Technical Data Sheet

TESIL®

Description

SUBJECT OF TDS

This TDS applies to production, sorting, labelling, testing, storage, supply and packaging of a polyester tow and polyester staple fibres sold under the trademark TESIL®. This standard is associated to the material sheets for any type of a polyester tow and staple fibres.

NOMENCLATURE

The polyester tow (hereinafter referred to as the tow) is defined by ISO 8159 (80 0011). Polyester staple fibres (hereinafter referred to as staple) is defined in ISO 8159 (80 0011). Polyester fibre (hereinafter referred to as fibre) is a term that includes both tow and staples fibres in the text of this standard.

1.GENERAL

1.1 Characteristics of the product

The staple and tow are, based on their chemical origin, polyester fibres produced by melt spinning of polyethylene terephthalate. This results in an undrawn fibre which is further drawn, a specific finish is applied on it, the crimp is produced, and the properties are usually fixed to the requested level. The resulting product is a tow or staple, obtained by cutting the tow to a certain length.

1.2 Use

Depending on the method of further processing, the tow and staple are divided:

A) Fibres for the production of nonwovens

- for processing into non-woven fabrics chemically or heat-treated
- for processing into non-woven fabrics with a water jet (chemically or heat-treated)
- for processing into non-woven fabrics reinforced by needle (or chemically or thermoset)

B) Spinning the fibre

- for cotton processing technology (lower fibre weight)
- for wool technology processing (usually higher fibre weight)

Colouring of PES fibres Tesil®

Tesil® Polyester fibres can be dyed by the methods used for surface dyeing of PES fibres. Uniformity of coloration is not guaranteed. The parameters and method of colouring and the use of textile auxiliaries need to be adopted to the type of Tesil® dyed fibres, taking into account their properties, e. g. shrinkage etc.

AUTOMOTIVE APPLICATIONS

HYGIENIC APPLICATIONS

CONSTRUCTION APPLICATIONS

GENERAL APPLICATIONS

TESIL®

Description

1.3 Appearance properties

Mattyfied fibres contain a uniformly dispersed matrix composition (titanium dioxide - TiO2). Fibre dyed in the mass contains a uniformly dispersed pigment or other dye, usually combined with a mattying composition.

The staple is produced as a semi-matt (M) with a reduced content of matt (PM) and glossy or dyed in a mass with a solid round cross-section.

The fibres are crimped, usually fixed, and are characterized by high lightness. They are surface-treated to ensure the processability.

1.4 Chemical properties

The fibres in the cold state resist weak acids and bases. With strong oxidizing agents, strong acids and bases the fibres get disrupted at temperatures above 40 °C, and there is a reduction in the mechanical properties. At temperatures above 210 °C there is a softening and deformation, at temperatures of 245 °C and higher melting occurs.

This article provides very general information. For a specific assessment, it is required a practical experimental verification of the suitability of the fibres application for the environment, and the manufacturer cannot hold the responsibility for damage resulting from improper use of the fibres.

1.5 Physical-mechanical properties

Polyester staple and TESIL® tow show the typical properties of this type of fibre. Among them, it is particularly relatively high strength and lightfastness. Fineness, elongation, shrinkage is determined by customer requirements. The fibre can be processed using standard procedures. It is advisable to use both the specifications in use as set out in this standard, and the experience of the manufacturer and the converters.

1.6 Health safety

All types of polyester staple and tow TESIL® are regularly tested under the Öko -Tex Standard 100. All the checks made so far have confirmed that the polyester staple and tow TESIL® meet the most demanding criteria of product category I - products for children under the age of 3 years.

Öko -Tex Standard 100 is compatible with the Decree of the Ministry of Health of the Czech Republic 84/2001 Sb. on hygiene requirements for toys and products for children under three years of age. At the same time, the TESIL ® fibres are labelled with the Ecolabel mark.

As of 2020, the customer can receive Global Recycle Standard on material, if requested.

AUTOMOTIVE APPLICATIONS

HYGIENIC APPLICATIONS

CONSTRUCTION APPLICATIONS

GENERAL APPLICATIONS

TESIL®

Description

2. TECHNICAL REQUIREMENTS

The technical characteristics of each type of staple and tow are given in the relevant material data sheet which form part of this technical data sheets. The list of test methods is given in Chapter 3.

The tow is produced and supplied in total nominal lengths from 150 to 240 ktex.

The nominal tow length of each fiber is 3.0 to 13.0 dtex. Specific values and nominal tow fineness is given in the relevant material data sheet. The tow must be of a ribbon-like shape, evenly crimped, without twists.

Staple is produced and supplied at cut length of 38 to 85 mm. The nominal length is from 3.0 to 17.0 dtex. Specific values of linear weight are given in the relevant material data sheets.

Staple and tow in a different design than mentionned above can be manufactured and supplied only by agreement between manufacturer and customer.

