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# tonerplastics

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## Material Safety Data Sheet

In accordance with 29 CFR 1910.1200, ANSI Z400.1-2004, and ISO 11014-1: 1994.

### 1. IDENTIFICATION

**Product name:** ABS 3D Printer Filament

**Product Use:** For use in 3D printing machines

**Supplier:** Toner Plastics 35 Industrial Drive East Longmeadow, MA 01028

**Emergency telephone numbers (24 hours a day):** (413) 525-2369

### 2. HAZARDS IDENTIFICATION

Most Important Hazards: None

Adverse Human Health Effects: None

Environmental Effects: None

Physical and Chemical: None

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance or Preparation: Substance

Chemical Name: Acrylonitrile-Butadiene-Styrene Copolymer

Content: > 98 % (Additives  $\leq$  2 %)

Formula: (C<sub>3</sub>H<sub>3</sub>N, C<sub>4</sub>H<sub>6</sub>, C<sub>8</sub>H<sub>8</sub>)<sub>x</sub>

CAS No: 9003-56-9

Impurities Contributing to Hazard: None

### 4. FIRST AID MEASURES

**Inhalation:** In case of gases evolving from melted filament, move subject to fresh air. Treat symptomatically.

**Skin Contact:** Wash with water. In case of melted filament, wash affected skin area and clothing with plenty of (soap and) water. Seek medical advice.

**Eye Contact:** In case of small particles, flush with plenty of water for at least 15 minutes. Seek medical advice if any small particles still remain. In case of gases evolving from melted filament of high temperature, flush with plenty of water for at least 15 minutes. Seek medical advice if necessary.

**Ingestion:** Induce vomiting. Rinse mouth with water. Seek medical advice if necessary.

## **5. FIRE-FIGHTING MEASURES**

Extinguishing Media: Water, Foam, Dry chemical powder

Special Fire-Fighting Procedure: Self-contained breathing apparatus

Fire and Explosion Hazards: None

## **6. ACCIDENTAL RELEASE MEASURES**

Methods for Cleaning up: Recovery if not contaminated or disposal

Personal Precautions: Strands/string remaining on ground may cause slipping

Environmental Precautions: Gather small particles thoroughly to avoid birds or fish taking from draining water.

## **7. HANDLING AND STORAGE**

Handling: Prevent fire around handling area. Maintain good housekeeping standards to prevent accumulation of dust.

Storage: Keep the materials in a cool dry place. Protect from direct sunlight, rain and violent temperature fluctuation.

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

Threshold Limit Value: Not determined

Ventilation: Necessary for fumes and gases when melting.

Personal Protection Eye: Wear safety glasses or chemical goggles for general purpose.

Respiratory: Wear masks as needed.

Gloves: Necessary for handling melted material.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance: String/strand

Color: Varies

Melting Temperature: Softening above 100C

Solubility: Insoluble in water

Specific Gravity: 1.03 ~ 1.10

## **10. STABILITY AND REACTIVITY**

Flammability: Yes

Flash Point: 404C

Auto-ignition Temperature: 466 C

Reactivity with Water: No

Stability: Stable and non-reactive under normal handling and storage conditions

Dust Explosion: Possible if powder exists.

Explosion data: for powder (< 145 mesh)

Lower explosion limit: 45 g/m<sup>3</sup>

Minimum ignition energy: 3.6 mJ

Maximum explosion pressure: 7 × 10<sup>5</sup> Pa

Maximum pressure increase rate: 3.2 × 10<sup>7</sup> Pa/S

Thermal Decomposition Gases: CO, HCN, AN, SM and NO

Combustion Energy: 3.53 × 10<sup>7</sup> J/kg (8424 Kcal/kg)

## **11. TOXICOLOGICAL INFORMATION**

Irritation: Fumes or vapors generated from melting or decomposing filament may irritate eyes.

Acute oral toxicity (LD<sub>50</sub>): Not determined

Mutagenicity: Not determined

## **12. ECOLOGICAL INFORMATION**

To avoid being taken by ocean species or birds, disposal of the waste to the ocean and water sources is inhibited.

