



Fabrics

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MATERIAL SAFETY DATA SHEET

7/6/98

MSDS IDENTIFICATION: Aramid, Fiberglass or Graphite (Carbon) Woven Unidirectional Warp Fabric

MSDS NUMBER: 439-3227-UNI0-AGC0-00 DATE: January 1, 1998 PAGE: 1 of 8

SUPERSEDES MSDS: All Woven Unidirectional (A-Style Warp) Fabrics; Different Fibers

SECTION I: MATERIAL AND MANUFACTURER IDENTIFICATION

MANUFACTURER:

Hexcel Corporation
5794 West Las Positas Boulevard
P.O. Box 8181
Pleasanton, CA 94588-8781

EMERGENCY TELEPHONE NUMBER:

800-433-5072 (24-Hour)

INFORMATION TELEPHONE NUMBER:

510-847-9500 (Normal Business Hours-PT)

PRODUCT IDENTIFICATION: Aramid, Fiberglass (E-Glass or S2 Glass) or Graphite (Carbon) Woven/Heat-set Unidirectional Warp Fabric, Sized (Finished) or Unsized (Greige)

CHEMICAL FAMILY: Aramid, Fiberglass (E-Glass or S2 Glass) or Graphite (Carbon) Unidirectional Warp Fabric with or without Sizing or Finish held together with a Woven/Heat-set Thermoplastic Coated Yarn.

SECTION II: HAZARDOUS INGREDIENTS

Table with 5 columns: MATERIAL OR COMPONENT, CAS NUMBER, % BY WEIGHT, OSHA(PEL), and ACGIH(TLV). Rows include ARAMID FABRICS, FIBERGLASS FABRICS, GRAPHITE (CARBON) FABRICS, and YARN USED ON ALL FABRICS.

SECTION II: HAZARDOUS INGREDIENTS (CONTINUED)

THE PERCENTAGES WILL VARY DEPENDING ON THE FABRIC STYLE AND THE INDIVIDUAL MATERIAL OR COMPONENT VARIATION.

SECTION III: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW:

APPEARANCE AND ODOR:

Aramid: Gold to yellow fibers;

Fiberglass: White fibers;

Graphite (Carbon): Black fibers;

Thermoplastic coated yarn: Clear colored yarn;

All woven, then heat-set, into fabrics of varying weight, width and thickness, depending on the style, with or without a sizing or finish on the fibers, with no distinctive odor.

STATEMENT OF HAZARD:

CAUTION! MAY CAUSE TEMPORARY MECHANICAL IRRITATION OF THE EYES, SKIN OR UPPER RESPIRATORY TRACT.

PRIMARY ROUTES OF EXPOSURE:

EYES--YES SKIN CONTACT--YES INHALATION--YES INGESTION--NO

HMIS RATING:

HEALTH--1 FLAMMABILITY--0 REACTIVITY--0 SPECIAL--NONE

POTENTIAL HEALTH EFFECTS:

EYES: May cause mechanical irritation to the eyes. Vapor from exposure to elevated temperatures may cause irritation to the eyes.

SKIN: May cause mechanical irritation to the skin and possible dermatitis. Vapor from exposure to elevated temperatures may cause irritation to the skin.

INHALATION: May cause mechanical irritation to the upper respiratory tract. Vapor from exposure to elevated temperatures may cause irritation to the respiratory tract.

INGESTION: Very unlikely. If a large amount is swallowed, seek medical attention.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Chronic respiratory or skin conditions that are aggravated by mechanical irritants may be at increased risk from exposure to this product.

OTHER: None of the components present in this material at concentrations equal to or greater than 0.1 % are listed or regulated by NTP, OSHA or ACGIH as a carcinogen, but Glass Filament is listed by IARC as Group 3 (not classifiable as to human carcinogen).

SECTION IV: FIRST AID MEASURES

EYES: In case of eye contact, immediately flush eyes with large amounts of water for at least 15 minutes, keeping the eyelids open. Get medical attention.

SKIN CONTACT: In case of contact which causes irritation, immediately wash skin with soap and room temperature to cool running water. Use a wash cloth to help remove the fibers. To avoid further irritation, do not rub or scratch irritated areas. Rubbing or scratching may force fibers into the skin. Get medical attention if the irritation persists.

INHALATION: If large amounts of dust or fiber are inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, qualified personnel may administer oxygen. Get medical attention.

INGESTION: Ingestion of this material is unlikely. If swallowed, get medical attention immediately.

SECTION V: FIRE FIGHTING MEASURES

FLASHPOINT/METHOD OF DETERMINATION: Not determined

MEANS OF EXTINCTION: Use water-spray, dry chemical or CO₂ to extinguish fires.

SPECIAL FIRE HAZARDS: Avoid exposure through use of a self-contained, positive-pressure breathing apparatus.

SECTION VI: ACCIDENTAL RELEASE MEASURES

PROCEDURES IN CASE OF ACCIDENTAL RELEASE OR LEAKAGE: Avoid contact with skin, eyes or clothing (See Section VIII). Clean up material, put into a suitable container and dispose of properly (See Section XIII).

