

## TECHNICAL DATA SHEET

### FILAFLEX 70A ULTRA-SOFT

#### Description

Filaflex is a Thermoplastic Polyether-Polyurethane elastomer with additives that allow high printability in FDM printers. Filaflex® has a remarkable hydrolysis resistance, high resistance to bacteria and low temperature flexibility properties in printed parts.

Physical properties	Value	Unit	Test method according to
Material density	1.08	g/cm <sup>3</sup>	DIN EN ISO 1183-1-A

Mechanical properties	Value	Unit	Test method according to
Hardness	70	Shore A	DIN ISO 7619-1 (3s)
Tensile strength	32	MPa	DIN 53504-S2
Elongation at break	900	%	DIN 53504-S2
Stress at 20% elongation	1.7	MPa	DIN 53504-S2
Stress at 100% elongation	3.6	MPa	DIN 53504-S2
Stress at 300% elongation	6.6	MPa	DIN 53504-S2
Tear strength	47	N/mm	DIN ISO 34-1Bb
Abrasion loss	46	mm <sup>3</sup>	DIN ISO 4649-A
Compression set 23°C / 72 hours	22	%	DIN ISO 815
Compression set 70°C / 24 hours	39	%	DIN ISO 815
Tensile strength after storage in water at 80°C for 42 days	20	MPa	DIN 53504-S2
Elongation at break after storage in water at 80°C for 42 days	900	%	DIN 53504-S2
Notched impact strength (Charpy) at +23°C	nb	kJ/m <sup>2</sup>	DIN EN ISO 179-1

Printing properties	Recommended
Printing temperatures	215 - 235°C
Printing speed	20 - 40 mm/s
Hot-bed temperature	0-40°C
Optimal layer height	0.2 mm
Minimal nozzle diameter	0.4 mm or higher
Retraction parameters	3.5 - 6.5 mm (speed 20 - 160 mm/s)

## MATERIAL SAFETY DATA SHEET

Filaflex 70A Ultra-Soft

### 1. Product and company identification

#### 1.1. Trade name

Filaflex 70A®

#### 1.2. Company details

Recreus Industries S.L.,  
C/El Envelope, F13-F14. Pol. Ind. Finca Lacy  
03600, Elda, (Alicante) - Spain  
(0034) 865 777 966  
info@recreus.com  
www.recreus.com

### 2. Hazards identification

#### Classification of the substance or mixture:

Not a product dangerous for health or the environment according to the definition of EC directives 2006/121/EC or 1999/45/EC and their valid adaptations and derived national regulations.

### 3. Composition/information on ingredients

Polyurethane Thermoplastic - 97% CAS: 75701-44-9

### 4. First-aid measures

- **General instruction:** Change clothes impregnated with the product.
- **In case of inhalation:** Supply fresh air. In case of disturbances, consult a doctor.
- **After inhalation of decomposition products,** breathe fresh air, rest, seek medical help.
- **In case of skin contact:** Wash with soap and water. Visit your doctor if irritation continues skin.
- **After contact with molten product,** cool rapidly with cold water. No skin separating the solidified product. Call a doctor immediately.
- **In case of eye contact:** Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor. Remove contact lenses, if present and easy. Continue rinsing.
- **If swallowed:** Rinse mouth and drink plenty of water. Do not induce vomiting. Consult doctor in case of persistent symptoms.

## 5. Firefighting measures

- Suitable extinguishing media: Water, Foam, Dry chemical.
- Burning releases carbon monoxide, carbon dioxide, oxides of nitrogen and traces of hydrogen cyanide. In the event of fire and/or explosion do not breathe fume.
- Firemen must wear self-contained breathing apparatus.
- Do not allow contaminated extinguishing water to enter the soil, groundwater or surface waters.

## 6. Measures in case of accidental release

### 6.1. Personal precautions

- Protective equipment and emergency procedures
- Avoid dust formation.
- Do not breathe dust.
- Keep away from sources of ignition.
- Avoid eye contact.
- Danger of slipping on spilled product or pouring.

### 6.2. Environmental cautions

Do not discharge into drains/surface water/groundwater.

### 6.3 Methods and Materials for containment and cleaning up

Allow to solidify, pick up mechanically. Dispose of the material collected according to regulations.

