



# PC-ABS Model

Material Safety Data Sheet

104589-0002

## 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Product Name	PC-ABS Model
Chemical Name	Polycarbonate – Acrylonitrile/Butadiene/Styrene Polymer Blend
Material Number	3541146
Chemical Family	Thermoplastic Polymer
General Use	Filament for Stratasys <sup>®</sup> Inc. FDM <sup>™</sup> modelers
Manufacturer and Address	Stratasys, Inc. 7665 Commerce Way Eden Prairie, MN 55344-2080 USA
Emergency Telephone Number	+1 952-937-3000

## 2. COMPOSITION, INGREDIENT INFORMATION

COMPONENT	CAS #	%	OSHA/PEL	ACGIH/TLV
Polycarbonate-Acrylonitrile/Butadiene/Styrene	Not applicable	> 99.9	N/E	N/E
Styrene	100-42-5	≤ 0.1	N/E	N/E

N/E=Not established. This product is not considered hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR § 1910.1200.

## 3. HAZARDS IDENTIFICATION

Emergency Overview	Black filament with slight or no odor. Can burn in a fire creating dense toxic smoke. Molten plastic can cause severe thermal burns. Fumes produced during melt processing may cause eye, skin, and respiratory tract irritation. Secondary operations, such as grinding, sanding, or sawing, can produce dust that may present an explosion or respiratory hazard.
HMIS Ratings	Health: 0                      Flammability: 1                      Reactivity: 0
Inhalation	Unlikely due to physical form
Eye Contact	Fumes that contact the eye may be irritating or cause mechanical injury
Skin Contact	Unlikely to cause irritation even on repeated contact. Molten plastic can cause severe thermal burns.
Ingestion	No hazard in normal industrial use
Chronic	NTP: not tested, OSHA: not regulated, IARC: not listed
Carcinogenicity	NTP: not tested, OSHA: not regulated, IARC: not listed

## 4. EMERGENCY AND FIRST AID MEASURES

Inhalation	No specific treatment is necessary since this material is not likely to be hazardous by inhalation
Skin Contact	Remove contaminated clothing. Wash thoroughly with soap and water immediately. Get medical attention if irritation or burns develop.
Eye Contact	In cases of contact, hold eyelids apart and immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
Ingestion	If swallowed, call a physician. Give large amounts of water to drink. Never give anything by mouth to an unconscious person.

## 5. FIRE-FIGHTING MEASURES & EXPLOSION HAZARD DATA

Flash Point	Not applicable
Autoignition Temperature	482° C (899.6° F)
Extinguishing Media	Water spray, foam, dry chemical, and carbon dioxide (CO <sub>2</sub> ). Water is the best extinguishing media.
Special Fire-Fighting Procedures	Approved pressure demand breathing apparatus and protective clothing should be used for all fires. Water spray is the preferred extinguishing medium.
Unusual Fire and Explosion Hazards	Impact Sensitivity: Not sensitive to mechanical impact Static Discharge: Not sensitive to static discharge
Hazardous Decomposition Products	Hazardous combustion products may include intense heat, dense smoke, carbon monoxide, carbon dioxide, and hydrocarbon fragments
Lower and Upper Flammable Limit	Not established
Conditions of Flammability	Requires a continuous flame source to ignite
Impact Sensitivity	Not sensitive to mechanical impact
Static Discharge	Not sensitive to static discharge

## 6. ACCIDENTAL RELEASE MEASURES

General	Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy adverse effects of the spill.
Specific	Contain spill. Sweep up material for recycling or disposal. Do not wash residues into drains or other waterways.



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## 7. HANDLING & STORAGE

Handling	Keep materials dry and avoid temperatures over 93° C (199.4° F)
Storage	Store in a cool, well-ventilated area. Keep container tightly closed.

## 8. EXPOSURE CONTROLS & PERSONAL PROTECTION

Although some of the additives used in this product may have exposure guidelines, these additives are encapsulated in the product and no exposure would be expected under normal handling conditions.