## **13. DISPOSAL CONSIDERATIONS**

Controlled incineration or landfill according to local, state or national laws and regulations concerning health and pollution. Inadequate incineration may generate toxic gases such as CO, HCN, AN and SM.

## **14. TRANSPORT INFORMATION**

Not classified as a dangerous good under transport regulations

## **15. REGULATORY INFORMATION**

Not available

## **16. OTHER INFORMATION**

**Product name:** ABS 3D Printer Filament

**Reason for revision:** Created

**Revision date:** 01/01/2015

**Recommended restrictions:** None

**Prepared by:** Toner Plastics

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult the Company for Further Information.

NOTICE REGARDING MEDICAL APPLICATION RESTRICTIONS: The company does not recommend any of its products, including samples, for use: (A) in any application which is intended for any internal contact with human body fluids or body tissues (B) as a critical component in any medical device that supports or sustains human life; and (C) specifically pregnant women or in any applications designed specifically to promote or interfere with human reproduction.

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## Material Safety Data Sheet

In accordance with 29 CFR 1910.1200, ANSI Z400.1-2004, and ISO 11014-1: 1994.

### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

**Product name:** PLA 3D Printer Filament

**Product Use:** For use in 3D printing machines

**Supplier:** Toner Plastics 35 Industrial Drive East Longmeadow, MA 01028

**Emergency telephone numbers (24 hours a day):** (413) 525-2369

### 2. HAZARDS IDENTIFICATION

#### Emergency Overview

**CAUTION!** May cause eye/skin irritation. Burning produces obnoxious and toxic fumes. Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

**Appearance:** Clear, translucent, or opaque strand/string.

**Color:** Varies

**Physical state:** Solid

**Odor:** Sweet

#### Potential health effects:

**Eye contact:** Contact with eyes may cause irritation.

**Skin contact:** Substance may cause slight skin irritation.

**Ingestion:** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Inhalation:** Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Low hazard for usual handling.

**Target organ effects:** N/A

**Sensitization:** N/A

**Specific hazards:** No information available

**Flammability:** Fine dust dispersed in air may ignite.

**Environmental precautions:** Not determined See Section 12 for more information.

**NFPA rating:** Data not available

Health: 1

Flammability: 1

Reactivity: 0  
Special: Not determined  
**HMIS classification:**  
Health: 1  
Flammability: 1  
Reactivity: 0  
Personal Protective Equipment: Not determined

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical name:** Polylactide resin 9051-89-2

**Weight %:** >98

**OSHA Exposure Limits:** None

**ACGIH Exposure Limits:** None

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

**Other Standards:** N/A

### 4. FIRST AID MEASURES

**Emergency telephone numbers (24 hours a day):** (413) 525-2369

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

**Skin contact:** Rinse immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician. Cool skin rapidly with cold water after contact with hot polymer.

**Inhalation:** Move to fresh air. 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.

**Notes to physician:** Treat symptomatically.

### 5. FIRE FIGHTING MEASURES

**Flammability:**

**Autoignition temperature:** 388C

**Flammability Limits in Air:**

**Flammable limits in air - lower (%):** Not applicable

**Flammable limits in air - upper (%):** Not applicable

**Suitable extinguishing media:** Foam. Water. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Alcohol resistant foams are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.

**Extinguishing media which must not be used for safety reasons:** No information available

**Hazardous decomposition products:** Burning produces obnoxious and toxic fumes Aldehydes Carbon monoxide (CO) carbon dioxide (CO<sub>2</sub>)

**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.

**Under fire conditions:** Cool containers / tanks with spray water. Water mist may be used to cool closed containers.

**Other information:** Fine dust dispersed in air may ignite. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Use personal protective equipment. See Section 8. Remove all sources of ignition. Avoid contact with skin and eyes. Sweep up 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:** Place into suitable container for disposal.

## 7. HANDLING AND STORAGE

**Safe handling advice:** Avoid contact with skin and eyes. Avoid dust formation. Workers should be protected from the possibility of contact with molten material during fabrication. Low hazard for usual industrial or commercial handling. Use personal protective equipment. See Section 8.

**Storage:** Store in cool place. Keep at temperatures below 122F (50 °C).

No special restrictions on storage with other products

**Precautions:** No special precautions required

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering measures:** Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.

