



SAFETY DATA SHEET

1. Identification

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Product Name: PolyMaker™ PC-PBT
Chemical Family: Thermoplastic Polymer
Use: 3D Printing Filament

2. Hazards Identification

GHS Classification

This product is not hazardous in the form in which it is shipped by the manufacturer.

GHS Label Elements

Signal word: Warning

Hazard statements: If fine particles are generated during further processing, handling or by other means, product may form combustible dust concentrations in air.

3. Composition/Information on Ingredients

Hazardous Components

The following potentially hazardous ingredient(s) are used to formulate this product. As supplied, the ingredient(s) are bound in the polymer matrix. Because they are bound in the matrix, they are not expected to create any unusual hazards when handled and processed according to good manufacturing and industrial hygiene practices and the guidelines provided in this SDS.

<u>Concentration</u>	<u>Components</u>	<u>CAS-No.</u>
0.1 - 1%	Carbon Black	1333-86-4

Material Name: PolyMaker™ PC-PBT

00403579

The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

4. First Aid Measures

Most Important Symptom(s)/Effect(s)

Acute: Contact with heated material can cause thermal burns., Gases and fumes evolved during the thermal processing or decomposition of this material may irritate the eyes, skin or respiratory tract.

Eye Contact

In case of contact, flush eyes with plenty of lukewarm water.

Skin Contact

Cool melted product on skin with plenty of water. Do not remove solidified product. Get medical attention if thermal burn occurs.

Inhalation

Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.

Ingestion

Get medical attention.

5. Firefighting Measures

Suitable Extinguishing Media: Water fog, Dry chemical, Carbon dioxide (CO₂), Foam

Unsuitable Extinguishing Media: High Pressure Water Streams

Fire Fighting Procedure

Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.

Hazardous Decomposition Products

By Fire and Thermal Decomposition: ; Phenol Carbon oxides, Hazardous decomposition products due to incomplete combustion

Unusual Fire/Explosion Hazards

Toxic and irritating gases/fumes may be given off during burning or thermal decomposition. Avoid generating dust: fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard.

6. Accidental Release Measures

Spill and Leak Procedures

If molten, allow material to cool and place into an appropriate marked container for disposal. Sweep up and shovel into suitable containers for disposal. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture as they are released into the atmosphere in sufficient concentrations. Avoid dispersal of dust in the air (e.g., cleaning dust from surfaces with compressed air).

7. Handling and Storage

Handling/Storage Precautions

Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dust does not accumulate on surfaces. Solid particulate can generate electrical charging during operations such as unloading from containers and pneumatic transfer. Provide adequate precautions, such as electrical grounding and bonding, where conductive equipment is involved.

Storage Period:

None.

Storage Temperature

Maximum: 49 °C (120.2 °F)

Storage Conditions

Containers should be tightly closed to prevent contamination with foreign materials and moisture.

Substances to Avoid

None known.

8. Exposure Controls/Personal Protection

The recommendations in this section should not be a substitute for a personal protective equipment (PPE) assessment performed by the employer as required by 29 CFR 1910 Subpart I.

Exposure Limits

Carbon Black (1333-86-4)

US. ACGIH Threshold Limit Values

Time weighted average 3 mg/m³ (Inhalable fraction.)

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Permissible exposure limit 3.5 mg/m³

US. ACGIH Threshold Limit Values

Hazard Designation: Group A3 Confirmed animal carcinogen with unknown relevance to humans.

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

Industrial Hygiene/Ventilation Measures

General dilution and local exhaust as necessary to control airborne vapors, mists, dusts and thermal decomposition products below appropriate airborne concentration standards/guidelines, especially during cutting, grinding and high heat operations.

Respiratory Protection

Although no exposure limit has been established for this product, the OSHA PEL for Particulates Not Otherwise Regulated (PNOR) of 15 mg/m³ - total dust, 5 mg/m³ - respirable fraction is recommended. In addition, the ACGIH recommends 3 mg/m³ - respirable particles and 10 mg/m³ - inhalable particles for Particles (insoluble or poorly soluble) Not Otherwise Specified (PNOS)., In the event that these limits are

exceeded, an air purifying respirator (APR) equipped with particulate (P100) cartridges is recommended.

Hand Protection

Ensure gloves remain in good condition during use and replace if any deterioration is observed.

Wear heat resistant gloves when handling molten material.

Eye Protection

Safety glasses with side-shields

Skin Protection

No special skin protection requirements during normal handling and use.

Additional Protective Measures

Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees in the safe use and handling of this product. Purgings should be collected as small flat thin shapes or thin strands to allow for rapid cooling.

