



TYPE A MACHINES

TECHNICAL AND MATERIAL SAFETY DATA SHEET (TDS / MSDS)

General

Name of Material	PerformancePLA
Description of Material	PerformancePLA is a polymer filament used in 3D Printing applications. It is used in engineering and design for prototyping and producing parts. It is sold to be consistent across batches, and in addition, consistent across color options.
CAS Number	None
Manufacturer Address	14570 Industrial Park Road, Suite E, Bristol, VA 24202

Hazards Identification

Classification of the Product	No need for classification according to GHS criteria for this product.
Label Elements	The product does not require a hazard warning label in accordance with GHS criteria.
Non-Classification Hazards: Eyes	No significant eye irritation or eye toxicity during normal use.
“ “ “ Skin	No significant skin irritation. Molten polymer may cause thermal burns.
“ “ “ Ingestion	May cause irritation to the throat, mouth and stomach and / or may cause nausea.
“ “ “ Inhalation	Inhalation of process fumes and vapors may cause irritation in the respiratory system.
“ “ “ Chronic Health Effects	No known chronic health effects.

Composition / Information on ingredients

Disclaimer	This product contains a proprietary blend of components encapsulated within a polymer matrix. These components are not regarded as hazardous under 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200. The specific chemical identity of this product is withheld because it is trade secret information of Universal Fibers, Inc.
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First Aid Measures

Inhalation	Move to fresh air. Get immediate medical attention.
Skin Contact	No adverse effects are expected from accidental skin contact. If persistent skin irritation occurs, call a physician. If skin contact with hot polymer occurs, cool the skin rapidly with cold water. Do not attempt to remove hot polymer from the skin as the skin may be easily damaged. Get medical attention if significant burns occur.
Eye Contact	Rinse immediately with plenty of water for at least 15 minutes, including under the eye lids. Get immediate medical attention.
Ingestion	Drink water as a precaution. Do not induce vomiting without medical advice. Get immediate medical attention.

Fire Fighting Measures

Suitable Extinguishing Media	Foam, carbon dioxide (CO ₂), dry chemical, and water fog
Fire Fighting Procedures	Firefighters must wear NIOSH-approved positive pressure self-contained breathing apparatus with full-face mask and full protective clothing.
Hazardous Combustion Products	Burning may produce carbon monoxide, carbon dioxide, hydrocarbons and other possible irritating or toxic substances.
Unusual Fire and Explosion Hazards	This product does not have unusual fire and explosion hazards. However, dust and fumes generated from burning of this product could present an explosion hazard.

Accidental Release Measures

Personal Precautions	Use personal protective equipment. Avoid contact with skin and eyes. Avoid dust formation. Remove sources of ignition. Sweep up to prevent slipping hazard.
Environmental Precautions	Do not flush into surface or sanitary sewer systems. Do not allow material to contaminate ground water system.
Cleanup Methods	Clean up promptly by scoop or vacuum. Sweep up and shovel in to suitable containers for disposal.

Handling and Storage

Handling	Avoid excessive heat and sources of ignition. Protect from moisture and sunlight.
Storage	Store in a cool, dry, well ventilated storage area. Avoid excessive heat and sources of ignition. Protect from moisture and sunlight.

Exposure Controls / Personal Protection

Exposure Limits	None established.
Engineering Controls	Store in a cool, dry, well ventilated storage area. Avoid excessive heat and sources of ignition. Protect from moisture and sunlight.
Respiratory Protection	Not required under normal process conditions and with adequate ventilation. However, should conditions exist that require respiratory protection, a NIOSH / MSHA approved respirator should be worn.
Eye Protection	Safety glasses with side-shields or goggles.
Body Protection	Impervious clothing.
Hygiene Measures	Good industrial hygiene practice should be observed by washing after use. Avoid contact with skin, eyes and clothing.

Physical and Chemical Properties

Appearance	Avoid excessive heat and sources of ignition. Protect from moisture and sunlight.
Odor	Store in a cool, dry, well ventilated storage area. Avoid excessive heat and sources of ignition. Protect from moisture and sunlight.
Boiling Point	Not measured.
Melting Point	150 – 180°C (302 – 356°F)
Decomposition Temperature	482°F (250°C)
Vapor Pressure	No data available.
Vapor Density	No data available.
Solubility in Water	Insoluble
Specific Gravity	1.25 g/cm ³
pH	Not applicable.

Toxicological and Ecological Information

Toxicological Information	No data available.
Ecotoxicity	No information available.
Persistence and Degradability	No information available.
Bioaccumulative Potential	No information available.
Disposal Considerations	Dispose of this product in accordance with local, state and federal regulations.

Transport Information

U.S. Department of Transportation (DOT)	This product is not regulated for transport.
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Regulatory Information

U.S. Toxic Substances Control Act (TSCA):	All the component(s) comprising this product are either exempt or listed on the TSCA inventory.
SARA Title III, Section 313	This product does not contain any components that exceed the threshold reporting levels established by SARA Title III, Section 313
Disclaimer	The information contained herein is accurate to the best of our knowledge. Neither Type A Machines nor Universal Fibers, Inc., makes no warranty of any kind, expressed or implied, concerning the safe use of this material in your process or in combination with other substances.

Original Document Information for Information Above

Disclaimer	The information on this document is copied from the original document, whose information is mentioned below. The information is provided by Universal Fibers, Inc for a product under the Type A Machines brand.
Revision Date	09/03/2015
Revision Indicator	SDS Revision # 2

Technical Properties

Property	Testing Method	Value	Comments
Melt Flow Index (g/10 min)	ASTM D1238	5 – 15	Dependent on color. Tested at < 400 ppm moisture
Density (g/cm ³)	ASTM D792	1.24	Resin Manufacturer data
Glass Transition Temperature (°C)	ASTM D3418	55-60	Resin Manufacturer data
Heat Deflection Temperature (°C)*	ASTM D648 at 66 psi	53	
Flexural Modulus (kpsi)	ASTM D790	275	
Tensile Strength at Break (psi) *	ASTM D638, Type IV	3640	
Tensile Strength at Yield (psi) *	ASTM D638, Type IV	5604	
Tensile Elongation (%) *	ASTM D638, Type IV	3.0	
Tensile Modulus (kpsi)*	ASTM D638, Type IV	336	
Notched Izod Impact (Jm ⁻¹)*	ASTM D256	95	
Chemical Resistance	Unknown	Toluene: Sparingly soluble Isopropyl alcohol: Insoluble Heptane: Slightly soluble	Resin Manufacturer data
* 3D printed test specimens, 100 % solid, y-axis orientation			