

**SECTION 1 - IDENTIFICATION**

**COMPANY ADDRESS:**

The Virtual Foundry, Inc  
 211 S Water St  
 Stoughton, WI 53589  
 USA

PRODUCT NAME: **Pyrex® (Borosilicate) Filamet™**

PRODUCT USE: Manufacture of metal parts by extrusion, injection-molding, or 3D printing.

**SECTION 2 - HAZARDS IDENTIFICATION SUMMARY**

(As defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200)

**PHYSICAL HAZARDS:** Contact with product at elevated temperatures can result in thermal burns. Inhalation of dusts and vapors of melted material from this product may cause irritation of the eyes, nose, throat and respiratory system. May cause coughing or shortness of breath. Mechanical eye irritant. May cause tearing and redness. Mechanical skin irritant. Prolonged contact may cause skin abrasion, redness, itching. Irritating to the respiratory tract. Large overdoses may cause nervous system disturbances, and diarrhea. May cause nausea and vomiting. No long-term health effects are anticipated.

**HAZARD STATEMENTS:** Irritating to eyes and respiratory tract. Exposure may include persistent cough, shortness of breath.

**OTHER HAZARDS:** No information available.

**SECTION 3 - COMPOSITION, INFORMATION OF INGREDIENTS**

<b>Base Material</b>	<b>CAS No.</b>	<b>%by Weight</b>
Borosilicate Glass	65997-17-3	73.0
<b>Chemical Name</b>	<b>CAS No.</b>	<b>%by Weight</b>
2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene	9003-56-9	trace
Binding Additive	Proprietary	trace
Polylactic Acid	9051-89-2	<30%

**SECTION 4 - FIRST AID MEASURES**

**IF SWALLOWED:** Rinse mouth out with water. Induce vomiting if significant quantities are ingested. Seek medical attention.

**IF ON SKIN OR CLOTHING:** Wash skin with soap and water. For molten polymer burns or if irritation develops, seek medical attention.

**IF IN EYES:** Immediately flush eyes with water to remove dust particles. If irritation develops, seek medical attention.

**IF INHALED:** Immediately remove the affected person to fresh air. If irritation develops, seek medical attention.

**MAIN SYMPTOMS:** Redness, coughing and/or wheezing. May aggravate existing pulmonary conditions if a high dust situation is created.

**NOTE TO PHYSICIAN:** Treat symptomatically.

## **SECTION 5 - FIRE FIGHTING MEASURES**

### **FLAMMABILITY**

**AUTOIGNITION TEMPERATURE:** 388°C

**SUITABLE EXTINGUISHING MEDIA:** Foam, carbon dioxide, dry chemical, water.

**UNSUITABLE EXTINGUISHING MEDIA:** No information available.

**SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:** No information available.

**HAZARDOUS COMBUSTION PRODUCTS:** No information available.

### **EXPLOSION DATA**

**SENSITIVITY TO MECHANICAL IMPACT:** Not sensitive.

**SENSITIVITY TO STATIC DISCHARGE:** No information available.

**FIRE FIGHTING INSTRUCTIONS AND FIRE FIGHTING EQUIPMENT:** No information available.

**ADDITIONAL INFORMATION:** No information available.

**PERSONAL PROTECTIVE EQUIPMENT:** No information available.

## **SECTION 6 - ACCIDENTAL RELEASE MEASURES**

**PERSONAL PRECAUTIONS:** Ensure adequate ventilation. Standard personal protection equipment (PPE). Avoid contact with skin and eyes. Avoid dust formation.

**ENVIRONMENTAL PRECAUTIONS:** Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains, and sewers. Should not be released into the environment, may be dangerous to birds and small animals.

**METHODS FOR CLEANING UP:** Pick up with shovel or mechanical equipment. Wet methods and vacuuming may be used on spills.

**SECTION 7 - HANDLING AND STORAGE**

**HANDLING:** Use personal protective equipment. Workers should be protected from the possibility of contact with molten material during fabrication. Avoid contact with eyes. Low hazard for usual industrial or commercial handling. Avoid accumulations of dust.

**STORAGE:** Keep tightly closed in a cool, dry and well-ventilated environment. Keep away from heat, sparks, and flames. Keep away from incompatible materials. Store at temperatures not exceeding 50°C.

**SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION**

**EXPOSURE LIMITS**

Base Material	CAS No.	%by Weight	ACGIH TLV (Mg/M <sup>3</sup> )	OSHA PEL (Mg/M <sup>3</sup> )
Borosilicate Glass	65997-17-3	73.0	Not Listed	15.0 (Total) 5.0 (Resp.)

