



THE **LARGE-SCALE** FFF 3D-PRINTER
FOR **PROFESSIONAL** AND **INDUSTRIAL** USE.

MATERIAL SAFETY DATA SHEET
BigRep ABS

1. Identification of the substance/preparation and of the company

1.1 Trade name:	BigRep Filament ABS
1.2 Chemical name:	Acrylonitrile-Butadiene-Styrene copolymer
1.3 Typical use of the material:	Monofilament for FFF/FDM technology based 3D printing
1.4 Identification of the company:	BigRep GmbH Gneisenaustraße 66 10961 Berlin – Germany Phone : +49 30 20 84 82 60 Email : office@bigrep.com

2. Hazards identification

2.1 Risk advise to man and the environment:	Not likely to be a risk in the solid form.
2.2 Classification of the substance or mixture:	This substance does not meet the criteria for classification according to Directive 67/548/EEC or Regulation (EC) 1272/2008 as amended.
2.3 Special advice on hazards:	Danger of burns when heated or molten material is handled

3. Composition / information on ingredients

3.1 Chemical nature:	Acrylonitrile-Butadiene-Styrene copolymer CAS No.: 9003-56-9 Weight %: >80% Exposure Limits: None
3.2 Additional information:	Not harmful

4. First-aid measures

4.1 If inhaled:	After inhalation of decomposition products, gases or dust, bring the affected person to a source of fresh air and keep calm. Contact a physician in case of discomfort.
4.2 On skin contact:	In case of contact with melted material, immediately cool the skin with plenty of cold running water. Removal of adhering to skin polymer, or burns caused by molten material require hospital treatment.
4.3 On contact with eyes:	In case of contact with molten material, immediately cool the skin with plenty of cold running water. Removal of adhering to skin polymer, or burns caused by molten material require hospital treatment.
4.4 On ingestion:	Rinse mouth with water and then drink plenty of water. Seek medical attention if difficulties or discomfort occur.
4.5. Important symptoms and effects	Burns resulted from contacting or handling heated or molten materials
4.6. Additional information	Provide general supportive measures and treat symptomatically

5. Firefighting measures

5.1 Suitable extinguishing media:	Use fire-extinguishing media appropriate for surrounding materials. Do not use a solid water stream as it may scatter and spread fire.
5.2 Specific hazards:	Gases hazardous to health may be formed in case of fire.
5.3 Further information:	Follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental Release Measures

6.1 Personal precautions:	Wear gloves when handling hot melt of material. Avoid eye and skin contact. All ignition sources shall be removed. Inhale from dust shall be avoided. If necessary, use dust mask and Goggles.
6.2 Environmental precautions:	Prevent entry into drainage systems, or surface water. Do not allow material to contaminate ground water system.
6.3 Methods for cleaning up:	Sweep/shovel into suitable container for disposal. Avoid raising dust and ensure adequate ventilation.

7. Handling and storage

7.1 Handling:	Handle in a well-ventilated area. Install local exhaust at 3D printers area is recommended when many printers are operated at once. Avoid contact with heated or molten product. Use personal protective equipment Avoid dust formation and electrostatic charge. Keep away from fire ignition sources.
7.2 Storage:	Protect from water, moisture and direct sunlight. Stored material in dry rooms and keep material in sealed packaging/container with desiccant when not in use. Store at ambient temperatures. Avoid all sources of ignition.
7.3 Precautions:	No special precautions required.
7.4 Specific end use(s):	Primarily used for 3D printing.

8. Exposure controls / personal protection

8.1 Control parameters	Occupational exposure limits UK. EH40 Workplace Exposure Limits (WELs) <table><tr><th>Components</th><th>Type</th><th>Value</th><th>Form</th></tr><tr><td rowspan="2">Dust (CAS -)</td><td rowspan="2">TWA</td><td>4 mg/m3</td><td>Respirable dust</td></tr><tr><td>10 mg/m3</td><td>Inhalable dust</td></tr></table> Biological limit values: No biological exposure limits noted for the ingredient(s) Recommended monitoring procedures: Not available Derived no-effect level (DNEL): Not available Predicted no effect concentrations (PNECs): Not available Provide appropriate exhaust ventilation at places where dust is formed. Avoid electrostatic charge by use of grounding cables.	Components	Type	Value	Form	Dust (CAS -)	TWA	4 mg/m3	Respirable dust	10 mg/m3	Inhalable dust
Components	Type	Value	Form								
Dust (CAS -)	TWA	4 mg/m3	Respirable dust								
		10 mg/m3	Inhalable dust								
8.2 Occupational exposure limits:	Given suitable ventilation it can be that the threshold limits will not be reached.										
8.3 <u>Personal protective equipment</u>											
8.3.1 Hand protection:	Wear heat protection gloves, preferably cotton or leather, when handling hot molten product.										
8.3.2 Eye protection:	Wear protective glasses, preferable with side-shields.										
8.3.3 Skin and body protection:	Wear (protective) clothing to avoid direct exposure of skin to hot molten product when handling.										
8.3.4 Safety and hygiene measures:	Avoid contact of hot molten material to skin. Avoid inhalation of dust, mists and vapors. Eye wash fountains and safety showers must be easily accessible. Handle in accordance with good industrial hygiene and safety practice. No eating or drinking during working.										
8.4 Environmental exposure controls:	Prevent entry into drainage systems, or surface water.										

