



SAFETY DATA SHEET

SDS No: 0026

Section 1. Product and Company Identification

Product Name: Silks

Trade Name: ABS

Recommended Use: Signage, Other

Restrictions on Use: None

Manufacture: Rowmark
5409 Hamlet Drive
Findlay, OH 45840

In Case of Emergency: Call: Medcal: 911
Poison Control: 800-589-3897
Email:
Information: Call: 1-877-ROWMARK
Email: techhelp@rowmark.com

Section 2. Hazard Identification

GHS Classification: Not Classified

GHS Label Elements: Not Applicable

Emergency Overview:

APPEARANCE: Various colors; Characteristic odor

Potential Health Effects:

EYE: Solid or dust may cause irritation or corneal injury due to mechanical action.

SKIN: Essentially non-irritating to the skin. Mechanical injury only. Under normal processing conditions, material is heated to elevated temperatures; contact with the material may cause thermal burns. No adverse effects anticipated by skin absorption.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

INHALATION: Dust may cause irritation to upper respiratory tract (nose and throat).

GHS Rating

Health	5
Flammability	4
Instability	5
Other	

HMIS Rating

Health	0
Flammability	1
Physical Hazard	0

0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Other Hazards: Not Applicable

NEW GHS Hazard Categories

Category 1 = Severe Hazard

Category 2 = Serious Hazard

Category 3 = Moderate Hazard

Category 4 = Slight Hazard

Category 5 = Minimal Hazard

Section 3. Composition / Information on Ingredients

Name	CAS #	% by Weight
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Acrylonitrile/butadiene/styrene resin	009003-56-9	90-100%
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May contain the following:

Mineral Oil	008042-47-5	0-2%
Tallow	008030-12-4	0-2%
Wax	000110-30-5	0-2%

* Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

Section 4. First Aid Measures

Inhalation:	Dust and process vapors may be irritation to the nose, throat and respiratory tract. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get Medical attention.
Eyes:	Dust, fines and process vapors may irritate the eyes. Immediately flush eyes with water for at least 15 minutes. Get medical attention.
Skin:	Exposure to molten plastic may cause thermal burns. If molten material comes in contact with the skin, cool under ice water or a running stream.
Ingestion:	No adverse health effects expected from ingestion.

Section 5. Fire-Fighting Measures

Suitable Extinguishing Methods:	Dry Chemical, Water Spray, Foam Carbon Dioxide. Avoid using direct streams of water on
Unsuitable Extinguishing Methods:	NONE known.
Hazards During Fire-fighting:	Carbon monoxide, carbon dioxide, original monomer other hydrocarbon oxidation products.
Protective Equipment:	Wear self-contained breathing apparatus and protective suit.

Section 6. Accidental Release Measures

Personal Precautions:	See Section 8 - Exposure Controls / Personal Protection.
Environmental Precautions:	No Special environmental precautions required.

Methods and Materials for Containment and Cleaning Up

Spill / Leak:	Containment of this material should not be necessary. Sweep up or gather material and place in appropriate
If Molten:	Allow material to cool and place into an appropriate marked container for disposal.

Section 7. Handling and Storage

Handling:	Keep away from heat, flame and strong oxidizing agents. Good housekeeping and controlling dusts are necessary for safe handling of product. Workers should be protected from the possibility of contact with molten resin during fabrication. Large masses of molten polymer held at elevated temperatures for extended periods of time may auto-ignite.
Storage:	Keep away from heat, sparks, and flame. Store horizontally in cool, dry place in original container and protect from sunlight.

Section 8. Exposure Control and Personal Protection

Exposure Limits:

1) Effects of Acute Exposure:	See section 11, Toxicological Information		
2) Effects of Chronic Over Exposure:	See section 11, Toxicological Information		
3) OSHA Permissible Exposure Limits:	Chemical	OSHA PEL	ACGIH TLV
	Corn Oil	5 mg/m3 (respirable) 15 mg/m3 (total) TWA	None Established
	Styrene	100 ppm TWA 200 ppm Ceiling 600 ppm Max concentration (5 min in any 3 hrs)	20 ppm TWA 20 ppm STEL
4) Carcinogen Potential:	See section 11, Toxicological Information		

Engineering Controls:

Use recommended safe handling practices to minimize unnecessary exposure.

General room ventilation is adequate for storage and ordinary handling.

Use local exhaust at points of fume generation or if dusty conditions prevail.

