Emergency HOTLINE: 1-717-665-2421
Monday-Friday; 8:00 AM – 5:00 PM, EST

1. PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER'S NAME: Fenner Drives
ADDRESS: 311 W. Stiegel Street, Manheim, PA 17545
TELEPHONE NO. +1.717.665-2421 (Monday – Friday, 8:00 a.m. – 5:00 p.m., EST)
PRODUCT NAME &/OR NUMBER:
- EEL

TRADE NAME & SYNONYM:
EEL 3D Printing Filament
CHEMICAL NAME & SYNONYM: Thermoplastic polyurethanes
CHEMICAL FAMILY: Mixture **FORMULA:** Not Applicable

2. HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW

Black colored odorless solids
The solid material is not hazardous and is not expected to cause irritation
Hazardous airborne contaminants may occur during decomposition such as in fused deposition modeling processes
Under hot melt processing conditions, wear personal protective equipment to prevent thermal burns
During a fire, irritating and highly toxic gases may be generated

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HAZARD CLASSIFICATION

Not classified

LABEL ELEMENTS:
HAZARD SYMBOL: No symbol
SIGNAL WORD: No signal word
HAZARD STATEMENT: Not applicable

POTENTIAL HEALTH EFFECTS

ACUTE TOXICITY:
IRRITATION/CORROSION: Not likely to result in irritation in solid form. Thermal decomposition may result in release of toxic airborne contaminates which can be irritating to eyes, skin and respiratory tract.
SENSITIZATION: The chemical structure does not suggest a sensitizing effect.

CHRONIC TOXICITY:
CARCINOGENICITY: The chemical structure does not suggest a specific alert for such an effect.
REPEATED DOSE TOXICITY: No known chronic effects.
GENOTOXICITY: The chemical structure does not suggest a mutagenic effect.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LEVEL
- Carbon Black	1333-86-4	≤ 18	OSHA PEL = ACGIH TLV = 3.5 mg/m^3
- Silica, cristobalite	14464-46-1	≤ 0.3	OSHA PEL = 0.05 mg/m^3; ACGIH TLV = 0.25 mg/m^3
Thermoplastic Polyurethane Resins	Proprietary	≥ 82	None established

Note: This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). The hazardous chemicals are bound within the applicable polymer structures; therefore; the material is not GHS classified for health and environmental hazards as exposure is not expected.

4. FIRST AID MEASURES

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INGESTION: Solid material; not expected to be ingested. If ingested, rinse mouth and then drink plenty of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Seek medical attention required.
SKIN: Solid material is not expected to pose a hazard in normal use, however skin contact with hot molten substance/product may cause thermal burns. Cool with plenty of water. Get medical attention if needed.
EYES: Fumes or vapors may cause slight irritation during fused deposition modeling process.
INHALATION: Not likely to result in irritation in solid form. Thermal decomposition may result in release of toxic airborne contaminants. Remove exposed individual to fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

MOST IMPORTABNT SYMPTOMS and EFFECTS, ACUTE and DELAYED.

ACUTE TOXICITY:
IRRITATION/CORROSION: Not likely to result in irritation in solid form. Thermal decomposition may result in release of toxic airborne contaminates which can be irritating to eyes, skin and respiratory tract
SENSITIZATION: The chemical structure does not suggest a sensitizing effect.

CHRONIC TOXICITY:
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REPEATED DOSE TOXICITY: No known chronic effects.
GENOTOXICITY: The chemical structure does not suggest a mutagenic effect.

INDICATION of any IMMEDIATE MEDICAL ATTENTION and SPECIAL TREATMENT NEEDED:
HARARDS: None
TREATMENT: **Treat symptomatically**

5. FIRE FIGHTING MEASURES

AUTOIGNITION: >400°C
GENERAL FIRE HAZARDS: No unusual fire or explosion hazards noted.
EXTINGUISHING MEDIA: Water spray, foam, dry extinguishing media, carbon dioxide.
UNSUITABLE EXTINGUISHING MEDIA: Not determined.
FIREFIGHTING HAZARDS: Carbon monoxide, carbon dioxide, and other products of incomplete combustion. May also include isocyanates and small amounts of hydrogen cyanide.
SPECIAL FIREFIGHTING PROCEDURES: Thermoplastic polymers can burn. Protect product from flames; maintain proper clearance when using heat devices, etc. Irritating or toxic substances will be emitted upon burning, combustion or decomposition. Large masses of molten polymer held at elevated temperatures for extended periods of time may auto-ignite.
FIRE-FIGHTING EQUIPMENT: Use self-contained breathing apparatus.

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

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: No measures required.
METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: Normal housekeeping or clean-up to avoid tripping hazard. Keep from entering sewers, lakes or streams. Industrial waste incineration is the recommended method of disposal, to be performed in accordance with Federal, State and local regulations.
ENVIRONMENTAL PRECAUTIONS: Avoid release to the environment. Do not contaminate water sources or sewer.

