions**

Avoid breathing fibers or dust. Follow good industrial hygiene practices for ventilation and cleanup; in particular avoid the use of air jets to blow off equipment; use vacuum cleaners with high efficiency particulate air (HEPA) filters instead.

Do not handle moving threadlines of KEVLAR, as entanglement with a high strength fiber can severely cut or even sever fingers.

### **First Aid**

**Inhalation:** If large amounts of fibers are inhaled, remove to fresh air. If breathing is difficult, give oxygen, and call a physician.

**Skin Contact:** If fibers irritate the skin, wash with soap and water.

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## **SECTION VI– Protection Information**

### **Generally Applicable Control Measures and Produces**

If the fibers or parts made from the fibers are cut or otherwise mechanically worked, dusts, and fibers may be generated. Use engineering controls where technically feasible such as isolation, enclosures, exhaust ventilation, wetting, and dust collection systems wherever necessary to control airborne respirable fiber exposures below applicable limits.

Loose fitting clothing that is routinely washed is recommended to reduce build up of fibers at chafing points.

Laser cutting of fabric of KEVLAR or of laminates containing KEVLAR or machinery that produces smoke should be well exhausted or ventilated to remove fumes from the workplace.

Water jet cutting of fabric or composites of KEVLAR produces fibrils in the cutting waste. If dried, this waste can become a source of airborne respirable fibers. Rinse or wipe waste from work surfaces and parts.

### **Personal Protective Equipment**

#### **EYE/FACE PROTECTION**

When cutting or mechanically working this product, wear safety glasses or coverall goggles.

#### **RESPIRATORS**

When cutting or mechanically working this product, wear NIOSH/MSHA approved respiratory protection if there is potential for airborne exposures in excess of applicable limits, or if there is potential for irritation of the nasal passages to occur due to the mechanical action of the fibers.

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## **SECTION VII – Disposal Information**

### **Spill, Leak or Release**

Use appropriate Personal Protective Equipment during clean up. Wash, shovel or sweep up and place in solid waste containers. Clean up dusts and fibers with HEPA filtered vacuum equipment.

### **Waste Disposal**

KEVLAR is not a hazardous waste as defined by regulations implementing the Resource Conservation and Recovery Act (RCRA). In general, KEVLAR waste materials may be discarded in accordance with the state and local regulations governing the disposal of other common or non-RCRA regulated waste materials.

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## **SECTION VIII – Shipping Information**

### **DOT**

Proper Shipping Name: None, non-regulated

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## **SECTION IX – Storage Conditions**

KEVLAR dry pulp should be stored with 4-8% absorbed moisture to control static charge.

Storage:           Boxes of yarn  
                      Bales of staple  
                      Bags of pulp  
                      Rolls of wet lap  
                      Rolls of fabric

## **SECTION X – Additional Information and References**

This MSDS is provided to comply with provisions of the Hazard Communication Standard (29 CFR 1910.1200)

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III: KEVLAR contains no toxic chemicals as regulated under section 313 Emergency Planning and Community Right-to-Know Act (EPCRA) of SARA Title III and 40 CFR part 372. KEVLAR is not regulated as hazardous waste under CERCLA and is not subject to the Superfund tax.

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): KEVLAR contains none of the substances known to the State of California to cause cancer or reproductive toxicity.

Pennsylvania and New Jersey Right-to Know Laws: KEVLAR is not subject to provisions of the Pennsylvania and New Jersey Right-to-Know laws.

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**Prepared By: Jamie D Guzzardo**