Dorlastan®

Spandex Fiber

Material Safety Data Sheet

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ASAHI KASEI SPANDEX AMERICA

ROICA DORLASTAN

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Introduction

This Material Safety Data Sheet does not cover all possible individual situations. The conditions of your use and application of our products, technical assistance and information (whether verbal, written or by way of production evaluations) including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis at least must include testing to determine suitability from a technical as well as a health, safety and environmental standpoint. Such testing has not necessarily been done by Asahi Kasei Spandex America, Inc. All information is given without warranty or guarantee. It is expressly understood and agreed that the customer assumes and hereby expressly releases Asahi Kasei Spandex America, Inc. from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance and information. Any statement or recommendation not contained herein is unauthorized and shall not bind Asahi Kasei Spandex America, Inc. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.

This Material Safety Data Sheet provides guidelines and suggested precautions for the safe handling and processing of Dorlastan spandex fibers. Asahi Kasei Spandex America, Inc. suggests that all individuals working with this product read and understand the information contained herein prior to the start of processing. This brochure does not include information on the suitability of Dorlastan for any specific applications. All information required by OSHA is contained in this document.

Background

Dorlastan is a spandex fiber manufactured by Asahi Kasei Spandex America, Inc. that features consistent processing behavior, high stretch and reactive forces for garment comfort, high elastic retention for lasting fit, and high resistance to cosmetic oils and dry-cleaning processes. Other features include a good resistance to atmospheric gas fume fading, good retention of whiteness after oxidative bleaching and good dye ability, which allows uniform shades to be produced.

Manufacturer/Product Identification

Product Name	Dorlastan
Product Code	V-Series
Chemical Family	Segmented polyurethane-polyurea filament yarn
Synonyms	Spandex fiber; elastane filament yarn

Asahi Kasei Spandex America **1566 Bushy Park Road** **Goose Creek, SC 29445**	**Emergency Pager 1-843-764-6382** **Information Telephone 1-888-336-4377**

Ingredients

Dorlastan is an organic filament yarn essentially composed of carbon, hydrogen, nitrogen and oxygen. The fiber contains additives and lubricants to achieve desired chemical and physical properties. These ingredients are not expected to create any unusual hazards when handled and processed according to good industrial hygiene and manufacturing practices and the guidelines provided in this MSDS.

Ingredient	CAS No.	Exposure Limits	Percent	Fiber Type
Segmented Polyurethane-Polyurea	Proprietary	OSHA-NE ACGIH-NE	>88%	All Types
Polydimethylsiloxane (Silicone Oil)	63148-62-9	OSHA-NE ACGIH-NE	Proprietary	All Types except V610 and V612
Magnesium Stearate	557-04-0	OSHA-NE ACGIH-10mg/m3 TWA	<1%	All Types
Titanium Dioxide	13463-67-7 1317-80-2	OSHA-15mg/m3 (TWA-total dust) ACGIH-10mg/m3 TWA	Max 3%	All Types
Dimethylacetamide (DMAC)	127-19-5	OSHA-10ppm TWA (skin) OSHA-35 mg/m3 TWA (skin) ACGIH-10ppm TWA (skin) ACGIH-36mg/m3 TWA (skin)	Max 1%	V6xx,V8xx,V9xx Series(xx=01-99)
Auxiliary Additives	Proprietary	OSHA-NE ACGIH-NE	Max 8%	All Types

NE = not established

Physical Properties

Physical Form	Solid
Appearance	Filament yarn
Color	Colorless or white
Odor	Odorless at room temperature; at higher temperatures an ammonia-like odor of DMAC may be detectable
Odor Threshold	47ppm (DMAC)
pH	Not applicable
Boiling Point	Not applicable
Melting/Freezing Point	482-572°F (250-300°C) with decomposition
Softening Point	329-338°F (165-170°C)
Solubility in Water	Insoluble at 68°F (20°C)
Specific Gravity	1.10-1.20 at 68°F (20°C)
Bulk Density	Not established
% Volatile by Weight	1% (DMAC) for V6xx, V8xx, V9xx Series (xx = 01-99)
Vapor Pressure	Non-Volatile at 68°F (20°C)

Fire/Explosion Data

Flash Point	Not applicable
Flammable Limits	
Upper Explosive Limit (UEL)(%)	Not established
Lower Explosive Limit (LEL)(%)	Not established
Extinguishing Media	All extinguishing media are suitable
Special Fire Fighting Procedures	Full emergency equipment with self-contained breathing apparatus must be worn by fire fighters. During a fire, irritating and toxic gases and aerosols may be generated by thermal decomposition and combustion. See "Reactivity Data" Section.
Unusual Fire/Explosion Hazards:	Prevent or remove fiber fly (dust). Keep away from sources of ignition. Take effects of static charges into account. Do not extinguish an electric fire with water. See "Handling and Storage Precautions" Section.