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Observe good industrial hygiene practices. Use personal protective equipment as required. Contact with heated material may cause thermal burns. Wear gloves when handling hot material Wash thoroughly after handling.
Refer to the Maximum Handling Temperature for melt processing temperature range. Heating above the maximum handling temperature can generate hazardous decomposition products (see Section 10). Fume condensates may include hazardous contaminants from additives. Condensate may be combustible and should be periodically removed from exhaust hoods, ductwork, and other surfaces. Impervious gloves should be worn during cleanup operations to prevent skin contact.
Post thermal processing activities necessary to produce molded articles (such as cutting, sanding, sawing, grinding, drilling, or regrinding) may create dust or fines. Powders, dust, and/or fines may pose a dust explosion hazard. Avoid breathing dust.
Conduct operations emitting fumes or vapors (including thermoforming, heat joining, cutting and/or sealing of articles and cleanup) under well-ventilated conditions. Avoid breathing process vapors. Do not hold product for extended periods of time at elevated temperatures or allow thick emitting hazardous passes. Do not taste, swallow, or chew products. Wash thoroughly after processing. Do not store or consume food in processing areas. The major off-gasses from normal melt processing are expected to be water vapor and carbon dioxide. Other trace volatile organic components may also be emitted.
Do not steam sterilize articles made with thermoplastic polyurethanes. Methylene dianiline can be generated as result.
MAXIMUM HANDLING TEMPERATURE: 221^{O}C (430^{O}F)
CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES Store in original containers at ambient environmental conditions. Segregate from foods and animal feeds. Store away from incompatible materials See section 10 for incompatible materials. Store in dry, well ventilated place away from sources of heat and direct sunlight.
MAMIUM STORAGE TEMERATURE: Not determined.
GENERAL ADVICE: Provide suitable exhaust ventilation in the area surrounding the melt outlet of fused deposition modeling printer.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS

CHEMICAL NAME	OSHA PEL	ACGIH TLV
Carbon Black	3.5 mg/m^3 TWA	3.5 mg/m^3 TWA -inhalable fraction
Silica, cristobalite – Respirable	0.05 mg/m^3 TWA	0.25 mg/m^3 TWA

NOTE: The hazardous chemicals are bound within the applicable polymer structures; therefore; the material is not GHS classified for health and environmental hazards as exposure is not expected.

APPROPRIATE ENGINEERING CONTROLS: Ensure sure adequate room ventilation to prevent buildup of dust or fumes during printing. Keep processing temperatures below decomposition temperature.

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT
GNERAL INFORMATION: Use personal protective equipment as required.
EYE/FACE PROTECTION: Wear splash goggles to protect from hot molten substance/product.
SKIN PROTECTION: Wear gloves when handling hot materials.
RESPIRATORY PROTECTION: Under normal use conditions, respirator is not usually required. Wear a NIOSH-certified (or equivalent) organic vapor respirator if exposure to dust particles, mist or vapors is likely. Cutting operations may create small particles from this product. If inhalation of particles cannot be avoided, wear a dust respirator.
HYGIENE MEASURES: Wear protective clothing to prevent contact during hot melt conditions. When using, do not eat, drink or smoke. After use wash hands with soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES+

FORM: Filament, Solid
COLOR: Black
ODOR: Faint
ODOR THRESHOLD: No data available
pH: Not applicable
RELATIVE DENSITY: Approx. 1.2 g/cm^3
VAPOR DENSITY: Not applicable
VAPOR PRESSURE: Not applicable
SPECIFIC GRAVITY: (H_2O=1): 1.1 – 1.3
PARTITIONING COEFFICIENT (20°C) OCTANOL/WATER (log Pow): No data available
SOLUBILITY IN WATER: No data available
SOLUBILITY (OTHER): No data available

MELTING TEMPERATURE: No data available
BOILING POINT: Not applicable
FLASH POINT: Not applicable
EVAPORATION RATE: Not applicable
FLAMMABILITY (solid, gas): No data available
FLAMMABLITY LIMIT-UPPER: No data available
FLAMMABILITY LIMIT-LOWER: No data available
EXPLOSIVIE LIMIT – UPPER: No data available
EXPLOSIVE LIMIT – LOWER: No data available
AUTO-IGNITION TEMPERATURE: No data available

DECOMPOSITION TEMPERATURE: No data available
VISCOSITY: Not applicable

10. STABILITY AND REACTIVITY

REACTIVITY: Stable
CHEMICAL STABILITY: The product is chemically stable. No hazardous reactions if stored and handled as prescribed/indicated.
POSSIBILITY OF HAZARDOUS REACTIONS: Will not occur.
CONDITIONS TO AVOID: No conditions known that should be avoided.
INCOMPATIBLE MATERIALS: Nitrates, strong acids, strong oxidizing agents, strong alkalis, chlorates.
HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide, and other products of incomplete combustion. May also include isocyanates and small amount of hydrogen cyanide.
THERMAL DECOMPOSITION: No decomposition if stored and handled as prescribed/indicated. Thermal decomposition above the indicated temperature is possible (> 221^{O}C or 430^{O}F). Prolonged thermal loading can result in products of degradation being given off.

11. TOXICOLOGICAL INFORMATION

INFORMATION ON LIKELY ROUTES OF EXPOSURE:
INHALTION: No data available.
INGESTION: Solid material; not likely a route of exposure.
SKIN CONTACT: Not likely a route of exposure.
EYE CONTACT: Solid material; not likely a route of exposure.

