

1. Product and Company Identification

Katun Corporation
10951 Bush Lake Road
Minneapolis, MN USA 55438
(952) 941-9505

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SECTION 1 – IDENTITY OF PRODUCT

3D FILAMENT

2. Hazards Identification

Emergency overview

CAUTION:
MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION.
INGESTION MAY CAUSE GASTRIC DISTURBANCES.
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE
CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.
Use with local exhaust ventilation.
Wear NIOSH-certified chemical goggles.
Eye wash fountains and safety showers must be easily accessible.
Wear protective clothing.

State of matter: solid
Colour: The colour is derived from the trade name.
Odour: faint specific odour

Potential health effects

Primary routes of exposure:

Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

Acute toxicity:

Contact with molten product may cause thermal burns. The resin in pelleted form poses a low hazard. No other known acute effects.

Irritation / corrosion:

Irritation is possible when the product comes in contact with the skin, respiratory tract or the eyes.

Sensitization:

No data was available concerning sensitizing properties. The chemical structure does not suggest such an effect.

Chronic toxicity:

Repeated dose toxicity: Product poses a low hazard under typical manufacturing and use conditions.

Medical conditions aggravated by overexposure:

N/A = Not Applicable

SAFETY DATA SHEET (SDS)

PN: 044876

Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product. See MSDS section 11 - Toxicological information.

Signs and symptoms of overexposure:

No significant reaction of the human body to the product known.

Potential environmental effects

Aquatic toxicity:

The product has not been tested. The statement has been derived from the structure of the product.

Terrestrial toxicity:

No data available concerning terrestrial toxicity.

Degradation / environmental fate:

In accordance with the required stability the product is not readily biodegradable. The product has not been tested. The statement has been derived from the structure of the product.

Bioaccumulation / bioconcentration:

Discharge into the environment must be avoided.

3. Composition / Information on Ingredients

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
9003-56-9	>= 90.0 - <= 100.0 %	Styrene-acrylonitrile-butadiene copolymer
100-42-5	< 0.1 %	Styrene
107-13-1	< 0.1 %	acrylonitrile

4. First-Aid Measures

General advice:

Immediately remove contaminated clothing.

If inhaled:

Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

If on skin:

Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.

If in eyes:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek immediate medical attention.

If swallowed:

Ingestion is not likely in the available physical form. If ingested, seek medical attention.

Note to physician

Treatment: Treat according to the symptoms under clinical conditions.

5. Fire-Fighting Measures

Flash point: > 400 °C

N/A = Not Applicable

Autoignition:	> 400 °C (DIN 51794)
Lower explosion limit:	As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Upper explosion limit:	As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Flammability:	not highly flammable
Self-ignition temperature:	not self-igniting

Suitable extinguishing media:

water spray, dry powder, foam, carbon dioxide

Hazards during fire-fighting:

carbon dioxide, carbon monoxide, hydrogen cyanide,
The substances/groups of substances mentioned can be released in case of fire.

Protective equipment for fire-fighting:

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental release measures

Personal precautions:

Avoid inhalation. Sources of ignition should be kept well clear.

Environmental precautions:

This product is not regulated by RCRA. This product is not regulated by CERCLA ('Superfund').

Cleanup:

Reclaim for processing if possible. After decontamination, spill area can be washed with water.

For small amounts: Sweep/shovel up.

For large amounts: Sweep/shovel up. Vacuum up spilled product.

Further information:

High risk of slipping due to leakage/spillage of product.

7. Handling and Storage

Handling**General advice:**

N/A = Not Applicable

Ensure adequate ventilation.

Protection against fire and explosion:

No explosion proofing necessary.

Storage

General advice:

Protect against moisture. Avoid extreme heat. Avoid all sources of ignition: heat, sparks, open flame.

Storage stability:

Avoid prolonged storage at high temperatures.

8. Exposure Controls and Personal Protection

Components with workplace control parameters

Styrene

OSHA TWA value 100 ppm ; CLV 200 ppm ; max. conc. 600 ppm ;

acrylonitrile

ACGIH TWA value 20 ppm ; STEL value 40 ppm ;
OSHA TWA value 2 ppm ; STEL value 10 ppm ; OSHA
Action level 1 ppm ; Skin Designation ;
The substance can be absorbed through the skin.

butadiene

ACGIH TWA value 2 ppm ; Skin Designation ;
The substance can be absorbed through the skin.
OSHA TWA value 1 ppm ; STEL value 5 ppm ; OSHA
Action level 0.5 ppm ;

butadiene

ACGIH TWA value 2 ppm ;

Advice on system design:

Provide local exhaust ventilation to control dusts/vapours.

Personal protective equipment

Respiratory protection:

Wear a NIOSH-certified (or equivalent) particulate respirator. Wear respiratory protection if ventilation is inadequate. Do not exceed the maximum use concentration for the respirator facepiece/cartridge combination. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator.

Hand protection:

Wear gloves to prevent contact during mechanical processing and/or hot melt conditions.

Eye protection:

Safety glasses with side-shields. Wear splash goggles to protect from hot molten substance/product.

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures:

Wear protective clothing to prevent contact during mechanical processing and/or hot melt conditions. Avoid

N/A = Not Applicable

inhalation of dust. Wash soiled clothing immediately.

