

MATERIAL SAFETY DATA SHEET

CONDUCTIVE FILAFLEX

CONDUCTIVE FILAFLEX is a Thermoplastic Polyurethane elastomer electrically conductive.

1. Product and company identification

1.1. Trade name

Conductive Filaflex

1.2. Company details

Recreus Industries S.L.,
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2. Hazards identification

Classification of the substance or mixture:

The product does not require a hazard warning label in accordance with CE n. 1272/2008 (CLP) regulation.

The fumes or vapors released during the process should not be inhaled. Molten material can cause burns. The dust and particles generated during the handling of the product can cause mechanical irritation to the eyes, skin and mucous membranes. Grinding of molded articles can accentuate these phenomena; it is therefore necessary to avoid inhalation of any possible dust in the environment.

3. Composition/information on ingredients

THERMOPLASTIC POLYURETHANE ELASTOMER TPU
LAMPBLACK

Under the referenced regulation, this product does not contain any components classified for health hazards above the relevant cut off value. SVHC substances has not intentionally added in concentration greater than 0.1%.

4. First-aid measures

Most important symptoms and effects, both acute and delayed Mechanical irritation due to product particles.

- **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 products,** 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 the doctor in case of persistent symptoms.

5. Firefighting measures

- Hazardous thermal decomposition: Burning releases Aliphatic compounds, Isocyanates, Traces of hydrogen cyanide, Carbon monoxide, carbon dioxide.
Under certain fire conditions, traces of other toxic substances must not be excluded. The formation of other decomposition and oxidation products is dependent on fire conditions.
- Suitable extinguishing media: Water, Foam, Dry chemical.
- Firemen must wear self-contained breathing apparatus.

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.

6.2. Environmental cautions

No special measures required.

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.

Considerable amounts of particles with a particle size of less than 500 micrometers must be avoided during handling, so the provisions of the NFPA 654 (National Fire Protection Association) standard or equivalent must be respected. Adopt the measures indicated below to prevent the formation of electrostatic discharges (grounding of devices, etc.) in accordance with the indications of Guide CLC / TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity) or other equivalent guides.

The material contains lampblack. It is therefore necessary to check the degree of protection of the site, of the electrical equipment, and particularly, compatibility due to the presence of conductive powders.

Storage

Keep the container tightly closed and dry away from the atmospheric agents. Storage temperature: < 40 °C.

8. Exposure controls/personal protection

Control indicators

Exposure Limit Values for Contaminants in the Workplace (ACGIH)

| | | | |
|-----|----------------------|---------|------------------|
| ELV | 10 mg/m ³ | ELV-TWA | inhalable powder |
| | 3 mg/m ³ | ELV-TWA | inhalable powder |
| | 3 mg/m ³ | ELV-TWA | lampblack |

Derived No Effect Levels (DNEL)

Long-term inhalation - systemic effects: 2mg/m³

Long-term inhalation - local effects: 2mg/m³

Predicted No Effect Concentration (PNEC)

Danger to aquatic organism - fresh water: 5mgm³

Danger to aquatic organism - saltwater: 5mgm³

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. General, mechanical, or dilution ventilation may be suitable.

Respiratory protection

In case of dust formation use respiratory equipment with filter type particle filter FFP2 according to EN 149.

Hand protection

In the presence of dust, it is advisable to use EN 388 (2132) gloves and protective clothing. Suitable materials for safety gloves; EN 374-3: polyvinyl chloride - PVC (≥ 0.5 mm). Contaminated and/or damaged gloves must be changed.

Eye protection

During the transformation of the material in the presence of molten material, it is advisable to put on the protective visor. Wear eye/face protection EN 166.

9. Physical and chemical properties

| | |
|-----------------------------------|-----------------------------|
| Appearance: | black pellets |
| Odor: | characteristic |
| Odour Threshold: | NA |
| PH: | NA |
| Melting point (° C): | >260°C |
| Properties Flammable / Explosive: | NA |
| Relative density: | 1.00-2.00 g/cm ³ |
| Solubility: | insoluble at 20°C |

10. Stability and reactivity

Reactivity: Non-applicable.

