SDS Number: HX04-1 **Revised/Reviewed: 08/31/2018** **Revised From: 07/06/2016**

SECTION 1 • PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME OR NUMBER:

- **HYTEX®-400** textiles; woven, knit, non-woven cloth, tape, rope, sleeving, yarn, thread and fiber.

  Note: All HYTEX-400 products are made from DuPont KEVLAR® Para-aramid fibers and yarns.
- **THERMOPAK®** custom fabricated products are made using one of one or more of the above listed products.

COMPANY: Mid-Mountain Materials, Inc.

ADDRESS: Office: PO Box 800
2731 77th Ave. SE, Ste. 100
Mercer Island, WA 98040

Plant: 18825 67th Ave. NE
Arlington, WA 98223

TELEPHONE: 206-762-7600

EMERGENCY TELEPHONE NUMBER: 800-382-2208

FAX: 206-762-7694

SECTION 2 • HAZARDS IDENTIFICATION

The hazards of this product are associated mainly with its processing. Processing para-aramid products can release respirable dust and respirable fiber particulate. Dust may form explosive mixture in air. Prolonged inhalation of respirable dust and respirable fiber particulate at high concentrations can cause lung damage. High concentrations of dust can irritate eyes, nose, and respiratory system, and cause coughing and sneezing. Continual rubbing of fiber particulate and dust on the skin can cause a transitory, mild irritation with redness or itching.

SECTION 3 • COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL / COMMON NAME	C.A.S. NUMBER	% BY WEIGHT (opt) (Based on dry weight)
• Para - Aramid Fiber: Poly (p-phenylendediamine terephalamide) (Kevlar® para-aramid polymer)	26125-61-1	100

SECTION 4 • FIRST-AID MEASURES

No hazards which require special first aid measures.

EYE CONTACT: In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists or develops later.

INHALATION: If large amounts of fumes, dust or fibers are inhaled, remove to fresh air. If persistent cough or other symptoms develop, get medical attention

SKIN CONTACT: Wash with soap and water. Wash contaminated clothing and gloves before reuse. Use hand creams to soothe and moisten irritated skin. Get medical attention if irritation persists after contact stops.

INGESTION: Not a probable route. However, in case of gastro intestinal distress, following accidental ingestion, call a physician.

SECTION 5 • FIRE-FIGHTING MEASURES

FLASH POINT: N/A

AUTO IGNITION TEMPERATURE: N/A

EXPLOSIVE LIMITS: N/A

THERMAL DECOMPOSITION: >300ºC (572ºF)

FIRE AND EXPLOSION HAZARDS: When forced to burn, HYTEX® 400(Kevlar) fibers produce hazardous gasses similar to those from wool. These are most commonly carbon dioxide, water, and oxides of nitrogen. However, carbon monoxide, small amounts of hydrogen cyanide and various other chemical residues (some possibly toxic or irritating) may be produced, depending on conditions of burning

EXTINGUISHING MEDIA: Water, foam, carbon dioxide (CO2), or dry chemical.

SPECIAL FIRE FIGHTING INSTRUCTIONS: Wear self-contained breathing apparatus.

SECTION 6 • ACCIDENTAL RELEASE MEASURES

Review FIRE FIGHTING MEASURES and HANDLING sections before proceeding with cleanup.

Wash, shovel or mot up fibers and place in solid waste containers. Avoid the use of dry sweeping of air-jet blowing of fibers and dust; these can re-suspend respirable dust in the air. Clean up dusts containing HYTEX 400 (Kevlar) fibrils with high-efficiency particulate air (HEPA) filtered vacuum equipment, or by wiping or wet cleaning.

Fibers are not biodegradable; do not flush to drains.

SECTION 7 • HANDLING AND STORAGE

Do not touch moving threadlines of HYTEX® 400 (Kevlar). Entanglement with these high-strength yarns can severely cut or even sever fingers.