Ventilation	Use with adequate ventilation to provide a continuous supply of fresh air
Respiratory	Not needed. If dust is produced in a secondary operation, use a respirator approved for protection from dust.
Eye Protection	Safety glasses with side shields are recommended for any type of handling. Dust-tight goggles are recommended for dusty operations of areas where vapors accumulate.
Skin	Wear well-insulated gloves when handling melt

Country specific exposure limits have not been established or are not applicable.

### Styrene (100-42-5)

US ACGIH Threshold Limit Values	Time Weighted Average (TWA): 20 ppm
US ACGIH Threshold Limit Values	Short Term Exposure Limit (STEL): 40 ppm
US ACGIH Threshold Limit Values	Hazard Designation: Group A4 not classifiable as a human carcinogen
US OSHA Table Z-2 (29 CFR 1910.1000)	Time Weighted Average (TWA): 100 ppm
US OSHA Table Z-2 (29 CFR 1910.1000)	Ceiling Limit Value: 200 ppm
US OSHA Table Z-2 (29 CFR 1910.1000)	Maximum concentration: 600 ppm (5 minutes in any 3 hours)

**9. PHYSICAL & CHEMICAL PROPERTIES**

Appearance	Solid plastic filament
Odor	Slight or no odor
Vapor Pressure (mmHg)	Negligible
Vapor Density	Not applicable
Melting Point	This product does not exhibit a sharp melting point but softens gradually over a wide range of temperature
Boiling Point	Not applicable
Specific Gravity (Water =1)	1.2
Volatile By Volume (Water)	Negligible
Solubility In Water	Insoluble
Autoignition Temperature	482° C (899.6° F)
Decomposition Temperature	277° C (530.6° F)
Softening Point	200° C (392 ° F)
pH	Not applicable
Octanol/Water Partition Coefficient	Not determined

**10. STABILITY & REACTIVITY**

Stability	Stable
Reactivity	Not reactive under conditions of handling, storage, processing, and use
Conditions to Avoid	Do not exceed liquefier temperatures of 400° C (752° F)
Hazardous Polymerization	Will not occur
Incompatibility	Acids and strong oxidizing agents
Hazardous Fire and Thermal Decomposition Products	Carbon Dioxide, Water, Styrene, Acrylonitrile, Hydrogen Cyanide, Carbon Monoxide, and Hydrocarbons

## 11. TOXICOLOGICAL DATA

### Toxicity Data for Styrene/Acrylonitrile Copolymer (SAN):

Eye Irritation	No eye irritation (rabbit)
Skin Irritation	Product not considered primary skin irritant. Draize Skin Primary Irritation Score (rabbit) for similar products, in finely divided form, for a 24-hour exposure is 0. Not expected to be a skin sensitizer based on results of Modified Buehler Guinea Pig Sensitization Test from similar products.
Acute Oral	LD50: 1,800 mg/kg (rat) LD50: 1,000 mg/kg (mouse)
Acute Dermal	LD50: >2,000 mg/kg (rabbit), estimated value
Acute Inhalation	Processing fumes from similar products are not considered toxic. In acute inhalation tests, laboratory rats were exposed to processing fumes at concentrations exaggerating those that would likely occur in workplace situations. No deaths or signs of toxicity, except transient irritancy in some cases, were noted during the six-hour fume exposure tests. There was no distinct or consistent treatment of related tissue or organ changes noted in gross necropsies.