Human Effects and Symptoms of Overexposure

Dorlastan is a non-reactive solid fiber. It has been manufactured and processed since 1964 without reports of adverse health effects. When used under recommended processing and ventilation conditions, no adverse health effects are expected. Titanium Dioxide is an additive used as a dulling agent and is bound within the polymer matrix. Silicone oil may be released into the air or extracted from the fiber during aqueous or solvent finishing. See "Ingredients" Section.

ROUTES OF ENTRY
Inhalation, skin contact, skin absorption, eye contact.

ACUTE EFFECTS OF EXPOSURE
Under normal fiber processing conditions overexposure to **fiber fly (dust)** is unlikely. However, if such an exposure occurs, we anticipate symptoms of respiratory irritation with sneezing, coughing or runny nose.

Overexposure to **DMAC** by *inhalation:* causes, nausea, vomiting, headache and dizziness. Jaundice has been reported in workers repeatedly exposed to 20-25ppm. Significant skin penetration reportedly contributed to those effects; *by eye and skin*: liquid and vapor is readily absorbed and may cause irritation with redness, rash, tearing, pain and blurred vision; *by ingestion*: may cause nausea, vomiting, alcohol intolerance, abdominal spasms and headache. DMAC overexposure can also cause abnormal liver function with yellowing of the skin (jaundice), nausea, vomiting, reduced appetite or abdominal pain. Laboratory testing indicates that abnormal kidney function can also occur.

At decomposition temperatures, silicone oil fumes may be generated, causing irritation to the eyes and respiratory tract. In addition, this product contains various agents and mixtures below the OSHA deminimis level. They may vaporize at processing temperatures in excess of 266°F (130°C). Local exhaust ventilation should be maintained at the processing equipment in order to limit exposure. See "Ventilation Recommendations" Section.

CHRONIC EFFECTS OF EXPOSURE
Workers in a polymer manufacturing plant exposed to 0 to 2ppm DMAC with some excursions between 11 and 34ppm reported symptoms of dizziness, lethargy and weakness.

CARCINOGENICITY
The components of this product are not listed by NTP, IARC or regulated as a carcinogen by OSHA.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Pre-existing eye, skin, bronchial, liver, kidney or lung disorders.

EXPOSURE LIMITS
For fiber fly (dust) observed nuisance dust exposure limits – also see "Ingredients" Section.

OSHA-PEL	15mg/m3 – total dust 5mg/m3 – respirable dust
ACGIH-TLV	10mg/m3

First Aid

If an employee should happen to develop symptoms of overexposure to DMAC or Silicone Oil, remove to fresh air. If breathing is difficult, give oxygen and call a physician. There is no specific antidote for overexposure; treat effects symptomatically and supportively. If overexposure to fiber fly (dust) occurs, remove to fresh air. If symptoms persist, call a physician. Eyes, skin and ingestion are not likely routes of overexposure.

Employee Protection

EYE PROTECTION:
Safety goggles are recommended as a good industrial hygiene practice, especially when cutting wires and straps for packaging.

SKIN PROTECTION REQUIREMENTS:
If prolonged handling of unprocessed yarn produces temporary discomfort due to skin contact with lubricants and other surface deposits wear impermeable gloves such as butyl rubber.

RESPIRATOR REQUIREMENTS:
The specific respirator selected must be based upon contamination levels found in the workplace, must not exceed the working limits of the respirator and must be jointly approved by NIOSH and MSHA. Use an approved dust respirator if airborne dust concentration is at or exceeds nuisance dust exposure limits. Use a respirator equipped with an organic vapor cartridge if DMAC or Silicone oil is generated in excess of listed exposure levels. See "Ingredients" Section.

VENTILATION REQUIREMENTS:
Local exhaust is recommended to control fiber fly (dust) and to capture DMAC, Silicone Oil and other processing vapors and decomposition products which can be emitted. Effective ventilation is particularly important when heat setting, hot wire and/or laser cutting are being used because hazardous decomposition products may be formed.