INFORMATION ON TOXICOLOGICAL EFFECTS:
ACUTE TOXICITY:
Oral: May cause irritation of the gastrointestinal tract. Not classified for acute toxicity based on available data.
Dermal: Not classified for acute toxicity based on available data.
Inhalation: Overexposure to vapors or mist may cause dizziness, headache, nausea, and/or flu-like symptoms. Persons with sensitive airways (e.g. asthmatics) may react to vapors. Avoid the inhalation of dust, mists, or vapors. Not classified for acute toxicity based on available data.
Skin Corrosion/Irritation: Not classified as a primary skin irritant. Remarks: Pre-existing skin conditions may be aggravated by prolonged or repeated exposure.
Serious Eye Damage/Eye Irritation: Not classified as a primary eye irritant.
Respiratory Sensitization: Under decomposition conditions, isocyanates may be generated from this product. Isocyanates can cause skin sensitization and/or respiratory sensitization.
Skin Sensitization: Under decomposition conditions, isocyanates may be generated from this product. Isocyanates can cause skin sensitization and/or respiratory sensitization.

SPECIFIC TARGET OGAN TOXICITY – SINGLE EXPOSURE:
Aspiration Hazard: No data available

Other effects: Polyurethane polymer under decomposition conditions, isocyanates may be generated from this product. Isocyanates can cause skin sensitization and/or respiratory sensitization. Persons with sensitive airways (e.g., asthmatics) may react to vapors.

CHRONIC EFFECTS:
Carcinogenicity: No data available.
Germ Cell Mutagenicity: No data available.
Reproductive Toxicity: No data available.
Specific Target Organ Toxicity – Repeated Exposure: No data available

12. ECOLOGICAL INFORMATION

DEGRADABILITY/PERSISTENCE BIOLOGICAL/ABIOLOGICAL DEGRADATIONEVALUATION: Poorly biodegradable

Ecotoxicity Fish: No data available
Aquatic Invertebrates: No data available
Toxicity to Aquatic Plants: No data available
Toxicity to Aquatic Plants: No data available
Toxicity to soil dwelling organisms: No data available
Sediment Toxicity: No data available
Toxicity to Above-Ground Organisms: No data available
Toxicity to microorganisms: No data available
Persistence and Degradability Biodegradation: No data available
Bio accumulative Potential;
Bioconcentration Factor (BCF): No data available
Partition Coefficient n-octanol/water (log know): No data available
Mobility: No data available
Other Adverse Effects: No data available

13. DISPOSAL CONSIDERATIONS

Waste disposal of substance:
Do not discharge substance/product into sewer system. Dispose of in a licensed facility.

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

14. TRANSPORT INFORMATION

U.S. Department of Transportation (US DOT): Not classified as a dangerous good under transportation regulations.
International Air Transport Association (IATA/ICAD): Not classified as a dangerous good under transportation regulations.
International Maritime Dangerous Goods (IMDG): Not classified as a dangerous good under transportation regulations.

15. REGULATORY INFORMATION

TSCA (Toxic Substances Control Act): All components of this material appear on the Inventory of Chemical Substances published by the US Environmental Protection Agency (EPA) under the authority of the Toxic Substance Control Act (TSCA).

SARA Title III (Superfund Amendments & Reauthorization Act):
311/312 Hazard Categories (for the compounded products)**:** Acute – No. Chronic – Yes. Fire – No. Reactive – No. Pressure – No.

313 Reportable Ingredients: NONE

CERCLA (Comprehensive Response Compensation and Liability Act): Not Reportable. Contact local authorities to determine if there may be other local reporting requirements.

EINECS: All components of this product are on the European Inventory of Existing Commercial Chemical Substances.
NEHAPS (National Environmental Health Action Plans): Contains no regulated substances.
EU CLASSIFICATION AND LABELING INFORMATION: Not applicable. **EU Risk Phrases:** Not applicable.
EU Safety Phrases: Not applicable.
VOLATILE ORGANIC COMPOUNDS (VOC): Not applicable.

STATE RIGHT-TO-KNOW REQUIREMENTS:

Chemical Name:	**State(s)**
Polyurethane Polyester Elastomer	NJ, PA

Note: These chemicals are bound within the applicable polymer structures and are not expected to be a health hazard.

HMIS® HAZARD CLASSIFICATION: Health: 1 Fire: 0 Reactivity: 0
NFPA HAZARD CLASSIFICATION: Health: 1 Fire: 0 Reactivity: 0

NFPA and HMIS use a numbering scale ranging from 0-4 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 tow 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.

16. OTHER INFORMATION

REVISION SUMMARY for SDS No. NinjaFlex
Date Prepared: December 6, 2018 **Last Revised:** December 6, 2018 **Previous Revision:**

Summary of Revisions:
12/6/2018 - New SDS

This information relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. The information is derived from the best available sources and is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of this product are not within the control of Fenner Drives, it is the user's responsibility to determine the suitability and completeness of this information, and the conditions of safe use of the product, for his own particular use.