



**Needle-punched nonwovens or felts** of ISOMATEX are made from FILAVA™ cut fibers. Thanks to high-performance technology and high throughput speeds with a high degree of automation and production efficiency, the manufacturing process is as simple and as clean as is physically possible and is achieved by mechanical interlocking by thousands of pointed felting needles constantly penetrating the mat with an array of barbed needles that carry tufts of the mat's own fibers into a vertical direction.

ISOMATEX's nonwoven fabrics or otherwise called felts are extremely versatile and can be used in a variety of applications. Their resulting mechanical toughness and excellent thermal and acoustical insulation properties make them the ideal choice in many industrial applications.

The cut FILAVA™ fibers used in the production of the nonwoven product range are extremely durable with exceptional strength and dimensional stability and exhibit excellent chemical resistance to acidic and alkaline environments at high temperatures. The nonwoven range of the cut fiber needle punched nonwoven textiles have been designed also with the aim to offer optimum performance per unit weight.

Beside very high mechanical, thermal insulation and sound absorption properties they offer:

- improved abrasion resistance, fire resistance and surface integrity;
- excellent processing characteristics for a wide variety of industrial applications.

Furthermore, the non-woven fabrics made of FILAVA™ are nearly incombustible producing low amounts of smoke and toxic fumes. As reminder, FILAVA™ is a direct roving made of enhanced volcanic rock filaments and manufactured in the melt spinning process, where the fibers are formed via a batch melt, followed by the lava which flow through bushing plates with nozzles and then vitrified by cooling.

**FILAVA™** roving is a unique product thanks to a genuine and innovative treatment of the raw material, volcanic rock, which being the major ingredient, is aggregated and enriched with various mineral additives with the aim to increase and guarantee its original mechanical and chemical properties as well for maintain the evenness of the required mechanical properties. The components used in the batch aggregation and the fabrication process are ISOMATEX's know-how and constitute its exclusive expertise.

Multi-End assembled direct rovings consist of thousands of continuous filaments with elementary diameters from 9,0 to 11,0 µm. bonded into a single strand. A specially developed by matrices' type sizing is applied on the fibers, which assures an excellent infusion and resin-to-reinforcement adhesion. ISOMATEX focuses on your specific criteria and offers experienced technical staff to help solve your unique application requirements.

**Storage and usage conditions.** ISOMATEX recommends storage of all its articles in a cool and dry warehouse into the original packaging. For an optimal processing we recommend to use the product in ambient conditions (20 - 23°C, 60 - 65% Relative Humidity).

Articles need to be kept in the workshop at least 24 hours prior usage.



**Product description:** **Needle-punched nonwovens or felts** made of FILAVA™ cut (staple) fibers for a high-grade thermal insulation and sound absorption materials as well as reinforcement for high-performance composite panels (see ISOMATEX Sales department for more information)

**Article reference:** **NP- NW** (Needle-punched nonwovens), ex.: NP-NW BSB3\_200(11).0120. 0110.IS65T

Batch composition's reference \_\_\_\_\_  
 Specific surface weight (gr/m<sup>2</sup>) \_\_\_\_\_  
 Diameter of elementary virgin fibers (µm.) \_\_\_\_\_  
 Length of roll (m) \_\_\_\_\_  
 Roll's width (cm) \_\_\_\_\_  
 Sizing reference of constituent yarns (\*) \_\_\_\_\_

(\*) see ISOMATEX Sales department for more information

**Properties:**

Volume density of constituent fibers (according to ASTM C693) : 2.600 gr/cm<sup>3</sup>  
 Specific surface weight : from 200 up to 1.600 gr/m<sup>2</sup>  
 Constituent fibers diameter : 11,0 µm.  
 Coefficient of variation : 2,5%  
 Cut fiber's lengths : from 20 up to 100 mm.  
 Thickness of felts : from 2,3 up to 25,4 mm.

**Packaging:**

Width (mm): 1.100  
 Length (m): up to 120 m. mat  
 Weight (kg): full package is from 26 to 210 kg. roll  
 Inner diameter of cardboard sleeve: 150,0 mm.

The rolls are individually labelled and wrapped with stretched plastic film for protection and improved handling.

**Sizing:**

Engineered for high temperature applications and compliant to different organic (epoxy, polyester, vinyl ester, PA, PP, PEEK, BMI, ...etc.) and/or ceramic matrix materials being considered especially as alternative fiber reinforcement to carbon or alumina.

Content, % weight (loss of ignition, LOI): 0,4 – 1,0 % (according to customer's request)  
 Moisture content, % weight: less than 0,1 %

**Thermal properties** (according to DIN ISO 7884) :

- Melting point: 1.560 °C
- Transition temperature: 730 °C
- Softening point: 940 °C
- Annealing point: 740 °C

**The thermal conductivity (λ)** according to ISO 10635:

Temperature (°C)	100	200	300	400	500	600	700	800	900	1.000
Thermal conductivity (W.m <sup>-1</sup> .K <sup>-1</sup> )	0,060	0,065	0,080	0,100	0,135	0,175	0,225	0,285	0,355	0,435

**Operating thermal range** (continuous application): from - 200°C up to 850°C

DISCLAIMER OF LIABILITY

The above shown data is presented solely as a guide in the selection of a fiber reinforcement. The information mentioned in this leaflet is based on actual ISOMATEX' laboratory data and field test experience. Because of numerous factors in downstream processability affecting results, we consider this information to be reliable, but do not guarantee its applicability to the user's process or assume any liability arising out of its use or performance. The end-user, by accepting the products described herein, assume the responsibility for thoroughly testing any application to determine its compliance before committing to production. It is important for the end-user to determine the properties of its own commercial compounds when using this or any other fiber reinforcement. WE MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. STATEMENTS AND DATA IN THIS DOCUMENT SHALL NOT BE UNDERSTOOD AS REPRESENTATIONS OR WARRANTIES OR AS INDUCEMENTS TO INFRINGE ANY PATENT OR VIOLATE ANY LAW, SAFETY CODE, OR INSURANCE REGULATION.