

# PLA+

## MATERIAL SAFETY DATA SHEET (MSDS)

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VERSION: 1.1 - 2020

PREPARED BY:  
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# Standard Print Co.

PLA Material Safety Data Sheet (MSDS)

## 1. Chemical Product/Manufacturer Identification

<b>Product identifier:</b>	Standard Print Co. PLA+
<b>Other means of identification:</b>	Standard Print Co. uses an agent company to manufacture this filament on its behalf Polylactide resin
<b>Use of the product:</b>	Biodegradable resin for FDM 3D Printing
<b>Details of manufacturer or importer:</b>	Standard Print Company PTY LTD Suite 5, 1-5 Woodburn St, Redfern, 2016, New South Wales, Australia.
<b>Emergency phone number:</b>	Standard Print Co., +61 419 496 599 (Office Hours Only)

## 2. Hazards Identification

<b>Classification:</b>	Not dangerous according to Safe Work Australia's Hazardous Chemical Information System (HCIS)
<b>Special advice on hazards:</b>	Danger of burns in contact with hot polymer. Hazardous vapours in case of burning.

## 3. Composition and Information of Ingredients

<b>Chemical characteristics:</b>	Biodegradable polymer-blend based on polylactic acid and other bio polyesters.
<b>CAS no:</b>	9051-89-2
<b>Additional Information</b>	No Harmful Ingredients

## 4. First-Aid Measures

<b>Skin contact:</b>	In case of contact with molten polymer immediately cool the skin with cold water. Medical aid may be required to remove adhering material and for treatment of burns.
<b>Inhalation:</b>	After inhalation of decomposition gases or dust remove patient to fresh air. Contact a Physician and treat symptomatically.
<b>Ingestion:</b>	Rinse mouth with water and drink more water. Contact a doctor in case of discomfort.

# Standard Print Co.

PLA Material Safety Data Sheet (MSDS)

**Eye contact:** Rinse open eyes thoroughly with water.

## 5. Fire-Fighting Measures

**Auto ignition temperature:** <450°C

**Extinguishing Media:** Foam. Water. Dry chemical.  
For safety reasons do not use the following extinguishing agents:

- Carbon dioxide, Extinguishing powder.
- Lack of cooling capacity may permit re-ignition.

**Specific Hazards under fire:** Gases Produced Upon Thermal Decomposition:

- CO, HCN, AN, SM and NO

In case of fire and/or explosion do not breathe fumes. Fires involving this material produce large amounts of sooty smoke; Carbon monoxide (CO) and Carbon dioxide (CO<sub>2</sub>), Hydrocarbons, Hydrogen cyanide (HCN) Under certain fire conditions, traces of other toxic gases cannot be excluded.

**Specific fire-fighting measures :** Move container from fire areas if it can be done without risk. Keep personnel removed from and upwind of fire. Evacuate non-essential personnel to safe area. Fire-fighters should wear proper protective equipment and self contained breathing apparatus -MSHA/NIOSH (approved or equivalent).

**Other information:** Fine particulate of the material dispersed in air may ignite. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust. Apply water from a safe distance to cool and protect surrounding area.

## 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Avoid dust formation and static discharge. Do not overheat material.

**Measures for environmental effects:** Do not wash away into shower or waterway.

**Methods and materials for containment and cleaning up:** If pellets got released in environment, take adequate steps to prevent aquatic animals and birds from eating pellets. Sweep up, place in a bag and hold for waste

# Standard Print Co.

## PLA Material Safety Data Sheet (MSDS)

disposal. Sweep up spilled pellets on road or floor to avoid tripping.

**Preventive measures for secondary accident:** Shut off all sources of ignition; No flares, smoking or flames in area.

### 7. Handling and Storage

**Handling:** Local ventilation / Total air ventilation :  
Good ventilation required when PLA is heated to a molten state.

**Safety treatments:** Do not keep this material under high temperature condition for a long time.  
Do not touch high temperature resin  
PLA can generate static electricity, so take countermeasures to eliminate static electricity if necessary

**Safety Measures/Incompatibility:** Do not empty into drains. Do not drop onto, or slide across sharp objects. Avoid rough handling or dropping

**Recommendations for Storage:** This material is flammable. Follow fire defence and local regulations for storage and handling. Keep away from heat.  
Keep away from sources of ignition—No smoking. Keep away from heat source, steam pipe and direct sunlight. Store in cool (below 50°C), dry conditions in well sealed containers. Material is hygroscopic – Keep in sealed container with desiccant or other hygroscopic substances to ensure the material remains in a dry state for optimal performance

**Stability and Reactivity:** Avoid contact with Strong bases and oxidizing agents.  
Bio-degradable with estimated life of 5-15 years. 90 days in industrial composter Colours will fade when exposed to sun light Material integrity degrades when exposed to water and sun light.

**Disposal considerations:** Does not Bioaccumulate  
Spools storing this product are currently non-recyclable within Australia. Dispose of unused material via registered waste carriers.