Personal Protective Equipment:

Wear safety glasses with side shields or chemical goggles to prevent eye contact.

Have eye-washing facilities readily available where eye contact can occur.

Wear impervious gloves and protective clothing to prevent skin contact.

Section 9. Physical and Chemical Properties

Appearance: Various colors,	Various color	Vapor Pressure:	Not applicable
Odor:	Slight, sweet, aromatic	Vapor Density:	3.6 (styrene
pH:	Not applicable	Relative Density:	Approx. 1.05
Melting Point / Freezing Point:	Not established	Solubility (ies):	Insoluble in water
Boiling Point:	Not Applicable	Partition Coefficient (N-Octanol/Water):	Not applicable
Flash Point:	388-400°C (730-752°F)	Auto-Ignition Temperature:	495-510°C (923-950°F)
Evaporation Rate:	Not Applicable	Decomposition Temperature:	Approx. 260°C (500°F)
Flammability (solid, gas):	Dust and molten material are flammable	Viscosity:	Not applicable
Upper Explosive Limit:	Not established	Specific Gravity:	1.05-1.12
Lower Explosive Limit:	Not established	Percent Volatile:	

Section 10. Stability Reactivity

Reactivity:	Hazardous polymerization does not occur
Chemical Stability:	Stable
Possibility of Hazardous Reactions:	None known
Conditions to Avoid:	Avoid temperatures above 300°C (572°F). Such exposure can cause product to decompose.
Incompatible Materials:	None known
Hazardous Decomposition Products:	Thermal decomposition will generate carbon dioxide, carbon monoxide, styrene, acrylonitrile, hydrogen cyanide, hydrocarbons.
Combustion Products:	

Section 11. Toxicological Information

Irritation Effects

Eye Irritation:	Solid particles may cause transient irritation from mechanical abrasion.
Skin Irritation:	Not expected to cause skin irritation. Molten material may cause thermal burns.
Inhalation:	Not a likely route of exposure. Process fumes may cause irritation.
Ingestion:	May cause a choking hazard if swallowed.

General Effects of Exposure

Acute Effects of Exposure: Gases and fumes evolved during thermal processing or decomposition of this material may irritate the eyes, skin or respiratory tract and cause nausea, drowsiness and headache.

Chronic (non-cancer) Effects of Exposure: Not expected to cause any adverse chronic health effects.

Carcinogenicity:

None of the components present at 0.1% or greater have been classified as a carcinogen.

The Agency for Toxic Substances & Disease Registry concluded in their 2007 Toxicological Profile for Styrene that styrene may possibly be a weak human carcinogen. The EPA has not given a formal carcinogen classification to styrene stating "Several epidemiologic studies suggest there may be an association between styrene exposure and an increased risk of leukemia and lymphoma. However, the evidence is inconclusive due to confounding factors." In 2011 the National Toxicology Program listed styrene as reasonably anticipated to be a human carcinogen based on limited evidence from studies in humans, sufficient evidence from studies in experimental animals, and supporting data on mechanisms of carcinogenesis.

Styrene **IARC** - Overall evaluation: 2B Possible carcinogen
IARC - Evidence of carcinogenicity in animals: Limited data
IARC - Evidence of carcinogenicity in humans: Limited data
NTP - Reasonably anticipated to be a human carcinogen
ACGIH - A4: Not classifiable as a Human Carcinogen

Product Toxicity Data

Toxicity Note: Toxicity data is based on similar to ABS resins.

Skin Irritation: rabbit - non-irritating.

Eye Irritation: rabbit - Draize - slightly irritating.

Other Relevant Toxicity Information: Styrene is slightly toxic to practically non-toxic in oral feeding studies (rats) and skin application studies (rabbits). Repeated inhalation studies in rats for 3 weeks reported effects suggestive of a hearing impairment. Repeated inhalation exposures produced lung irritation in guinea pigs and organ weight changes in rats. Styrene caused lung tumors in several strains of mice by inhalation and oral exposure. The evidence in rats is insufficient for reaching a conclusion concerning the carcinogenicity of styrene. There is limited evidence for the carcinogenicity of styrene in humans based on studies of workers that showed an increased mortality from or incidence of cancer of the lymphohematopoietic system and increased levels of DNA adducts and genetic damage in lymphocytes from exposed workers. However, the types of lymphohematopoietic cancer observed in excess varied across different studies and excess risk was not found in all cohorts. In standard mutagenicity tests, both positive and negative results were reported. No birth defects occurred in rats given styrene orally. Some toxic effects on the fetus were noted in a limited inhalation study using repeated high doses.