**Control parameters:** None

## **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. Respiratory protection is needed if any of the exposure limits in Section 2 are exceeded. 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.

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

**Exposure limits:** See Section 2.

## **9. PHYSICAL AND CHEMICAL PROPERTIES:**

**Appearance:** Clear, translucent, opaque, strand/string.

**Color:** Varies

**Physical state:** Solid

**Odor:** Sweet

**pH:** Not applicable

**Vapor pressure:** Not determined

**Vapor density:** Not determined

**Evaporation rate:** Not determined

**Density:** 1.24 g/cc

**Boiling point/range:** Not applicable

**Decomposition temperature:** 482F (250C)

**Melting point/range:** Not determined

**Water solubility:** Insoluble

**Solubility in other solvents:** None known

## **10. STABILITY AND REACTIVITY**

**Stability:** Stable under recommended storage conditions

**Conditions to avoid:** Temperatures above 446F (230 °C).

**Materials to avoid:** Oxidizing agents. Strong bases.



**Hazardous decomposition products:** Burning produces obnoxious and toxic fumes. Aldehydes. Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>).

**Polymerization:** Not applicable

## 11. TOXICOLOGICAL INFORMATION

**Principle Routes of Exposure:** Eye contact. Skin contact. Inhalation. Ingestion.

**Acute toxicity:** N/A

**Local effects:** May cause eye/skin irritation. Product dust may be irritating to eyes, skin and respiratory system. Caused mild to moderate conjunctival irritation in eye irritation studies using rabbits. Caused very mild redness in dermal irritation studies using rabbits (slightly irritating). Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Long term toxicity:** Did not cause skin allergic reactions in skin sensitization studies using guinea pigs.

**Specific effects:** May cause skin irritation and/or dermatitis. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Burning produces irritant fumes.

**Mutagenic effects:** Not mutagenic in AMES Test.

## 11. TOXICOLOGICAL INFORMATION

**Reproductive toxicity:** No data is available on the product itself.

**Carcinogenic effects:** No data is available on the product itself.

**Target organ effects:** There were no target organ effects noted following ingestion or dermal exposure in animal studies.

**Skin:** LD<sub>50</sub>/dermal/rabbit > 2000 mg/kg

**Ingestion:** LD<sub>50</sub>/oral/rat > 5000 mg/kg.

## 12. ECOLOGICAL INFORMATION

**Mobility:** No data available

**Bioaccumulation:** Does not bio accumulate. Inherently biodegradable.

**Ecotoxicity effects:** EC<sub>50</sub>/72h/algae > 1100 mg/L

## 13. DISPOSAL CONSIDERATIONS

**Waste from residues / unused products:** In accordance with local and national regulations. Do not contaminate ponds, waterways or ditches with chemical or

used container. Contact manufacturer. 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 AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

**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.

#### **14. TRANSPORT INFORMATION**

##### **U.S. Department of Transportation (DOT):**

**Proper shipping name:** Not regulated as a hazardous material.

##### **IMDG:**

**Proper shipping name:** None

**Hazard class:** Not regulated.

**UN/Id No.:** None

**Packing group:** None

##### **ICAO/IATA:**

**Proper shipping name:** None

**Hazard Class:** Not regulated.

**Packing group:** None

#### **15. REGULATORY INFORMATION**

(Not meant to be all inclusive--selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the print date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

##### **U.S. REGULATIONS**

Sara 313 title III: Not listed

TSCA Inventory List – Not listed

##### **STATE REGULATIONS**

California Proposition 65 Not listed

## **INTERNATIONAL INVENTORIES**

**Canada DSL Inventory List :** Not listed

**REACH/EU EINECS List :** Components are in compliance with and/or are listed.

**Japan (ECL) :** Not listed

**Australia (AICS):** Not listed

**Korean chemical inventory:** Not listed

**Philippines (PICCS) inventory:** Not listed

**China inventory of existing chemical substances list :** No listed

## **16. OTHER INFORMATION**

**Product name:** PLA 3D Printer Filament

**Reason for revision:** Created

**Revision date:** 01/01/2015

**Recommended restrictions:** None

**Prepared by:** Toner Plastics

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