9. Physical and Chemical Properties

Form:	pellets
Odour:	faint specific odour
Colour:	The colour is derived from the trade name.
pH value:	not soluble
softening temperature:	> 100 °C (DIN EN ISO 306)
onset of boiling:	The substance / product decomposes therefore not determined.
Vapour pressure:	not applicable
Density:	approx. 1.04 g/cm ³ (20 °C, 1 bar) (DIN 53479)
Relative density:	1.06 - 1.08
Bulk density:	approx. 600 kg/m ³ (20 °C, 1 bar) (DIN 53466)
Vapour density:	not applicable, The product is a non-volatile solid.
Partitioning coefficient n-octanol/water (log Pow):	not applicable
Viscosity, dynamic:	not relevant
Solubility in water:	insoluble

10. Stability and Reactivity

Conditions to avoid:

Avoid extreme heat. Avoid all sources of ignition: heat, sparks, open flame.

Substances to avoid:

strong oxidizing agents

Hazardous reactions:

No hazardous reactions known.

Decomposition products:

Hazardous decomposition products: hydrogen cyanide, monomers, hydrocarbons, gases/vapours, cyclic low molecular weight oligomers, oxides, Gaseous products of degradation can be given off if the product is greatly overheated.

Thermal decomposition:

approx. 300 °C

To avoid thermal decomposition, do not overheat.

Corrosion to metals:

No corrosive effect on metal.

Oxidizing properties:

not fire-propagating

11. Toxicological information

N/A = Not Applicable

Acute toxicity

Information on: acrylonitrile

Assessment of acute toxicity:

Of high toxicity after short-term inhalation. Of high toxicity after short-term skin contact. Of high toxicity after single ingestion.

Information on: Styrene

Assessment of acute toxicity:

Of moderate toxicity after short-term inhalation. High concentrations in the air may cause narcosis. Virtually nontoxic after a single skin contact. Virtually nontoxic after a single ingestion. Harmful: may cause lung damage if swallowed.

Information on: Styrene, acrylonitrile, 1,3-butadiene decomp.

Oral:

No data available concerning acute toxicity.

Dermal:

No data available concerning acute toxicity.

Irritation / corrosion

Information on: acrylonitrile

Assessment of irritating effects:

Irritating to skin. May cause severe damage to the eyes.

Information on: Styrene

Assessment of irritating effects:

Eye contact causes irritation. Skin contact causes irritation.

Information on: Styrene, acrylonitrile, 1,3-butadiene decomp.

Assessment of irritating effects:

Thermal decomposition products of the substance can irritate the eyes, skin, and respiratory tract.

Skin:

Prolonged contact with the product can result in skin irritation.

Eye:

Similar findings as for skin apply to eyes.

Sensitization

Information on: Styrene

Assessment of sensitization:

Skin sensitizing effects were not observed in animal studies.

No data available concerning sensitizing effects.

No data available concerning sensitizing effects.

Repeated dose toxicity

Information on: Styrene

Assessment of repeated dose toxicity:

The substance may cause deafness after repeated inhalation.

Carcinogenicity

Information on: acrylonitrile

The substance caused cancer in animal studies.

IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans).

N/A = Not Applicable

SAFETY DATA SHEET (SDS)

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Information on: Styrene

IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans). NTP listed as reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Information on: acrylonitrile

Animal studies gave no indication of a fertility impairing effect at doses which were not toxic to the parental animals.

Other Information:

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

12. Ecological Information

Degradability / Persistence

Biological / Abiological Degradation

Evaluation: The polymer component of the product is poorly biodegradable. The insoluble fraction can be removed by mechanical means in suitable waste water treatment plants.

Bioaccumulation

The product will not be readily bioavailable due to its consistency and insolubility in water.

Other adverse effects:

No data can be given due to the product's insolubility in water.

13. Disposal considerations

Waste disposal of substance:

This product is not regulated by RCRA. This product is not regulated by CERCLA ("Superfund"). Incinerate in a licensed facility. Do not discharge substance/product into sewer system. Dispose of in accordance with national, state and local regulations.

Container disposal:

Dispose of in accordance with national, state and local regulations.

14. Transport Information

Land transport

USDOT

Not classified as a dangerous good under transport regulations

Sea transport

IMDG

Not classified as a dangerous good under transport regulations

Air transport

IATA/ICAO

Not classified as a dangerous good under transport regulations

15. Regulatory Information

Federal Regulations

Registration status:

Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Not hazardous;**EPCRA 313:****CAS Number Chemical name**

100-42-5 Styrene

State regulations**State RTK CAS Number Chemical name**

MA, NJ, PA 100-42-5 Styrene

MA, NJ, PA 107-13-1 acrylonitrile

CA Prop. 65:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

16. Other Information

Recommended use: for industrial processing only

HMIS III rating

Health: 1 Flammability: 1 Physical hazard: 0

NFPA and HMIS use a numbering scale ranging from 0 to 4 to indicate the degree of hazard. A value of zero means that the substance possesses essentially no hazard; a rating of four indicates extreme danger. Although similar, the two rating systems are intended for different purposes, and use different criteria. The NFPA system was developed to provide an on-the-spot alert to the hazards of a material, and their severity, to emergency responders. The HMIS system was designed to communicate workplace hazard information to employees who handle hazardous chemicals.

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.