## 7. Handling and storage

### Handling

Adequate ventilation and if necessary, effective exhaust must be provided at the workplace of fused deposition modeling process.

Provided good ventilation and/or local exhaust systems are used, the Workplace Exposure Limit(s) stated in Chapter 8 should not be exceeded. Dust must be removed by effective exhaust ventilation.

### Storage

Keep container tightly closed and dry. Storage temperature: < 40 °C

## 8. Exposure controls/personal protection

### Ventilation

During fused deposition modeling operations, use with ventilation adequate to reduce levels of air contaminants below that which may cause personal injury or illness. Local exhaust ventilation that removes air contaminants from the breathing zone is preferred. General, mechanical, or dilution ventilation may be suitable.

### Respiratory protection

In case of dust formation use respiratory equipment with filter type particle filter P1 according to EN 143.

### Hand protection

Suitable materials for safety gloves; EN 374-3: polyvinyl chloride - PVC ( $\geq 0.5$  mm). Contaminated and/or damaged gloves must be changed.

### Eye protection

Wear eye/face protection.

### Skin and body protection

Wear suitable protective clothing.

### Further protective measures

Do not breathe dust/vapor. Grease skin.

## 9. Physical and chemical properties

Appearance:	Various colors
Odor:	Odorless
Odour Threshold:	NA
PH:	NA
Boiling Point (° C):	NA
Melting point (° C):	195-220
Softening point (° C):	90
Evaporation Rate:	NA

Properties Flammable / Explosive:	NA
Vapor pressure / vapor density:	NA
Relative density:	1.13
Solubility:	NA
Octanol/water partition:	NA
Auto-ignition temperature:	NA
Decomposition temperature:	NA
Viscosity:	NA
Other properties:	NA

## 10. Stability and reactivity

### Reactivity

Non-applicable

### Chemical stability

Thermal decomposition/conditions to be avoided:

- No decomposition with storage and proper handling.
- Avoid impact, friction, heat, sparks, and electrostatic charges.

**Possibility of dangerous reactions:** Non-applicable.

**Conditions to be avoided:** No further relevant information.

**Incompatible materials:** Strong oxidants.

### Strong decomposition products

- Irritant gases/vapours
- Toxic gases/vapours
- Smoke
- Carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>) emissions

## 11. Toxicological information

**Acute toxicity LD50 oral rat:** > 5000 mg/kg.

**Acute toxicity LD50 subcutaneous, rat:** > 5000 mg/kg.

**Primary skin irritation, rabbit:** non-irritant.

**Primary mucosal irritation, rabbit:** non-irritant.

**Skin sensitisation according to Magnusson/Kligman (maximizing test):** No sensitisation established on guinea-pigs.

**Additional information:** According to our experience and information the product has no harmful effects on health if properly handled.

## 12. Ecological information

### Ecotoxicity

It is not expected to be very toxic, but if ingested by birds or aquatic life, can cause adverse mechanical effects.

### Mobility

Bioconcentration is not expected because of the high molecular weight (MW > 1000). In the terrestrial environment, material is expected to remain in the soil. In the aquatic environment material will sink and remain in the sediment.

### Persistence and degradability

This solid water-insoluble polymeric are expected to be inert in the environment. Surface degradation is expected with exposure to sunlight. Appreciable biodegradation is not expected.

### Additional ecological information

General instructions: CPA 1 (auto classification): not dangerous for water.

## 13. Disposal considerations

Dispose in accordance with applicable international, national and local laws, ordinances and statutes. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

After containers have been emptied as thoroughly as possible (e.g. by pouring, scraping or draining until "drip-dry"), they can be sent to an appropriate collection point set the framework of the existing take-back scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

The product is suitable for mechanical recycling. After appropriate treatment it can be remelted and reprocessed into new moulded articles. Mechanical recycling is only possible if the material has been selectively retrieved and can fully segregated according to type.

#### **14. Transport information**

Not regulated.

#### **15. Regulatory information**

Not regulated.

#### **16. Other information**

The data is based on the current state of knowledge, but it is not a guarantee of the product features and it is not legally valid in a contractual relationship.

#### **Disclaimer**

Is under responsibility of the 3d printer parts manufacturer or end user the compliance of the plastic object, for the specific use, with the overall migration limit, the specific migration limit and other restrictions. Do not hesitate to contact our technical service for explanations, advising and for any other need.