SECTION VII: HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store in a cool, dry place. Maintain sealed against contamination from dirt and moisture. Aramid fibers or fabric will be degraded by ultraviolet sunlight and discolored by fluorescent lighting.

SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE/FACE PROTECTION: Avoid eye contact. Wear coverall goggles, as necessary, to prevent irritation, if airborne dust, fibers or vapor are present.

SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION (CONTINUED)

SKIN PROTECTION: Wear protective clothing such as loose fitting, long sleeved shirt that covers to the base of the neck, long pants and gloves, as necessary, to prevent irritation. Skin irritation is known to occur primarily at pressure points such as around the neck, wrist, waist and between the fingers.

RESPIRATORY PROTECTION: Not ordinarily required. If sufficient dust or fibers are generated during use of the product, use a NIOSH approved dust respirator. If sufficient vapor is generated during use of the product, use a NIOSH approved organic vapor respirator.

VENTILATION: Use local exhaust sufficient to control dust, fibers or vapor generated. If exhaust ventilation is not available or is inadequate, use a NIOSH approved respirator, as appropriate.

GENERAL HYGIENE RECOMMENDATIONS: Before eating, drinking, smoking or using toilet facilities, wash face and hands thoroughly with soap and water. Remove any contaminated clothing and launder before reuse. Use vacuum equipment to remove fibers and dust from clothing and work areas. Compressed air is not recommended.

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR...Aramid: Gold to yellow fibers;
...Fiberglass: White fibers;
...Graphite (Carbon): Black fibers;
...Thermoplastic coated yarn: Clear colored yarn;
All woven, then heat-set, into fabrics of varying weight, width and thickness, depending on the style, with or without a sizing or finish on the fibers, with no distinctive odor.

MELTING POINT (°F/°C)...Aramid: Does not melt, but will start to carbonize at around 800°F/427°C
...Glass: >1292°F/>700°C
...Graphite (Carbon): 6512°F/3600°C,
...Thermoplastic coated yarn: 156°F/69°C

SPECIFIC GRAVITY (WATER=1)...Aramid: 1.45;
...Glass: 2.60;
...Graphite (Carbon): 1.5-1.9;
...Thermoplastic coated yarn: 1.02

PH OF UNDILUTED PRODUCT..... Not determined

VOLATILE [PERCENT (%) BY WEIGHT]...Aramid: 0-9, equilibrium moisture

PERCENT (%) VOC..... Not determined

SOLUBILITY IN WATER..... Insoluble, except for some of the finish or sizing

SECTION X: STABILITY AND REACTIVITY

STABILITY: Stable under normal handling and storage conditions

INCOMPATIBLE MATERIALS: None

PRODUCTS EVOLVED FROM HEAT OF COMBUSTION OR DECOMPOSITION:

The products of combustion and decomposition depend on other materials present in the fire and the actual conditions of the fire. Burning will produce the following based on fibers:

Aramid: Carbon dioxide, carbon monoxide, nitrogen oxides, ammonia, aldehydes, aliphatic hydrocarbons and small amounts of hydrogen cyanide.

Fiberglass: The finish may decompose and release carbon dioxide, carbon monoxide, water and traces of incompletely burned carbon products.

Graphite (Carbon): The sizing may decompose and release carbon dioxide, carbon monoxide, nitrogen oxide, phenols, aldehydes, acrolein, carboxylic acid and traces of incompletely burned carbon products.

Thermoplastic coated yarn: The yarn may decompose and release carbon monoxide and hydrogen cyanide.

Also included in each may be other unidentified gases and vapors which may be toxic. Avoid inhalation of all the smoke, vapor or fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions of use. Rapid heating of the product in bulk may produce an uncontrolled exothermic reaction which may char and decompose the finish, generating unidentified gases and vapors which may be toxic. Avoid inhalation.

SECTION XI: TOXICOLOGICAL INFORMATION

MATERIAL OR COMPONENT TOXICITY DATA:

MEDIAN LETHAL DOSE (SPECIES):

ORAL (ALD)...Aramid...>7,600 mg/kg (Rat)

ORAL (LD₅₀)...Thermoplastic coated yarn...1210 mg/kg (Rat)

INHALATION (LC₅₀)...Thermoplastic coated yarn...300 mg/m³/2H (Rat)

DERMAL (LD₅₀)...Not determined

IRRITATION INDEX, ESTIMATION OF IRRITATION (SPECIES):

SKIN...Fibers...Possible mechanical irritation and dermatitis

...Thermoplastic coated yarn...500 mg/24H, Mild (Rabbit)

EYES...Fibers...Possible mechanical irritation

...Thermoplastic coated yarn...20 mg/24H, Moderate (Rabbit)

INHALATION...Possible mechanical irritation and possible irritation when heated to elevated temperatures.