ADDITIONAL SAFETY MEASURES:
Safety shoes and general purpose work gloves should be worn when cutting wires and straps for packaging.

Reactivity Data

Stability	Stable
Hazardous Polymerization	Will not occur
Incompatibilities	None known
Instability Conditions	None known
Decomposition Temperature	482 – 572°F (250-300°C)
Decomposition Products	By fire or high heat: carbon monoxide, carbon dioxide, nitrogen oxides, nitrites, hydrogen cyanide, methylene diisocyante (MDI) and other undetermined decomposition products. Additionally, small amounts of formaldehyde may be formed through oxidative decomposition of Silicone Oil.

Spill/Leak Procedures

Remove mechanically by method which minimizes the generation of airborne dust (i.e. vacuum cleaner). If accumulation of silicone oil occurs on workroom floor, take up with suitable absorbent and place in container for disposal. Wear appropriate protective equipment.

Waste Disposal Methods

Material may be incinerated or landfilled in compliance with federal, state and local environmental control regulations.

Handling and Storage Precautions

Storage Temperature (MIN/MAX)	39°F (4°C) / 80°F (27°C)
Shelf Life	3 to 12 months maximum recommended depending on denier (dtex)
Special Sensitivity	Avoid excessive heat or moisture. Store away from any atmospheric contaminants like exhaust gases from internal combustion engines.

Dorlastan should be stored in a clean, cool, dry environment. Failure to do so may compromise the integrity of the product. To avoid a slipping hazard, prevent accumulation of silicone oil on the workplace floor. Exercise caution in stretching operations to help prevent violent backlashes which can result in injury. Keep open flames, sparks and heat away from dusty areas. Static charges can accumulate during shipping, unloading or conveying. Regular cleaning of machines, work clothes and workrooms is recommended. Hands should be washed with soap and water before eating, drinking or smoking, and at the

end of the work shift. Do not breathe any fumes or dusts which may be formed. In addition, avoid eye and skin contact with fumes, dusts or mists.

Shipping Information

Technical Shipping Name:	Filament yarn
Freight Class Bulk:	Fiber, synthetic, NEC
Freight Class Package:	Fiber, synthetic, NO (NMFC 68555) Sub 8 CL-70
Product Label:	Current assigned label
DOT (HM-181) (Domestic Surface):	Non-regulated
IMO/IMDG CODE (OCEAN):	Non-regulated
ICAO/IATA (AIR):	Non-regulated

Packaging

Dorlastan is packaged and shipped as single continuous fibers wound on plastic laminated paper tubes or recyclable all-plastic tubes in cartons and multiple continuous fibers wound on beams in racks.

Animal Toxicity Data

Toxicity Data - DMAC (Dimethylacetamide)

ACUTE TOXICITY

Oral LD50	4300 (rat)
Dermal LD50	Greater than 2000 mg/kg (rat)
Inhalation LC50	2475 ppm (rat) 1 hour
Eye Effects	Mild irritation (rabbit)
Skin Effects	Mild irritation (rabbit)
Other Effects	Inhalation, ingestion, or skin absorption can result in liver or kidney damage.
Reproduction	Inhalation of high concentrations or ingestion of large amounts of DMAC can result in reproductive damage.

Regulatory Information

OSHA Status:	This MSDS complies with the OSHA Hazard Communication Standard 29 CFR 1910. 1220
TSCA Status:	This product is registered as an article, therefore exempt from TSCA Regulation.
CERCLA Reportable Quantity:	None
SARA Title III:	
Section 302 Extemely Hazardous Substances:	None
Section 311/312 Hazard Categories:	Immediate health hazard; delayed health hazard
Section 313 Toxic Chemicals:	None
RCRA Status	If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristics. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)
State Right-to-Know	Titanium Dioxide (CAS #13463-67-7) PA, NJ, MA Dimethlacetamide (CAS #127-19-5) PA, NJ, MA

Other Regulatory Information

	Health	Flammability	Reactivity	Other
NFPA 704M Ratings 0=insignificant	1 1=slight	1 2=moderate	0 3=high	 4=extreme
HMIS Ratings 0=minimal	1 1=slight	1 2=moderate	0 3=serious	 4=severe

Asahi Kasei Spandex America Inc.'s method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by Asahi Kasei Kasei Spandex America, Inc. as a customer service.

APPROVALS

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