Defective fibers are single or combined non-oriented fiber (melted fibers). Their properties are different from standard fibers. The manufacturer maintains their content at a low level and controls them content. The defective fibers must not significantly impair the processing, quality and appearance of the product.

These guarantees do not apply to 3rd and 4th grade of fibers. The 3rd and 4th quality material is sold after handover of a representative sample. Upon reconciliation, there is no right to claim.

If a customer uses a visually demanding product, it is necessary to consult the customer support of a supplier for a suitable type of fibers. Otherwise, the manufacturer cannot hold the warranty for defects and costs of disposal.

Release of the fiber is performed on the basis of test results according to valid internal company standards, based on the relevant material data sheets. The fiber is supplied in four quality grades:

For TESIL staple fiber:

- 1st quality
- 3rd quality
- 4th quality

AUTOMOTIVE APPLICATIONS

HYGIENIC APPLICATIONS

CONSTRUCTION APPLICATIONS

GENERAL APPLICATIONS

TESIL®

Description

3. TESTING

3.1 Preparation of samples

Test samples to check the fibre parameters are taken according to the valid sampling plan. Properties of fibres are tested in an air-conditioned laboratory (temperature 20 ± 3 °C, humidity 65 ± 4%).

3.2 Test methods

Staple and tow are tested according to internal test procedures based on valid EN ISO standards, or BISFA. For each test method reference is made to the relevant standard. If stated IPN 300 CH-x-x-x, this is an internal standard (test procedure) of SILON s.r.o., which is available on request from the manufacturer.

Test method Technical standard

Test method	Technical standard
Fineness	EN ISO 1973 (80 0269)
Strength and elongation	EN ISO 5079 (80 0200)
Staple length	IPN-ZP 300 CH 3-2-8
Number of crimps	IPN-ZP 300 CH 3-2-9
Finish level	IPN-ZP 300 CH 3-2-2 (based on ČSN 800523)
Hot air shrinkage at 160 °C	IPN-ZP 300 CH 3-2-10
Undrawn fibres	IPN-ZP 300 CH 3-2-15
Determination of defects after carding	IPN-ZP 300 CH 3-2-38
Colour shade	IPN-ZP 300 CH 3-2-41 (CIELab 1976)
Sinking time	IPN-ZP 300 CH 3-2-40
LOI	EN ISO 4589-2

It must be kept in mind, that the above standards apply to fibre properties. The convertor is responsible for properties of the nonwoven material or spun yarn produced from the fiber, as the nonwoven properties as well depend on composition and processing technology. In cases of life saving properties, as the flamability, the guarantee of the LOI performance is strictly limited by the method of the testing and is subject to verification in other forms of fibrous structure derailing from the sampled one.

AUTOMOTIVE APPLICATIONS

HYGIENIC APPLICATIONS

CONSTRUCTION APPLICATIONS

GENERAL APPLICATIONS

TESIL®

Description

4. DELIVERY, PACKAGING, MARKING, TRANSPORTATION AND STORAGE

The packing unit of the staple and the tow is a bale.

The standard bale weight ranges from 160kg to 380kg, typically 280 -320 kg for staple fibre and from 190kg to 280 kg for tow. Exceptionally, the range may be exceeded. Unless the customer requests otherwise, such a package can be sold as 1st quality.

Another exception to weight range of the bale may be the special customer requirements that may be part of a logistics and quality agreement between the supplier and the customer.

The packaging protects the fibre from contamination.

The tow layout must be uniform to ensure trouble-free pulling of the tow from the package.

Both the beginning and end of the tow must be marked.

On each bale (packaging unit) of fiber, there is:

- manufacturer's designation
- designation of product and type
- Nominal weight
- Nominal staple length
- Commercial weight
- Batch number
- Additional information may appear
- Samples may be labelled on the basis of an agreement with the customer with a specific labelling

On each bale of tow, there is:

- Manufacturer's designation
- Designation of product and type
- Nominal linear weight and nominal tow ktex
- Commercial weight
- Batch number
- Additional information may appear
- Samples may be labelled on the basis of an agreement with the customer with a specific labelling.

Store in temperature from -30 °C to 70 °C in cavered dry area, protect the product from sun light.

AUTOMOTIVE APPLICATIONS

HYGIENIC APPLICATIONS

CONSTRUCTION APPLICATIONS

GENERAL APPLICATIONS

TESIL®

Description

The fiber is sold with a mass weight at nominal humidity based on the BISFA Technical Standard on Commercial Mass, revision 2007.

The manufacturer shall send the accompanying documentation and Quality Certificate to each consignment within three working days of the dispatch of the product. The products are transported in sheltered weather-protected vehicles.
The storage area must be clean and packing units must be stored and transported in such a way as not to be subject to possible damage.
The warranty period for staple and tow is 6 months from the date of delivery, unless agreed otherwise with the customer.
Packing units are stored in dry rooms protected from climatic influence, conditions common to textile materials. Before processing, the fibers must maturing (conditioning) at relative air humidity and temperature recommended for processing PES fibers. The provisions of Czech standard ČSN 64 0090 also applies.