COMPONENT	OSHA PEL	ACGIH TLV	NIOSH IDLH
2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene 9003-56-9	-	-	-

**TLV:** Threshold Limit Value over 8 hours of work.

**PEL:** Permissible Exposure Limit

**ADDITIONAL PROTECTION:** Provide eyewash station and washing facilities accessible to areas of use and handling.

**ENGINEERING CONTROLS**

**Engineering Measures:** Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

**EXPOSURE MONITORING**

**Exposure Limits:** See table above.

**Hygiene Measures:** Avoid contact with eyes.

**PERSONAL PROTECTIVE EQUIPMENT**

**Eye protection:** Avoid eye contact. To minimize the risk of injury to eyes, always wear appropriate protective safety glasses, side-shields, or chemical safety goggles.

**Skin protection:** Avoid skin contact with molten polymer. Wear appropriate protective clothing to minimize risk of injury to the skin from contact with dust or physical abrasion. Long sleeved/impervious clothing if contact is probable and skin is sensitive. Protect contact with skin when processing; while material is hot, wear insulated safety gloves; wash hands after handling. Coveralls should be made from fire resistive materials which tend to not accumulate static charges. They should be designed in such a way as to avoid accumulation of dust in cuffs, pockets, etc.

**Respiratory protection:** If airborne dust exposure approaches the TLV or PEL use half-mask or full-face air

purifying respirator equipped with NIOSH or MSHA-approved high efficiency filters for protection against pneumoconiosis-producing dust. An airline respirator may be required where dust levels are extremely high.

**Hand protection:** While material is hot, wear insulated safety gloves; wash hands after handling.

**Hygiene measures:** Provide regular cleaning of equipment, work area and clothing. Handle in accordance with good industrial hygiene and safety practices. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Avoid contact with eyes. Do not breathe dust. Use personal protective equipment as required.

**Special hazard:** Workers should be protected from the possibility of contact with molten material during fabrication.

**Environmental Protection:** Do not allow to enter drains or watercourses.

**SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State:</b>	Solid
<b>Appearance:</b>	Filament, Pellets
<b>Color:</b>	Whiteish
<b>Odor:</b>	Slight
<b>Odor Threshold:</b>	No information available.
<b>Melting/Freezing Point:</b>	150-180°C (302- 356°F)
<b>Boiling Point:</b>	No information available.
<b>Flash Point:</b>	No information available.
<b>Evaporation Rate:</b>	No information available.

<b>Flammability:</b>	No information available.
<b>Flammability Limits:</b>	No information available.
<b>Vapor Pressure:</b>	Not applicable
<b>Vapor Density:</b>	Not applicable
<b>Specific gravity:</b>	1.5 (H2O=1)
<b>Relative Density:</b>	No information available.
<b>Water Solubility:</b>	Negligible (<0.1%), Insoluble in cold and hot water
<b>Percent Volatile (v/v):</b>	0%
<b>Chemical Stability:</b>	No information available.
<b>Conditions to avoid:</b>	No information available.
<b>Solubility in other solvents:</b>	Insoluble
<b>Partition Coefficient:</b>	No information available.
<b>Auto-Ignition Temperature:</b>	388°C
<b>Hazardous Decomposition Products:</b>	No information available.
<b>Possibility of Hazardous Reactions:</b>	No information available.
<b>Hazardous Polymerization:</b>	No information available.
<b>Decomposition Temperature:</b>	250°C
<b>Viscosity:</b>	No information available.
<b>Explosive Properties:</b>	No information available.
<b>Oxidizing Properties:</b>	No information available.
<b>Other Information:</b>	
Softening Point:	80-100°C
VOC Content (%)	negligible
Bulk Density:	0.8-1.3 g/cc (50-80 lb/ft <sup>3</sup> )
MEC:	45-120 (g/m <sup>3</sup> )
MIE:	4-13 (mJ)
KST:	90-300 (bar-m/sec)
MIT (layer):	650°C

**SECTION 10 - STABILITY AND REACTIVITY**

**INCOMPATIBILITY:**

**CHEMICAL STABILITY:** Stable under recommended storage conditions.

**HAZARDOUS POLYMERIZATION:** Will not undergo hazardous polymerization.

**CONDITIONS & MATERIALS TO AVOID:** Avoid keeping resin molten for excessive periods of time at elevated temperatures. Prolonged exposure will cause polymer degradation. Dust formation. Oxidizing agents/materials, Strong bases. Incompatible with strong oxidizing agents and halogens.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Burning produces noxious and toxic fumes, Carbon monoxide (CO), Carbon Dioxide (CO<sub>2</sub>). Exothermic reaction with water, acids, alkalis, to generate hydrogen and heat.

