

## ESSENTIUM TPU 80A

Thank you for your interest in Essentium's products. We are providing this material safety data sheet [MSDS] as a courtesy to your request. We certainly expect you to read the entire MSDS and to call us with any required points of clarification. Please follow all precautions identified in this document.

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### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name:</b>	Essentium TPU 80A
<b>Supplier:</b>	Essentium Inc.
<b>Address:</b>	19025 N. Heatherwilde Blvd. Suite 100 Pflugerville, TX 78660
<b>Manufacturer:</b>	Essentium Inc.
<b>Address:</b>	19025 N. Heatherwilde Blvd. Suite 100 Pflugerville, TX 78660
<b>Supplier Emergency Contacts &amp; Phone:</b>	Essentium Inc. Email: Sales@Essentium3D.com Website: Essentium3D.com
<b>Revision Date</b>	05/27/2019

## SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	WT%
TPU	75701-44-9	100%

All ingredients in quantities > 1.0% (0.1% for carcinogens) that are potentially hazardous per OSHA definitions.

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## SECTION 3: HAZARDS IDENTIFICATION

**Hazard statement:** Molten polymer will cause thermal burns. Please take all precautions necessary to avoid burns by the molten polymer.

**Precautionary statement:** None

**Signal word:** None

**Potential health effects:** See section 11 for more information

**Environmental precautions:** See section 12 for more information

**Other hazards:** If small particles are generated during further processing, handling, or by other means, combustible dust concentrations in air may form. See sections 7 and 8 for additional information.

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## SECTION 4: FIRST AID MEASURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial best practices are followed. Precautions should be taken to avoid inhalation and eye contact.

**Eye contact:** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

**Skin contact:** Adverse effects are not expected from accidental skin contact following occupational exposure. After contact with skin, wash with soap and water. If skin irritation persists, call a physician. Cool skin rapidly with cold water after contact with hot polymer. DO NOT attempt to remove hot polymer from skin or contaminated clothing as skin may be easily damaged. Call a physician immediately.

**Ingestion:** Drink water as a precaution. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Call a physician immediately.

**Inhalation:** Move to fresh air, keep person calm. Call a physician immediately.

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## SECTION 5: FIRE-FIGHTING MEASURES

**Suitable extinguishing media:** Carbon dioxide, water spray, dry powder, and foam

**Unsuitable extinguishing media:** None known

**Special protective equipment for firefighters:** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**Dangerous product after decomposition:** No particular hazards known

**Further information:** Do not breathe in fumes

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Use personal protective equipment. Avoid contact with skin and eyes. Avoid dust formation. Remove all sources of ignition. Sweep up and remove to prevent slipping hazard.

**Environmental precautions:** Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.

**Methods for cleaning up:** Clean up promptly by scoop or vacuum. Sweep up and shovel into suitable containers for disposal.

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## SECTION 7: HANDLING AND STORAGE

**Safe handling advice:** Use personal protective equipment. Avoid contact with skin and eyes. Low hazard for usual industrial or commercial handling. Workers should be protected from the possibility of contact with molten material during fabrication. Avoid dust formation. If small particles are generated during further processing, handling, or by other means, combustible dust concentrations in air may form. Protect from moisture and impurities. Keep the floor clear. Provide suitable exhaust for ventilation during the drying process.

**Storage:** Store the material in a closed container

**Suitable materials for containers:** Iron, HDPE, LDPE, Stainless Steel

**Precautions:** No special precautions required

**Dangerous reaction:** No dangerous reactions are known

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## SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure control:**

**Engineering measures:** Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Provide appropriate exhaust ventilation at places where dust is formed.