9. Physical and Chemical Properties

State of Matter:	solid
Appearance:	pellets
Color:	Black, Opaque
Odor:	Odorless
Odor Threshold:	No Data Available
pH:	No Data Available
Melting Point:	220 °C (428 °F)
Boiling Point:	No Data Available
Flash Point:	320 °C (608 °F)
Evaporation Rate:	No Data Available
Flammability:	Ignition temperature more than 300 °C
Lower Explosion Limit:	No Data Available
Upper Explosion Limit:	No Data Available
Vapor Pressure:	No Data Available
Vapor Density:	No Data Available
Density:	ca. 1.1 - 1.4 g/cm ³
Relative Vapor Density:	No Data Available
Specific Gravity:	No Data Available
Solubility in Water:	practically insoluble
Partition Coefficient: n-octanol/water:	No Data Available
Auto-ignition Temperature:	> 320 °C (> 608 °F)
Decomposition Temperature:	>= 380 °C (716 °F)
Softening point:	100 - 200 °C (212 - 392 °F)
Dynamic Viscosity:	not applicable
Kinematic Viscosity:	No Data Available
Bulk Density:	600 - 800 kg/m ³
Self Ignition:	not applicable

10. Stability and Reactivity

Hazardous Reactions

Hazardous polymerisation does not occur.

Stability

Stable

Materials to Avoid

None known.

Conditions to Avoid

Generation of dust clouds.

Hazardous Decomposition Products

By Fire and Thermal Decomposition: Phenol; Carbon oxides, Hazardous decomposition products due to incomplete combustion

11. Toxicological Information**Likely Routes of Exposure:**

Inhalation
Skin Contact
Eye Contact

Health Effects and Symptoms

Acute: Contact with heated material can cause thermal burns., Gases and fumes evolved during the thermal processing or decomposition of this material may irritate the eyes, skin or respiratory tract.

Toxicity Data for: MAKROBLEND KU2-7912 901510

No data available for this product.

Toxicity Data for: Carbon Black**Acute Oral Toxicity**

LD50: > 8,000 mg/kg (rat, male/female) (OECD Test Guideline 401)

Acute Dermal Toxicity

LD50: > 3,000 mg/kg (rabbit)

Skin Irritation

rabbit, Non-irritating

Eye Irritation

Human, non-irritant

Sensitization

Buehler Test: negative (Guinea pig, OECD Test Guideline 406)

Skin sensitization (local lymph node assay (LLNA)):: negative (Mouse, OECD Test Guideline 429)

Repeated Dose Toxicity

13 weeks, Inhalative: NOAEL: 0.0011 mg/kg, (rat,)

Mutagenicity

Genetic Toxicity in Vitro:

Salmonella/microsome test (Ames test): negative

Mammalian cell - gene mutation assay: positive (other mammalian cell line, Metabolic Activation: without)

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Micronucleus test: positive (other human cell line, Metabolic Activation: without)

Genetic Toxicity in Vivo:

Other assay: negative (Mouse, male, intraperitoneal)
negative

Carcinogenicity

Several inhalation studies involving carbon black in female rats have shown increases in benign and malignant lung tumors. Although a large body of data on possible mechanisms of carcinogenicity in rats was considered by the IARC Working Group, it was not possible to state with confidence that the mechanisms of carcinogenicity in rats correlate to exposure in humans. Tumors have not been observed in other animal species (i.e., mouse and hamster) under similar circumstances and study conditions.

Developmental Toxicity/Teratogenicity

rat, female, Inhalative, 10 days, daily,

Other Relevant Toxicity Information

May cause irritation of respiratory tract.

Carcinogenicity:

Carbon Black

IARC - Overall evaluation: 2B Possibly carcinogenic to humans.

12. Ecological Information

Ecological Data for: MAKROBLEND KU2-7912 901510

No data available for this product.

Ecological Data for Carbon Black

Acute and Prolonged Toxicity to Fish

LC0: > 1,000 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: > 5,600 mg/l (Water flea (Daphnia magna), 24 h)

Toxicity to Microorganisms

EC0: 100 - 800 mg/l, (Activated sludge microorganisms, 3 h)

13. Disposal Considerations

Waste Disposal Method

Waste disposal should be in accordance with existing federal, state and local environmental control laws.

14. Transportation Information

Land transport (DOT)

Non-Regulated

Sea transport (IMDG)

Non-Regulated

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Air transport (ICAO/IATA)

Non-Regulated

15. Regulatory Information

United States Federal Regulations

US. Toxic Substances Control Act: Listed on the Active Portion of the TSCA Inventory.

No substances are subject to TSCA 12(b) export notification requirements.

US. EPA CERCLA Hazardous Substances (40 CFR 302) Components:

None

SARA Section 311/312 Hazard Categories:

Refer to hazard classification information in Section 2.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) Components:

None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required Components:

None

US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):

Under RCRA, it is the responsibility of the person who generates a solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste.

State Right-To-Know Information

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

The concentrations reported below in units of parts per million (ppm) or parts per billion (ppb) are maximum values.

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

<u>Concentration</u>	<u>Components</u>	<u>CAS-No.</u>
>=1%	Bisphenol A Polycarbonate	25971-63-5
>=1%	Polybutylene Terephthalate	26062-94-2
>=1%	Polymer	CAS# is a trade secret
0.1 - 1%	Carbon Black	1333-86-4

New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:

<u>Concentration</u>	<u>Components</u>	<u>CAS-No.</u>
0.1 - 1%	Carbon Black	1333-86-4

Massachusetts Right to Know Extraordinarily Hazardous Substance List:

<u>Concentration</u>	<u>Components</u>	<u>CAS-No.</u>
<=3 ppm	Methylene Chloride	75-09-2

California Proposition 65 List:

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