

Carbon nanotube-TPU composite for fibre formation

TECHNICAL DATA SHEET:

Product Description

NOVI carbon nanotube - thermoplastic polyurethane composite pellets is designed for fibre formation on screw extruder. Final fibre characterizes high electrical conductivity, flexibility and light-weight. Composed with a polymer well-known to textile industry: thermoplastic polyurethane (TPU), which makes it perfect for smart-textiles applications.

It is possible to adjust the properties of the composite and thus the final fibre to the customer's needs.

Product benefits

- ✓ Good electrical conductivity
- ✓ Simple and low-cost method
- ✓ Good elasticity (depending on CNT filling)
- ✓ Excellent for elastic electrically conducting fibres

Processing:

designed for technologies:

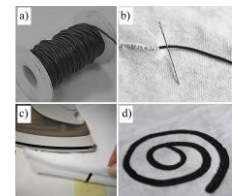
screw extrusion

-self-standing fibre

-Possibility of both sewing the fibre into fabric and transferring it onto fabric by a thermal process, where the polymer softens and attaches to the woven classical yarns.

important processing parameters:

- instrumentation: screw extruder
- temperatures: 140 °C, 160 °C



Composition:

- Functional phase: carbon nanotubes
- Polymer: thermoplastic polyurethane (TPU)
- Washing solvent: THF

Important joint parameters:

- **current carrying capacity:** *maximal current: 1.25 A for 40% w/w CNT in TPU
1.8 A for 20% w/w CNT in TPU*
- **maximum elongation:** *35% for 40% w/w CNT in TPU
70% for 20% w/w CNT in TPU*
- **Electrical conductivity:** *671 S/m for 40% w/w CNT in TPU
4.2 S/m for 20% w/w CNT in TPU*

Storage and shelf life:

Tightly sealed containers should be stored in a dry room, at room temperature, away from sources of fire. Shelf life for pellets in unopened containers is 6 months from the date of production.