Chemical stability: Stable as long as the provisions / indications for storage and handling are observed.

Possibility of dangerous reactions: Non-applicable.

Conditions to be avoided:

- During purging, do not allow fumes from molten material to spread into the work environment.
- If the material is handled at processing temperatures higher than the highest suggested value (mentioned in the technical literature), some decomposition may occur; this becomes more important with higher residence times in the barrel.
- Do not allow the material to remain in the barre if the production process is interrupted: it can decompose and / or create dangerous excess pressure in the barrel.

Incompatible materials: Avoid contamination with other materials that in the transformation phase can give rise to harmful gases and fumes.

Strong decomposition products

- Aliphatic compounds
- Isocyanates
- Traces of hydrogen cyanide

11. Toxicological information

Acute toxicity: DL50 rat (oral) >8.000 mg/kg (lampblack).

Inhalation: May cause mechanical irritation to the upper respiratory tract.

Skin: Dust generated during material handling can cause mechanical irritation to the skin.

Eyes: May cause physical abrasion in contact with eyes. Molten polymer will cause serious.

Germ cell mutagenicity: Non-data available.

Carcinogenicity: lampblack may be carcinogenic to humans group 2B.

Reproduction: Non-data available.

Specific target organ toxicity - STOT: Non-data available.

12. Ecological information

Ecotoxicity

There is a high probability that the product is not acutely harmful to aquatic organisms. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

- **Fish toxicity:** LC50 (96 h) >1.000 mg/l (fresh water) Brachydanio rerio.
- **Fish chronic toxicity:** Non-data available.
- **Aquatic invertebrates:** EC50 (24 h) >5.600 mg/l Daphnia magna.
- **Aquatic chronic invertebrates:** Non-data available.
- **Aquatic plants:** EC50 (72 h) >10.000 mg/l.
- **Microorganism:** EC50 (3 h) >=800 mg/l.

Persistence and degradability

Potentially not biodegradable. It is expected to be persistent.

Results of PBT and vPvB assessment

The material does not contain any PBT (persistent, bioaccumulative, toxic) or vPvB (very persistent, very bioaccumulative) substances.

Additional ecological information

Other ecotoxicological advice: The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

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. Incinerate in a licensed facility. Do not discharge substance/product into sewer system. Dispose of in a licensed facility.

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 to 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.

14. Transport information

Not regulated.

15. Regulatory information

Classification and labeling: Directive 2001/60/CE - 1999/45/CE - 92/32/CE - 67/548/CEE to (CE) and amendments - N° 1272/2008 Regulation.

Occupational health and safety: D.M. 26/02/2004 - D.Lgs. 233/03 "ATEX" - Directive 98/24/CE, 89/391/CEE, 89/654/CEE, 2009/104/CE, 89/656/CEE, 2004/37/CE, 2000/54/CE, 2003/10/CE, 2009/148/CE - D.Lgs. 81/2008 - D.Lgs. n. 106 03/08/2009.

Atmospherics emissions: D.Lgs. n. 152 03/04/2006 - DM 12/7/94 - Directive 2008/50/CE - 2010/75/UE.

Water protection: D.Lgs. n. 219 de 10/12/2010 - D.Lgs. n. 152 de 03/04/2006 - Directive 91/271/CEE, 2000/60/CE, 2008/105/CE, 2009/90/CE, 2013/39/UE.

Waste disposal: D.Lgs. n. 152 de 03/04/2006 - Directive 2008/98/CE, 94/62/CE, 2001/118/CE.

PPE: D.Lgs. 475/92 - D.Lgs. 10/97 - D.M. 02/05/2001 - Directive 89/686/CEE - 93/68/CEE - 93/95/CEE - 96/58/CE.

The information contained in this data sheet has been prepared in accordance with the following standards: Reg. (UE) n° 453/2010 - Reg. (CE) n° 1272/2008 - Reg. (CE) n° 1907/2006 (REACH) - DM 07/09/2002 - Directive 2001/58/CE - 1999/45/CE - ISO 11014:2009.

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.