**SECTION 11 - TOXICOLOGICAL INFORMATION**

**Principal routes of exposure:** Skin contact.

**PRODUCT INFORMATION:**

**Acute toxicity:** None established.

**Chronic toxicity:** None established.

**Specific effects:** None established.

**Long term toxicity:** None established.

**Mutagenic effects:** None established.

**Reproductive toxicity:** None established.

**Carcinogenic effects:** This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

COMPONENT	ACGIH	IARC	NTP	OSHA
2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene 9003-56-9	-	Group 3	-	--

**Target organ effects:** Eyes, Respiratory system.

**Ingestion:** May cause gastrointestinal discomfort if consumed in large amounts. Not an expected route of exposure.

**Inhalation:** Inhalation of dust in high concentration may cause irritation of the respiratory system.

**Eye Contact:** Dust contact with the eyes can lead to mechanical irritation.

**Symptoms related to the physical, chemical, and toxicological characteristics:** Redness. Coughing and/or wheezing.

**Delayed and immediate effects and also chronic effects from short and long term exposure:**

**Irritation:** Product dust may be irritating to eyes, skin, and respiratory system.

## **SECTION 12 - ECOLOGICAL INFORMATION**

**Ecotoxicity:** Pellets may be eaten by wildlife and should be swept up and placed in closed containers. EC50/72h/algae > 1100 mg/L

**Persistence and degradability:** Not readily biodegradable.

**Bioaccumulation:** Not expected to bioconcentrate or bioaccumulate.

**Mobility:** Is not likely mobile in the environment.

**Other adverse effects:** This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

**Ozone:** Not applicable.

## **SECTION 13 - DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL METHODS:** Solid or chemical waste generators must determine whether a discarded waste is classified as a hazardous waste. U.S. EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local waste regulations to ensure complete and accurate classification. Should not be released into the environment. Do not contaminate ponds, waterways or ditches with product or used containers.

**CONTAMINATED PACKAGING:** Empty remaining contents. Do not re-use empty containers. Empty containers should be transported/delivered using a registered waste carrier to local recyclers for disposal.

## **SECTION 14 - TRANSPORT INFORMATION**

**DOT:** Not regulated.

**MEX:** Not regulated.

**ICAO:** Not regulated.

**IATA:** Not regulated.

**IMDG:** Not regulated.

**UN NUMBER:** N/A.

**SECTION 15 - REGULATORY INFORMATION**

**DOT:** This product is not regulated by USDOT as a Hazardous Material (49 CFR 172.101). No UN code assigned. No placard required for transportation.

**SARA (TITLE III):** Under applicable definitions, this material may meet the criteria for a delayed (chronic) health hazard.

**SARA (SECTION 313):** Not Listed.

**CALIFORNIA PROP. 65:** Not Listed.

**TSCA:** Not Listed.

**DSCL (EEC):** Listed on the DSCL inventory.

**RCRA HAZARDOUS WASTE NUMBER:** Not Listed.

COMPONENT	SARA 313 – Threshold Values %
1,3-butadiene 106-99-0	0.1

**SARA Title III:** Not applicable.

**CLEAN AIR ACT, TITLE VI (1990):** This product does not contain, nor was it manufactured using ozone depleting chemicals.

**CALIFORNIA PROPOSITION 65:** This product contains the following Proposition 65 chemicals:

COMPONENT	CALIFORNIA Prop. 65
1,3-butadiene	Carcinogen Developmental Female Reproductive

Inventory Status:

TSCA (USA): Listed\*

DSL (Canada): Listed\*

NDSL (Canada): Not Listed

EINECS (Europe): Listed\*

AICS (Australia): Listed\*

ENCS (Japan): Not Identified\*\*

IECSC (People’s Republic of China): Listed\*

PICCS (Philippines): Listed\*

ECL (Korea): Listed\*

ECN (Taiwan): Listed\*

\*\*Listed” indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

\*\* Pure metals are not specifically identified by CAS or ENCS number.



**SECTION 16 - OTHER INFORMATION, INCLUDING THE DATE OF PREPARATION OF THE LAST REVISION**

**LABEL REQUIREMENTS:** Not expected to produce significant adverse health effects when the recommended instructions for use are followed.

NFPA HAZARD RATINGS	HEALTH	0
	FLAMMABILITY	1
	PHYSICAL HAZARD	0
	INSTABILITY	-
	4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

HMIS HAZARD RATINGS	HEALTH	0
	FLAMMABILITY	1
	PHYSICAL HAZARD	0
	PERSONAL PROTECTION	X
	4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

**DISCLAIMER:** The information provided in this SDS is based on available data from reliable sources and is correct to the best of The Virtual Foundry, Inc's knowledge. The Virtual Foundry, Inc makes no warranty, express or implied, regarding the accuracy of the data or the results obtained from the use of this product. Nothing herein may be construed as recommending any practice or any product in violation of any law or regulations. The user is solely responsible for determining the suitability of any material or product for a specific purpose and for adopting any appropriate safety precautions. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**REVISED DATE:**

December 2021