Toxicity Data for Acrylonitrile/Butadiene/Styrene Terpolymer

Acute Oral Toxicity: LD50 > 5000 mg/kg (rat)

Acute Dermal Toxicity: LD50 >2,000 mg/kg (rabbit) estimated

Skin Irritation: rabbit – Draize – No skin irritation

Eye Irritation: rabbit – Slightly irritating

Sensitization: Dermal – non-sensitizer (guinea pig Buehler Test)

Toxicity Data for Styrene

Acute Oral Toxicity: LD50 1000 mg/kg (rat)

Acute Inhalation Toxicity: LC50 11.8 mg/L/4 hr (rat)

Acute Dermal Toxicity: LD50 >20,000 mg/kg (rabbit)

Skin Irritation: rabbit – Draize – moderately irritating

Eye Irritation: rabbit – Draize – severely irritating

Sensitization: Dermal – non-sensitizer (guinea pig maximization test (GPMT))

Repeated Dose Toxicity

6 months, inhalation NOAEL 6.3 mg/kg (monkey, male/female, daily)

28 Days, dermal NOAEL <500 mg/kg (rat, male daily)

13 weeks, inhalation NOAEL 0.565 mg/L (rat, male/female, daily)

Mutagenicity

Genetic Toxicity in Vitro:

Ames: negative (Salmonella typhimurium, metabolic activation with and without)

Sister Chromatid Exchange: positive (human lymphocytes, metabolic activation with and without)

Genetic Toxicity in Vivo:

Cytogenic assay positive (rat)

Drosophila SLRL test: positive (Drosophila melanogaster)

Carcinogenicity

Styrene was tested for carcinogenicity in rats in four gavage studies, one drinking water study and two inhalation studies. Overall, there was no reliable evidence for an increase in tumor incidence in rats in any of these studies. Inhalation exposure caused benign lung tumors (alveolar/bronchiolar adenoma) and increased the combined incidence of benign and malignant lung tumors (alveolar/ bronchiolar adenoma and carcinoma) in CD-1 mice of both sexes; in females, it also increased the separate incidence of malignant lung tumors. In male B6C3F1 mice, oral exposure to styrene increased the combined incidence of benign and malignant lung tumors (alveolar/bronchiolar adenoma and carcinoma), and a positive dose-response trend was observed (NCI 1979). These findings are supported by findings of lung tumors in both sexes of O20 mice exposed to styrene (Ponomarev and Tomatis 1978). In O20 mice, a single dose of styrene was administered to pregnant dams on gestational day 17, and pups were exposed orally once a week for 16 weeks after weaning. A significantly increased incidence and earlier onset of benign and malignant lung tumors combined (adenoma and carcinoma) occurred in mice of both sexes as early as 16 weeks after weaning. In a similar study with C57Bl mice administered a much lower dose of styrene, lung-tumor incidence was not significantly increased. A screening study by intraperitoneal administration did not find an increase in tumor incidence or multiplicity in mice. The increased risks for lymphatic and hematopoietic neoplasms observed in some human epidemiological studies are generally small, statistically unstable and are not very robust.

Toxicity to Reproduction/Fertility

Three generation study, oral, daily (rat, male/female) NOEL (parental): 250 ppm, NOEL (F1): 125 ppm, NOEL (F2): 125 ppm
No effects on reproductive parameters observed at doses tested.
Other method, inhalation, daily, (rabbit female) NOEL parental 2.6 mg/L, NOEL (F1) 2.6 mg/L

Developmental Toxicity/Teratogenicity

Rat, female inhalation, gestation NOEL (teratogenicity): >600 ppm, NOEL (maternal) : <300 ppm. No teratogenic effects observed at doses tested.
Rabbit, female, inhalation, daily, gestation, NOEL (teratogenicity): >600 ppm, NOEL (maternal) : >600 ppm. Fetotoxicity seen only with maternal toxicity.

Additional Toxicological Information

When used and handled according to specifications, the product does not have any harmful effects according to research and information provided by suppliers.

Carcinogenic Effect

International Agency for Research on Cancer (IARC) : Group3 NOT classifiable as to its carcinogenicity to humans.