**Exposure guidelines:**

**Personal protective equipment:**

**Eye protection:** Safety glasses with side-shields, goggles

**Skin and body protection:** Impervious clothing

**Respiratory protection:** Respirator must be worn if exposed to dust. Wear respirator with dust filter. Consult an industrial hygiene professional prior to respirator selection and use. Use a positive-pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Hand protection:** Preventive skin protection, gloves

**Hygiene measures:** Avoid contact with skin, eyes, and clothing

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

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Solid filament	<b>Bulk Density:</b>	500 – 700 kg/m <sup>3</sup>
<b>Appearance:</b>	Clear, translucent, filament	<b>Decomposition Temperature:</b>	> 230°C
<b>Color:</b>	Clear, Translucent	<b>Boiling Point / Boiling Range:</b>	Not available
<b>Odor:</b>	No apparent odor	<b>Melting Point / Melting Range:</b>	150 - 230°C
<b>pH:</b>	Not applicable	<b>Flash Point:</b>	> 230°C
<b>Vapor Pressure:</b>	Not determined	<b>Autoignition Temperature:</b>	Not available
<b>Vapor Density:</b>	Not determined	<b>Water Solubility:</b>	Insoluble
<b>Evaporation Rate:</b>	Not applicable	<b>Solubility in Other Solvents:</b>	Not determined
<b>Relative Density:</b>	1.20 g/cm <sup>3</sup>		

## SECTION 10: STABILITY AND REACTIVITY

**Corrosive effect on metals:** No corrosive effect

**Oxidizing properties:** Not fire propagating

**Reactivity:** Will not occur

**Chemical stability:** Stable under recommended storage conditions

**Hazardous decomposition products:** Carbon monoxide, carbon dioxide, hydrogen cyanide

## SECTION 11: TOXICOLOGICAL INFORMATION

**Inhalation:** Low hazard for usual industrial handling, may cause respiratory tract irritation

**Eyes:** Molten material will cause thermal burns

**Skin:** Molten material will cause thermal burns

**Ingestion:** Expected to be a low ingestion hazard

**Oral:** Type of Value: LD50

Species: Rat

Value: >5000 mg/kg

**Other:** No specific target organ toxicity (STOT)

No sensitizing effect

No aspiration hazard

No known chronic effects

Chemical structure does not suggest a specific alert to genetic toxicity

Chemical structure does not suggest a specific alert to carcinogenicity

Chemical structure does not suggest a specific alert to reproductive toxicity

Chemical structure does not suggest a specific alert to teratogenicity

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## SECTION 12: ECOLOGICAL INFORMATION

**Water toxicity:** Not Applicable

**Biodegradable:** Not expected to biodegrade

**Mobility:** No data available

**Other:** This product contains no organically-bound halogens

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## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste from residues / unused products:** In accordance with local, state and national regulations. Should not be released into the environment. Do not contaminate ponds, waterways or ditches with chemical or used container. Contact manufacturer.

**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.

THE COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION.

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## SECTION 14: TRANSPORT INFORMATION

**U.S. DEPARTMENT OF TRANSPORTATION | PROPER SHIPPING NAME:** Not regulated for transportation

**WATER TRANSPORTATION | PROPER SHIPPING NAME:** Not regulated for transportation

**AIR TRANSPORTATION | PROPER SHIPPING NAME:** Not regulated for transportation

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## SECTION 15: REGULATORY INFORMATION

Regulatory requirements are subject to change and may differ between locations. It is the User's responsibility to ensure that all activities comply with all federal, state or provincial and local laws and regulations. The following specific information is made for the purpose of complying with numerous national, federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

### U.S. REGULATIONS

<b>Sara 313 title III:</b>	Not listed		
<b>TSCA Inventory List:</b>	Listed		
<b>EPCRA 311/312:</b>	Not hazardous		
<b>NFPA Hazard Codes:</b>	Health: 1	Fire: 0	Reactivity: 0

**HMIS III Rating:**

Health: 1

Flammability: 0

Physical hazard: 0

**INTERNATIONAL REGULATIONS:**

Contact Essentium Inc. for more information.

Not meant to be all inclusive - selective regulations represented.

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**SECTION 16: OTHER INFORMATION****DISCLAIMER:**

Essentium Inc. nor any of its subsidiaries assumes any liability whatsoever for transporting/handling the product. It is the buyer's/user's/licensee's responsibility to ensure that its activities comply with all federal, state, provincial, or local laws and import/export requirements. We assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Essentium Inc. makes no warranties, expressed or implied, including but not limited to, any implied warranty of merchantability or fitness for a particular purpose or course of performance or usage of trade. Final determination of suitability of any material is the sole responsibility of the user.