9. Physical and chemical properties

9.1 Form:	Filament, Solid
9.2 Colour:	Natural (or colored, e.g. black)
9.3 Odour:	characteristic, weak, acrid when burning
9.4 Melting point/range:	200 – 260 °C
9.5 Auto-ignition temperature:	n.a. °C
9.6 Explosions limit:	Not specified
9.7 Relative density:	1.08 g/cm³
9.8 Solubility:	Soluble in esters, ketones and ethylene dichloride

10. Stability and reactivity

10.1 Stability:	Product is stable at recommended storage conditions.
10.2 Conditions to avoid:	Avoid extreme heat and all sources of ignition. Thermal decomposition.
10.3 Substances to avoid:	Strong oxidizing agents, strong acids.
10.4 Hazardous reactions:	The product is chemically stable.
10.4.1 Hazardous decomposition products:	When burning irritating vapors can occur, please use personal protection

11. Toxicological information

11.1 Likely routes of exposure	Inhalation: Dust irritates the respiratory system, and may cause coughing and difficulties in breathing. Skin contact: Dust may irritate skin. Eye contact: Dust may irritate the eyes. Ingestion: May cause discomfort if swallowed.
11.2 Symptoms:	Dust may irritate throat and respiratory system and cause coughing. Direct contact with eyes may cause temporary irritation.
11.3 Information on toxicological effects	Acute toxicity: Dusts may irritate the respiratory tract, skin and eyes. Skin corrosion/irritation: Dust may irritate skin. Serious eye damage/eye irritation: Dust may irritate the eyes. Exposed may experience eye tearing, redness, and discomfort. Respiratory sensitization: Not classified. Skin sensitization: Not a skin sensitizer. Germ cell mutagenicity: Not expected to be mutagenic. Carcinogenicity: Not classified. Reproductive toxicity: Not classified.

Specific target organ toxicity - single exposure: No data available
Specific target organ toxicity - repeated exposure: No data available
Aspiration hazard: Due to the physical form of the product it is not an aspiration hazard.
Mixture versus substance information: Not applicable.
Other information: Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure.

12. Ecological information

12.1 Toxicity:	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
12.2 Persistence and degradability:	No data available.
12.3 Bioaccumulative potential:	No data available.
12.4 Mobility in soil:	Not available.
12.5 Other adverse effects:	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

13. Disposal considerations

13.1 Product:	Generation of waste should be minimized, check possibility for recycling. Waste product can be incinerated or dumped together with domestic waste in compliance with local authority requirements. Do not contaminate ponds, waterways or ditches with chemical or used container. Contact manufacturer if needed.
13.2 Packaging:	Packaging material has to be emptied completely and disposed in accordance with the regulations. Packaging can be recycled if not contaminated. <i>WARNING - Plastic bags and desiccant bag can be dangerous. To avoid danger of suffocation, keep these bags away from babies, children and animals.</i>

14. Transport information**14. Transport hazard class**

ADR: Not regulated as dangerous goods.
RID: Not regulated as dangerous goods.
AND: Not regulated as dangerous goods.
IATA: Not regulated as dangerous goods.
IMDG: Not regulated as dangerous goods.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
This substance/mixture is not intended to be transported in bulk.

15. Regulatory information**15.1 EU / National regulations:**

Not listed

15.2 Chemical safety assessment:

No Chemical Safety Assessment has been carried out.

16. Other information**Company name:**

BigRep GmbH

Additional data:

In addition to the information given in this Material Safety Data Sheet (MSDS) we refer to the products specific Technical Data Sheet (TDS).

Disclaimer:

The information given in the Material Safety Data Sheet only applies to the described product in connection with its appropriate use.

All information is based on the latest state of our knowledge. In particular, it describes our product under the aspect of possible hazards and pertaining safety measures. The information does not constitute any guarantee of specific product and/or quality properties.

The information given in this Material Safety Data Sheet is not required according to article 31 and Annex II of Regulation (EC) No.1907/2006. It merely serves the purpose of providing sufficient information on a voluntary basis to ensure safe use of the compound/product. There is no obligation on the part of BigRep GmbH to revise this document. BigRep does not take responsibility for the data provided in this document.

BigRep GmbH
Gneisenaustraße 66
10961 Berlin - Germany