HYTEX® 400(Kevlar) is degraded by ultraviolet light. Do not store in direct sunlight. Fluorescent lighting will cause discoloration, but will not affect fiber mechanical properties.

Waste disposal: HYTEX® 400(Kevlar) is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). In general, dispose in accordance with all Federal, State & Local Laws.

SECTION 8 • EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS/WORK PRACTICES

Avoid breathing fibers, dust and fumes. Follow good industrial hygiene practices for ventilation during cleanup. In particular, avoid the use of air jets to blow off equipment.

If fumes, fiber fly or dusts are generated, use engineering controls (where technically feasible) whenever necessary to control exposure exposures below applicable limits. Isolation, enclosures, exhausts, ventilation, wetting and dust collection systems may be used.

PERSONAL PROTECTIVE EQUIPMENT/PROTECTIVE MEASURES

RESPIRATORY PROTECTION: When mechanically working with this product, wear NIOSH/MSHA-approved respiratory protection for dust if there is potential for airborne exposure in excess of applicable limits, or if there is potential for irritation of the nasal passages due to the mechanical action of the fibers.

EYE PROTECTION: Safety glasses with side-shields

PROTECTIVE CLOTHING: Impervious gloves, aprons and other protective clothing as a preventative measure.

EXPOSURE GUIDELINES

COMPONENT	OSHA – PEL	ACGIH - TLV
• HYTEX 400(Kevlar)	NE	NE
• AEL (DUPONT)	2 fibers/cm^3 8 & 12 hr. TWA (Respirable fiber)	5mg/m^3 8 & 12 hr. TWA (Non-fibrous or non-respirable fiber)

AEL is DuPont's acceptable Exposure Limit.

SECTION 9 • PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid, Yarn, Felt, Fabric, Paper, Pulp, Floc, Staple

COLOR AND ODOR (natural state): Gold and odorless.

pH: N/A

MELTING POINT: Does not melt.

BOILING POINT: N/A

EVAPORATIVE RATE (n–Butyl Acetate = 1): N/A

PERCENT SOLUBILITY IN WATER: Insoluble

SPECIFIC GRAVITY (water = 1): 1.44-1.45 at 20ºC (68ºF)

VAPOR PRESSURE: (mm Hg @ 20°C): N/A

VISCOSITY: N/A

PERCENT VOLATILE BY VOLUME: N/A

POUR POINT: N/A

SECTION 10 • STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions of use.

INCOMPATIBILITY: Strong acids and strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS: Begins to thermally degrade rapidly above 300ºC (572 °F). The thermal degradation rate increases with temperature. (See section 4)

HAZARDOUS POLYMERIZATION: Polymerization will not occur.

SECTION 11 • TOXICOLOGICAL INFORMATION

EYE EFFECTS: HYTEX® 400(Kevlar) is untested for eye irritancy. As with other particles, mechanical action of fibers in the eye may cause slight irritation.

SKIN EFFECTS: HYTEX® 400(Kevlar) brand fibers are not skin irritants, or skin sensitizers in animals. None of three tests using guinea pigs produced sensitization.

Skin sensitization has not been observed in human patch tests or in industrial experience. HYTEX® 400 (Kevlar) fiber have been used in direct contact with the skin in industrial gloves and protective apparel for many years.

The mechanical action of the fibers may cause slight skin irritation at clothing binding points. Repeated harsh rubbing of the skin with fibrous dust or supported fiber structures (e.g. sized, coated or impregnated fabrics, paper edges, etc.) may cause abrasion, with resulting irritation and rash. Symptoms disappear following cessation of skin contact.

ACUTE ORAL EFFECTS: HYTEX® 400(Kevlar) has very low toxicity by ingestion. Oral ALD >7500mg/kg in rats.

ACUTE INHALATION EFFECTS: Industrial experience shows that inhalation of fibrous dust and fly may cause mechanical irritation of the mucous membranes of the nose and throat with resulting dry cough, scratchy throat and runny nose. Symptoms cease upon cessation of exposure.