5. FIRE-TECHNICAL CHARACTERISTICS

For polyester fibers, the manufacturer provides a safety data sheet. In Chapter 9, there is a fire safety-technical characteristics described. Chapter 5 lists the measures for firefighting.

6. SAFETY AND HEALTH AT WORK

Polyester fiber are not classified as dangerous preparations within the meaning of REACH 1907/2006/EC and 1272/2008/EC (Act 350/2011 Coll., as amended).
In case of contact with the fiber, it is necessary to use appropriate personal protective equipment specified by the respective operating instructions of the convertor.
Standard hygiene measures must be followed - do not eat, drink and smoke when dealing with fibers; before work and after work wash your hands with soap and water.
The manufacturer possesses a safety certificate described in Chapters 3, 4, 6, 7 and 8, the issue of occupational safety and health described in full detail.

AUTOMOTIVE APPLICATIONS

HYGIENIC APPLICATIONS

CONSTRUCTION APPLICATIONS

GENERAL APPLICATIONS

TESIL®

Description

7. WASTE MANAGEMENT GUIDELINES

7.1 Waste from the tow and Tesil® staple

Polyester fibers mixed with natural or synthetic fibers are used as padding material.
Polyester fibers without any additives are recycled.
Waste from tow and staples includes the waste producer according to valid legislation.
Recommended classification according to the Waste Catalogue: 07 02 13
Recommended ways of using waste: Material use.

7.2 Packaging

Plastic packages of low density (high density) polyethylene, respectively of polypropylene can be recycled and further processed into technical products. In accordance with ČSN 77 0052-2 and EN ISO 11469, the >LD-PE < (> HD-PE <) or > PP < is used for low-density (high density) polyethylene. These polymers do not contain lead, chromium, cadmium or mercury and are not within the meaning of Regulation (EC) 1272/2008 and Act No. 350/2011 Coll. as amended, classified as a hazardous chemical.

Further specifications are provided based on customer requirements to the packaging material used.
Recommended classification according to the Waste Catalog: 15 01 02
Recommended ways of using waste: material use, energy recovery (43 MJ.kg-1).

Boxes and other types of packaging made of multilayer paperboard can be recycled and further processed into technical products. In accordance with ČSN 77 0052-2 and EN ISO 11469, the material type > PAP < may be used for multilayered cardboard products.
Recommended classification according to the Waste Catalog: 15 01 01
Recommended ways of using waste: material use, energy
recovery (16 MJ.kg-1).
The pallets are reversible.

AUTOMOTIVE APPLICATIONS

HYGIENIC APPLICATIONS

CONSTRUCTION APPLICATIONS

GENERAL APPLICATIONS

TESIL®

Description

8. DOCUMENTATION

8. 1 Quoted standards

· ČSN 64 0090 Plastics. Storage of plastic products
· ČSN 80 0523 Chemical fibres. Detection of the preparation and low molecular weight content of chemical fibres
· ISO 8159 (80 0011) Textiles. Fibre and thread shapes. Dictionary
· EN ISO 1973 (80 0269) Textile fibres. Length measurement - Gravimetric a vibroscopic method
· EN ISO 5079 (80 0200) Textiles - Fibres - Determination of strength and elongation of individual fibres by breaking
· ČSN 77 0052-2 Packaging - packaging waste. Part 2: Identification of packaging · EN ISO 11469 Basic identification and designation of plastic products
· EN ISO 4589-2 Plastics – Determination of Burning behaviour by oxygen index – Part 2: Ambient-temperature test

8.2 Related Standards

· ČSN 01 8003 Principles for safe working in chemical laboratories
· ČSN 80 0001 Textiles. Sorting and basic names
· ČSN 80 0030 Chemical fibres. Nomenclature of chemical fibre defects

8.3 Related Legislation (as amended)

· Regulation (EC) No 1907/2006 of the European Parliament and of the Council
· Regulation (EC) No 1272/2008 on Classification and Labeling of Substances and Mixtures (CLP)
· Act No. 258/2000 Coll., On the protection of public health
· Decree No. 84/2001 Coll., Laying down the hygiene requirements for toys and products for children under the age of 3 years.
· Act No. 477/2001 Coll., On packaging
· Act No. 185/2001 Coll., On Wastes
· Act No. 350/2011 Coll., On chemical substances and chemical mixtures

9. ANNEXES

Material datasheet for individual assortments is sent to customers separately

AUTOMOTIVE APPLICATIONS

HYGIENIC APPLICATIONS

CONSTRUCTION APPLICATIONS

GENERAL APPLICATIONS