SWAB1EN0007

New TPU sheathing resins & compounds for cables

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The “Moose Test”, published as ISO 3888-2, is designed to simulate a driver swerving to avoid a moose that runs into the road. In 1997, the new Mercedes-Benz A-Class model flipped over, failing the test. The Electronic Stability Control (ESC) system was introduced to solve the problem and this has led to more widespread use of control cables made of thermoplastic polyurethane (TPU).

A comprehensive package

SONGWON offers a wide range of solutions for TPU cable sheathing. The broad variety of TPUs for which SONGWON’s products can be used includes polyether and polyester based, thermally stabilized, breathable, super soft, compression set, calender, transparent and high recovery grades.

SONGSTOMER™ polyether TPU resin – the product of choice for compounding

TPU consists of alternating sequences of hard and soft segments. The hard segment is crystalline in structure, while the soft segment is amorphous. The soft segment can semi-crystallize during extreme elongation, stopping crack formation and thereby improving tear strength.

Additives such as fillers, plasticizers and flame retardants lower the initial mechanical properties of the TPU to a certain extent. Selection of the right TPU base resin is therefore essential to ensure the quality of the final compound.

Polyether based TPU is used in cable sheathing to ensure durability. Thanks to maximum initial mechanical values, high filler loading and minimum thermal degradation during processing, SONGSTOMER™ polyether TPU resins are highly suitable for compounding. They are resistant to cracking, caused by cutting, tearing, abrasion and kinks; their backbone design ensures good performance at low temperatures (Tg: -40 °C/F) as well as protection against hydrolysis and microbe attack; and their recrystallization and flow characteristics make them cost effective in processing.

Polyether versus polyester TPUs

The choice of most suitable product depends on the requirements for the particular application.

Performance	Polyether TPU	Polyester TPU
Hydrolysis resistance	high	limited
Microbe resistance	high	limited
Hot / dry resistance	good	very good
Oil resistance	limited	very good
Tensile / tear / abrasion resistance	high	very high
Compression set	good	very good
Cold flex	good	very good

Extigen TPU compounds – a reference in the fiber optic cable industry

Unience is a leading manufacturer of technologically advanced, environmentally sound products. Halogen free Extigen TPU compounds, which are based on SONGSTOMER™ TPU resins, are highly suitable alternatives to conventional polymers.

Extigen TPU compounds:

- minimize mechanical and chemical impact during and after installation, making for robust cable jacketing that protects the fragile optical fiber;
- prevent bending and kinking, which can occur as a result of soil settlement, for example, during laying and after installation;
- protect cables against cutting and abrasion during trailing over soil and rocks;
- are resistant to low temperatures, which can intensify impact and result in breakage;
- provide protection against the long term effects of humidity, water, salts, termites and microbes;
- reduce the risk of flame propagation thanks to their flame retardancy and heat stability;
- eliminate the threat of caustic halogen acid formation and reduce the risk of corrosion damage to adjacent materials.

Besides robust and reliable cable sheathing, other potential applications for Extigen TPU compounds include robotic, mining, under the hood, offshore, and electric car cables.

Further developments in the pipeline

SONGSTOMER™ TPU resins make cables stronger, more durable and safer. SONGWON intends to use its knowhow in stabilizers to continue developing and producing products for the fast growing plastic cable sheathing market.

Solutions from SONGWON and Unience help to ensure the safety of the vehicle driver and passengers. With the aid of robust cables, Electronic Stability Control enables the driver to swerve without overturning the vehicle and people and animals on the road have a better chance of escaping unharmed.

Please don’t hesitate to contact us if you would like further information. Our experts will be pleased to help.