SUBCHRONIC INHALATION EFFECTS: In a two-week inhalation study with rats (1983), respirable fibrils (sub fibers) of Kevlar at concentrations of 1000-2000 fibrils per cubic centimeter (f/cc) caused mild non-progressive fibrosis (lung scarring that shrinks with cessation of exposure) and nonspecific effects such as weight loss, and irritation. There are no effects at concentrations of 280f/cc or less.

CHRONIC INHALATION EFFECTS:

A two-year inhalation study with Kevlar pulp (refined to increase its respirable fibril content) showed fibrosis at concentrations of 25, 100 and 400 f/cc, and lung lesions in some rats in the group exposed to respirable fibers at concentrations of 100 and 400 f/cc. A panel of 12 pathologists from North American and Europe reviewed these lesions and diagnosed them as "proliferative keratin cysts." They agreed that the lesions are not malignant neoplasms and are most likely not neoplastic. This unique lesion is not found in humans and may be indicative of a nonspecific biological response to the respirable material, rather than an indication of the toxicity of Kevlar. No fibrosis was seen in animals exposed to 2.5 f/cc for two years (and very little at 25f/cc). At no concentrations were fibers found to have migrated beyond the lungs and associated lymph system. Four experiments at fibril concentrations of 2.5 f/cc to 400 f/cc have shown that fibrils of Kevlar in the lungs of rats are shortened with time, probably by enzymatic clipping of the polymer chain. (This effect has been independently confirmed in rats by two other laboratories and by DuPont in hamsters. In-vitro tests show fibrils of Kevlar are shortened in proteolytic enzyme solutions). While not all fibrils disappear, long fibers are cut to an average of less than 5 micrometers and gradually removed. The lower the exposure, the faster fibrils are broken down.

CARCINOGENICITY:

IARC completed an in-depth review of all valid scientific data relating to para-aramid fibrils in October, 1996. They classified the fibrils as in Group 3, "not classifiable as to their carcinogenicity to humans." That is, the experts found no convincing evidence of carcinogencity. (While IARC has no regulatory authority, its expert options are used for guidance by regulatory authorities worldwide).

MUTAGENIC, DEVELOPMENTAL AND REPRODUCTIVE EFFECTS: Fibers: In an in vitro assay, fibrils of HYTEX® 400 (Kevlar) produced no chromosomal aberrations in cultured human peripheral blood lymphocytes.

No animal tests have been run to define mutagenic, developmental or reproductive hazards of either Nomex or HYTEX® 400 (Kevlar) fibers.

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

SECTION 12 • ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: HYTEX® 400 (Kevlar) fibers are essentially non-biodegradable in the environment, and do not leach material toxic to flora or fauna. Finishes and additives used in the production of Kevlar fiber are routinely tested for their potential effects on manufacturing wastewater treatment systems. Biocompatibility and aquatic toxicity tests give the following results:

- None appear to be inhibitory or toxic to microbes commonly found in biological treatment systems.

- Biodegradation and normal anti-foam treatments control foaming.

- Discharge of scoured finishes should not result in increased effluent toxicities.

- Finishes are completely or substantially biodegradable.

Since concentrations and treatment conditions vary, the above should be considered indicative only.

SECTION 13 • DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: HYTEX® 400 (Kevlar) fibers are not a hazardous waste as defined by regulations implementing the Resource Conservation and Recovery Act (RCRA). In general, waste materials may be discarded, land filled or incinerated in accordance with state and local regulations governing the disposal of other common or non-RCRA-regulated waste materials. Do not flush into surface water or sanitary sewer system.

SECTION 14 • TRANSPORT INFORMATION

UN/NA CODE: None.

PROPER SHIPPING NAME: Not regulated.

HAZARD CLASS: Non-hazardous.

DOT INFORMATION: Not regulated.

LABELS REQUIRED: None.

BILL OF LADING DESCRIPTION: Product name.