### Toxicity Data for Acrylonitrile/Butadiene/Styrene Terpolymer:

Eye Irritation	Product not considered primary eye irritant. When similar products, in finely divided form, were placed into the eyes of rabbits, slight transient redness or discharge occurred – consistent with the expected slightly abrasive nature of the resin particles.
Skin Irritation	Product not considered primary skin irritant. Draize Skin Primary Irritation Score (rabbit) for similar products, in finely divided form, for a 24-hour exposure is 0. Not expected to be a skin sensitizer based on results of Modified Buehler Guinea Pig Sensitization Test from similar products.
Acute Oral	LD50: 5,000 mg/kg (rat)
Acute Dermal	LD50: >2,000 mg/kg (rabbit), estimated value
Acute Inhalation	Processing fumes from similar products are not considered toxic. In acute inhalation tests, laboratory rats were exposed to processing fumes at concentrations exaggerating those that would likely occur in workplace situations. No deaths or signs of toxicity, except transient irritancy in some cases, were noted during the six-hour fume exposure tests. There was no distinct or consistent treatment of related tissue or organ changes noted in gross necropsies.



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### 12. ECOLOGICAL INFORMATION

#### Ecological information for Acrylonitrile/Butadiene/Styrene Terpolymer:

General	Not expected to present any significant ecological problems
Fish Toxicity	LC50: 18 mg/l, Common Carp/Cyprinus Carpio, 96 hours
Daphnia Toxicity	No data available
Bioaccumulation	Does not bioaccumulate
Biodegradation	Not readily biodegradable

### 13. DISPOSAL CONSIDERATIONS

Product is not a RCRA hazardous waste. Disposal of wastes and used containers must be in accordance with applicable federal, state and local regulations.

### 14. TRANSPORT INFORMATION (NOT MEANT TO BE ALL-INCLUSIVE)

U.S. Department of Transportation (D.O.T.)	This product is not regulated by D.O.T. when shipped domestically by land
Canadian TDG Information	This product is not regulated by TDG when shipped domestically by land

**15. REGULATORY INFORMATION (NOT MEANT TO BE ALL-INCLUSIVE)**

This product does not contain reportable quantities of substances subject to supplier notification.

**United States Federal Regulations****OSHA Hazcom Standard Rating**

Non-hazardous

**US Toxic Substances Control Act (TSCA) Status**

Listed on the TSCA inventory

**US EPA CERCLA Hazardous Substances (40 CFR 302)**

Components: none

**SARA Section 311/312 Hazard Categories**

Non-hazardous under Section 311/312

**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

**US EPA Emergency Planning and Community Right-to-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) – Supplier Notification Required**

Components: none

**US EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261)**

If discarded in its 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).

**State Right-to-Know Information**

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements, you should contact the appropriate agency in your state.

The concentrations reported below in units of parts per million (ppm) or parts per billion (ppb) are maximum values.

**Massachusetts, New Jersey, or Pennsylvania Right-to-Know Substance Lists:**

Weight (%)	Components	CAS #
≥ 1	Bisphenol A Polycarbonate	25971-63-5
≥ 1	Styrene/Acrylonitrile Copolymer (SAN)	9003-54-7
≥ 1	Acrylonitrile/Butadiene/Styrene Terpolymer	9003-56-9

**Pennsylvania Right-to-Know Special Hazard Substance List:**

Weight (%)	Components	CAS #
0.01	Acrylonitrile	107-13-1

**MA Right-to-Know Extraordinarily Hazardous Substance List:**

Weight (%)	Components	CAS #
0.01	Acrylonitrile	107-13-1

**California Prop. 65:**

This product contains chemical(s) known to the State of California to be carcinogenic.

Weight (%)	Components	CAS #
0.01	Acrylonitrile	107-13-1
0.0003	Methylene Chloride	75-09-2

**16. OTHER INFORMATION**

THE INFORMATION contained in the PROCEEDING report is based upon current knowledge, our experience with the product, and is not exhaustive. While not guaranteed, the information presented herein was prepared by a competent, technical professional and is true and accurate to the best of our knowledge. The information applies to product as defined by the specifications. If the product is mixed with other substances, the customer must confirm that no new hazards exist. In all cases, the user is not exempt from following all legal, administrative and regulatory procedures relating to the product, personal hygiene, and the integrity of the work environment. Stratasys® shall not be held liable for any damage resulting from handling or from contact and use with the above product.

**Revision History**

Revision	Revision Date
104589-0001	2005-05-23
104589-0002	2008-07-10