SECTION XII: ECOLOGICAL INFORMATION

Aramid...Fibers...Essentially non-biodegradable
...Do not leach, material toxic to flora or fauna
...Finishes...Not inhibitory or toxic to microbes commonly found in biological treatment systems
...Are biodegradable
...None appear to enhance foaming
...Discharge of scoured finishes should not result in increased effluent toxicity.
...Thermoplastic coated yarn...Generally not hazardous for water

SECTION XIII: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS: Material for disposal should be placed in appropriate sealed containers to avoid potential human and environmental exposure. It is the responsibility of the generator to comply with all federal, state, provincial and local laws and regulations. We recommend that you contact an appropriate waste disposal contractor and environmental agency for relevant laws and regulations. Under the US, Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets relevant waste classification.

SECTION XIV: TRANSPORT INFORMATION

DOT AND IATA:
PROPER SHIPPING NAME..... Not Regulated
HAZARD CLASS..... Not Regulated
IDENTIFICATION NUMBER... Not Regulated
PACKING GROUP..... Not Regulated
LABEL REQUIRED..... None

SECTION XV: REGULATORY INFORMATION

SARA TITLE III:
SECTION 302/304 EXTREMELY HAZARDOUS SUBSTANCE:
None

SECTION 311 HAZARDOUS CATEGORIZATION:
None

SECTION 313 TOXIC CHEMICALS:
None

SECTION XV: REGULATORY INFORMATION (CONTINUED)

CERCLA SECTION 102(a) HAZARDOUS SUBSTANCE:

Thermoplastic coated yarn, RQ 5,000

RCRA INFORMATION:

Currently, this product is not listed in federal hazardous waste regulations 40 CFR, Part 261.33, paragraphs (e) or (f), i.e. chemical products that are considered hazardous if they become wastes. State or local hazardous waste regulations may also apply if they are different from the federal regulation. It is the responsibility of the user of the product to determine at the time of disposal, whether the product meets relevant waste classification and to assure proper disposal.

WHMIS (CANADA):

CLASSIFICATION:

None

INGREDIENT DISCLOSURE LIST:

Fibrous glass (CAS # 65997-17-3), Fiberglass only
Thermoplastic coated yarn

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65):

WARNING ! THE STATE OF CALIFORNIA HAS DETERMINED THAT THE FOLLOWING LISTED MATERIALS OR COMPONENTS IN THIS PRODUCT MAY CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM:

None

ALL MATERIALS OR COMPONENTS OF THIS PRODUCT ARE EITHER LISTED OR ARE NOT REQUIRED TO BE LISTED IN THE EPA TSCA INVENTORY.

THIS PRODUCT DOES NOT CONTAIN OR IS NOT MANUFACTURED WITH OZONE DEPLETING SUBSTANCES AS IDENTIFIED IN TITLE VI, CLEAN AIR ACT "STRATOSPHERIC OZONE PROTECTION" AND THE REGULATIONS SET FORTH IN 40 CFR, PART 82.

SECTION XVI: OTHER INFORMATION

SPECIAL PRECAUTIONS: Airborne Graphite (Carbon) fibers or dust may create electrical short-circuits which could result in damage to or malfunctioning of electric equipment.

SECTION XVI: OTHER INFORMATION (CONTINUED)

EXPLANATION AND DISCLAIMER: Wherever such words or phrases as "hazardous," "toxic," "carcinogen," etc. appear herein, they are used as defined or described under state employee right-to-know laws, Federal OSHA laws or the direct sources for these laws such as the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), etc. The use of such words or phrases should not be taken to mean that we deem or imply any substance or exposure to be toxic, hazardous or otherwise harmful. **ANY EXPOSURE CAN ONLY BE UNDERSTOOD WITHIN THE ENTIRE CONTEXT OF ITS OCCURRENCE, WHICH INCLUDES SUCH FACTORS AS THE SUBSTANCE'S CHARACTERISTICS AS DEFINED IN THE MSDS, AMOUNT AND DURATION OF EXPOSURES, OTHER CHEMICALS PRESENT AND PREEXISTING INDIVIDUAL DIFFERENCES IN RESPONSE TO THE EXPOSURE.**

The data provided in this MSDS is based on the information received from our raw material suppliers and other sources believed to be reliable. We are supplying you this data solely in compliance with the Federal OSHA Hazard Communication Standard, 29 CFR 1910.1200 and other Federal and state laws as described in Section XV: Regulatory Information. The information contained in this MSDS is not to be used for purposes other than compliance with the Federal OSHA Hazard Communication Standard.

LIABILITY, IF ANY, FOR USE OF THIS PRODUCT IS LIMITED TO THE TERMS CONTAINED IN OUR SALE TERMS AND CONDITIONS. WE DO NOT IN ANY WAY WARRANT (EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE) THE DATA CONTAINED OR THE PRODUCT DESCRIBED IN THIS MSDS. ADDITIONALLY, WE DO NOT WARRANT THAT THE PRODUCT WILL NOT INFRINGE ANY PATENT OR OTHER PROPRIETARY OR PROPERTY RIGHTS OF OTHERS.

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