# Standard Print Co.

## PLA Material Safety Data Sheet (MSDS)

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### 8. Exposure Control and Personal Protection

<b>Exposure limits:</b>	No information available
<b>Biological limit values:</b>	Not established
<b>Recommended monitoring procedures:</b>	No information available
<b>Derived no effect level (DNEL)</b>	No information available
<b>Appropriate Engineering measures:</b>	When Processing, good ventilation is required to exclude dust, fumes and gases. Dust emission data not currently available
<b>Personal protective equipment:</b>	In case of insufficient ventilation and fume extraction, wear suitable respiratory equipment. Against powder-dust: protective mask for powder-dust Against gas from molten polymer: protective mask for organic gas
<b>Respiratory protection:</b>	In case of insufficient ventilation and fume extraction, wear suitable respiratory equipment. Against powder-dust: protective mask for powder-dust against gas emitted from molten polymer: protective mask for organic gas
<b>Hand protection:</b>	Not required (for FDM printing). Wear suitable heat-resistant gloves when handling hot or molten polymer and heated elements of the printer.
<b>Eye protection:</b>	Not required (for FDM printing). Wear protective eyeglasses or chemical safety goggles when handling molten filament or when post processing filament.
<b>Skin and body protection:</b>	Not required (for FDM printing). Wear long-sleeve clothing so as not to touch skin directly with molten filament.
<b>Hygiene measures:</b>	Hand in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product.
<b>Environmental exposure controls:</b>	Do not allow product to enter drains, water courses or soil.

### 9. Physical and Chemical Properties

# Standard Print Co.

## PLA Material Safety Data Sheet (MSDS)

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<b>Appearance:</b>	Solid Filament
<b>Density:</b>	1.2-1.3 g/cm <sup>3</sup>
<b>Colour:</b>	Variable
<b>Odour:</b>	Noticeable when heated
<b>pH</b>	Not available
<b>Glass transition temperature:</b>	Approx. 55°C
<b>Boiling Point:</b>	Not available
<b>Melting Point:</b>	<180°C
<b>Decomposition Temperature:</b>	260°C
<b>Auto ignition temperature:</b>	>450°C
<b>Flashpoint:</b>	Non-Volatile burning solid
<b>Solubility in water:</b>	Negligible
<b>Solubility in other solvents:</b>	Caustic Soda
<b>Vapour pressure:</b>	Not available

### 10. Stability and Reactivity

<b>Reactivity:</b>	Not reactive under normal handling conditions.
<b>Chemical Stability:</b>	Stable for handling under normal handling conditions.
<b>Possibility of Hazardous reactions:</b>	No hazardous reactions with other chemicals known under normal handling conditions.
<b>Conditions to avoid:</b>	Do not grind, pelletize or mill the material. Avoid temperatures above 250°C
<b>Incompatible Materials:</b>	Avoid water which can cause degradation of material. Material can react with strong oxidizers.
<b>Hazardous decomposition products:</b>	Hazardous decomposition products may form under fire conditions: carbon dioxide, acetaldehyde, carbon monoxide, nitrogen oxide may be produced.

# Standard Print Co.

PLA Material Safety Data Sheet (MSDS)

## 11. Toxicological Information

<b>Acute toxicity:</b>	Not tested (not to be expected)
<b>Skin corrosion/irritation:</b>	Not tested (not to be expected)
<b>Serious eye damage/eye irritation:</b>	Not tested (not to be expected)
<b>Respiratory or skin sensitization:</b>	Not tested (not to be expected)
<b>Germ cell mutagenicity:</b>	Not tested (not to be expected)
<b>Carcinogenic effects:</b>	Not tested (not to be expected)
<b>Toxicity for reproduction:</b>	Not tested (not to be expected)
<b>Specific Target Organ/Systemic Toxicity (Single Exposure):</b>	Not tested (not to be expected)
<b>Specific Target Organ/Systemic Toxicity (Repeated Exposure):</b>	Not tested (not to be expected)
<b>Aspiration hazards:</b>	Not tested (not to be expected)
<b>Others:</b>	As for articles that are "not tested", there are no instances reported on harmful effects to health have been reported to date. Information listed in this section is transferred from safety data from the ingredients of this product.

## 12. Ecological Information

<b>Aquatic toxicity:</b>	No information
<b>Persistence and degradability:</b>	Minimal degradation
<b>Bioaccumulation potential:</b>	Does not bioaccumulate. Inherently biodegradable.
<b>Mobility in soil:</b>	No information
<b>Results of PBT and vPvB assessment:</b>	No information
<b>Other adverse effects:</b>	No adverse effects known to date.
<b>Additional ecotoxicological information:</b>	The material is practically non-soluble in water being solid. Therefore, under environmental conditions, no detrimental effects on plants, animals and micro-organism are to be expected.

## 13. Disposal Consideration

# Standard Print Co.

PLA Material Safety Data Sheet (MSDS)

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<b>Waste treatment methods:</b>	Dispose to an authorized waste collection point in accordance with local regulations.
<b>Packaging:</b>	Dispose of in accordance with local regulations.

## 14. Transport Information

<b>International transport guidelines:</b>	Not Listed
<b>Specific safety measures and conditions on transport:</b>	Store in cool, dry conditions out of direct sunlight. Handle with care as to avoid damaging of outer packaging material.

## 15. Other Information/References

The information relates to this specific material. It may not be valid for this material, if used in combination with any other materials or in any process. It is the user's responsibility to satisfy him-selves as to the suitability and completeness of this information for his own particular use.

The information herein is given in good faith, but no warranty, express or implied, is made.

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It is advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

**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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