Section 12. Ecological Information

Eco-toxicity:	Toxicity to fish - No relevant studies identified.
Persistence and Degradability:	This material is not expected to be readily biodegradable.
Bio-accumulate Potential:	Product is not likely to accumulate in biological organisms.
Mobility in Soil:	This Product has not been found to migrate through soils.
Other Adverse Effects:	This Substance is not in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.

Ecological Data for Acrylonitrile/Butadiene/Styrene Terpolymer

Biodegradation:	Not readily biodegradable
Bioaccumulation:	Does not bioaccumulate
Acute and Chronic Toxicity to Fish:	LC50: 18 mg/L/96 hr common carp (cyprinus carpio)

Ecological Data for Styrene

Biodegradation:	
Biological Oxygen Demand (BOD):	5 days, 2.46 mg/L
Chemical Oxygen Demand:	2800-2880 mg/g
Theoretical Biological Oxygen Demand (ThBOD):	3.07 mg/L

Bioaccumulation:

Carp 13.5 BCF

Acute and Chronic Toxicity to Fish

LC50 9 mg/L/96 hr sheepshead minnow (*cyprinodon variegatus*)
 LC50 29 – 59.3 mg/L/96 hr fathead minnow (*pimephales promelas*)
 LC50 25 mg/L/96 hr bluegill (*lepomis macrochirus*)
 LC50 2.4 – 4.1 mg/L/96 hr rainbow trout (*salmo gairdneri*)

Acute Toxicity to Aquatic Invertebrates

EC50 4.7 – 23 mg/L/48 hr water flea (*daphnia magna*)

Toxicity to Aquatic Plants

EC50 1.4 mg/L/72 hr green algae (*selenastrum capricornutum*)

Toxicity to Microorganisms

EC50 approx. 500 mg/L/30 min activated sludge microorganisms
 EC50 5.5 mg/L/5 min photobacterium phosphoreum
 EC50 72 mg/L/16 hr pseudomonas putida

Section 13. Disposal Considerations**Disposal Methods**

Product Recommendation:

1. Recycle (Reprocess) if product has not been contaminated so as to make it unsuitable for its intended use.
2. Disposal through controlled incineration or authorized waste dump in accordance with Local, State or Federal Regulations.

Uncleaned Packaging Recommendation:

1. Disposal must be done in accordance with Local, State, or Federal Regulation.

Section 14. Transportation Information

UN Number: Not Relevant

UN Proper Shipping Name: Not Relevant

Transportation Hazard Class(es)

DOT: Not Regulated/classified

TDG: Not Regulated/classified

ADR / RID: Not Regulated/classified

IMDG: Not Regulated/classified

ICAO/IATA: Not Regulated/classified

Packing Group: Not Applicable

Environmental Hazards: Not Relevant

Transportation in Bulk (According to Annex II of MARPOL 73/78 and IBC Code): Not Relevant

Special Precautions for User: No special precautions

Section 15. Regulatory Information

(Not meant to be all-inclusive – selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

United States Federal Regulations

US OSHA Hazard Communication Classification: This product is hazardous under the criteria of the Federal OSHA Hazard

US Toxic Substance Control Act: All the components of this product are listed on the TSCA Inventory

US EPA CERCLA Hazardous Substances (40 CFR 302):

Components

Styrene 100-42-5 <0.1% RQ=1000 lbs

SARA Section 311/312 Hazard Categories: Not Hazardous

US EPA Emergency Planning and Community Right to Know Act (EPCRA) SARA Title III

Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):

Components

None

Section 313 Toxic Chemicals (40 CFR 372.65) – Supplier Notification Required:

Components

Styrene 100-42-5 < 0.1%

US EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents

If discarded in purchased form, this product would not be a hazardous waste either by listing or by characteristic. 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).

Canadian Regulations

Canadian CEPA Status: All of the components of this product are listed on the DSL.

OSHA HazCom: This Material is not Hazardous b OSHA Hazardous Communication Standard 29 CFR 1910.1200

SARA 313:

Immediate Hazard: NO	Fire Hazard: NO	Reactivity Hazard: NO
Delayed Hazard: NO	Pressure Hazard: NO	

Section 16. Other Information

No Additional Information

NOTICE: The information presented in this Safety Data Sheet is based on data considered to be accurate as of the date this Safety Data Sheet was prepared. However, no warranty or representation, expressed or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

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