SECTION 15 • ADDITIONAL REGULATORY INFORMATION

US FEDERAL REGULATIONS

OSHA: This SDS is provided to comply with [provisions of the] Hazard Communication Standard (29CFR1910.1200).

TSCA: These products are listed or compliant on the TSCA inventory.

CERCLA: HYTEX® 400/Kevlar is not regulated as a hazardous waste under CERCLA.

SARA TITLE III SECTION 313 INFORMATION: Not reportable

CLEAN AIR ACT AMENDMENTS OF 1990: Para-aramid fiber products do not contain, nor are they manufactured with, any of the ozone-depleting substances listed in either Class I (chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform) or Class II (hydro chlorofluorocarbons) of the Clean Air Act Amendments of 1990.

STATE REGULATIONS

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Prop 65): This fiber 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: Nomex fiber is considered an "article" and is not subject to the provisions of these laws.

CANADIAN REGULATIONS

This material is not WHMIS controlled.

This material is not TGD regulated.

SECTION 16 • OTHER APPLICABLE INFORMATION

NFPA & NPCA-HMIS RATINGS

	NFPA	NPCA-HMIS
Health	0	0*(chronic health effects)
Flammability	1	1
Reactivity	0	0

Caution: Do not use in medical application involving permanent or temporary implantation in the human body or contact with body fluid.

- Kevlar® is registered trademarks of the E.I. du Pont de Nemours and Company.

- REFERENCE: DuPont Material Safety Data Sheet No. 150000002634.

DEFINITIONS

29 CFR 1910.134 & 1926.103: OSHA Respiratory Protection Standards
29 CFR 1910.1200 & 1926.59: OSHA Hazard Communication
ACGIH American Conference of Governmental Industrial Hygienists
ADR Carriage of Dangerous Goods by Road (International Regulation)
CAA Clean Air Act
CAS Chemical Abstract Services
CERCLA Comprehensive Environmental Response, Compensation and Liability Act
CFR Code of Federal Regulations
DOT Department of Transportation
DSL Domestic Substances List (Canada)
EEC European Economic Committee
EINECS European Inventory of Existing Commercial Chemical Substances
EPA Environmental Protection Agency
EU European Union
HEPA High Efficiency Particulate Air
HMIS Hazardous Materials Information System
IARC International Agency for Research on Cancer
IATA International Air Transport Association
IMDG International Maritime Dangerous Goods Code
LC Lethal Concentration
LD Lethal Dose
NFPA National Fire Protection Association
NIOSH National Institute for Occupational Safety and Health
NTP National Toxicology Program
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
PIN Product Identification Number
PNOC Particulates Not Otherwise Classified
PNOR Particulates Not Otherwise Regulated
RCRA Resource Conservation and Recovery Act
RID Carriage of Dangerous Goods by Rail (International Regulation)
SARA Superfund Amendments and Reauthorization Act
STEL Short Term Exposure Limit
TCLP Toxic Chemical Leachate Program
TDG Transportation of Dangerous Goods

TITLE III EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT – SECTION:
302 Extremely Hazardous Substances
303 Emergency Release
311 SDS/List of Chemicals
312 Emergency and Hazardous Inventory
313 Toxic Chemicals Release Reporting

TLV Threshold Limit Value
TSCA Toxic Substance Control Act
TWA Time Weighted Average
WHMIS Workplace Hazardous Materials Information System

µm micrometer (micron)

mm	millimeter
cm	centimeter
m	meter
f/cc	fibers per cubic centimeter
ml	milliliter
in	inch
oz	ounce
lb	pound
µg	microgram
mg	milligram
g	gram
kg	kilogram
µg/cm^2	micrograms per centimeters squared
mg/m^3	milligrams per cubic meter of air
mppcf	million particles per cubic foot
ppm	parts per million
N/A	Not Applicable
ND	No Data/Not Determined
NE	Not Established
NR	Not Regulated

<<< End of SDS >>>