



**Non-crimp multi-axial technical textiles or fabrics** made from multiple layers of unidirectional placed and stitch bonded FILAVA™ fibers permits to obtain higher tensile strength and flexural properties in the reinforced composite materials.

The downstream processability is easier notably the wettability and resin infusion while it is much convenient to cut or handle the fabrics as the stitching yarn holds the fabric stable.

They are available in wide range of surface, weight and construction pattern (angle combination), including Unidirectional 0/90°, Biaxial +/- 45° or 0/90°, Triaxial, Quadriaxial, ...etc.

Non-crimp technical textiles made from FILAVA™ are available in a nominal surface weight range of 200 to 1.200 gr/m<sup>2</sup>, all with a roll's width of 127 cm.

Non-crimp fabrics have excellent wettability and are compliant with various matrices or resins systems for thermoset or thermoplast applications: epoxy, vinylester, polyurethane, polyamide, ...etc.

They are suitable for various structural end-use applications: in aircraft, automotive, nautical and many other domains where fiber-reinforcement layers can be placed in different orientations with aim to optimize the performance of the composites whilst improving the shock absorption.

FILAVA™ is a direct roving made of enhanced volcanic rock filaments and manufactured in the melt spinning process. 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 to 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.

Single-End and Multi-End assembly direct rovings consist 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 fiber, which guarantees an excellent infusion and resin-to-reinforcement adhesion.

FILAVA™ is unique due to its high strength, high elasticity and resistance to high temperature as well as to temperature's variation (contrarily to carbon which does not like thermal shocks). This compares well to existing high-end products (R - glassfibers, S - glassfibers).

**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:** Non-crimp multiaxial fabrics or technical textiles made of FILAVA™ continuous filament for high-performance structural composites (see ISOMATEX Sales department for more information)

**Article reference:** **NCF** (non-crimp fabric), ex.: NCF BX BSB3\_210\_±45\_060\_0127\_IS71  
NCF BX BSB3\_210\_0/90\_150\_0127\_IS65T

Batch composition's reference \_\_\_\_\_  
Specific surface weight (gr/m<sup>2</sup>) \_\_\_\_\_  
Construction pattern (fibers' orientation, in degrees) \_\_\_\_\_  
Length of roll (m) \_\_\_\_\_  
Roll's width (cm.) \_\_\_\_\_  
Sizing reference of constituent yarns (\*) \_\_\_\_\_

(\*) see ISOMATEX Sales department for more information about compliance with organic matrices and downstream processing

**Properties:**

Volume density of constituent yarns (according to ASTM C693): 2.600 gr/cm<sup>3</sup>  
Specific surface weight (nominal) : from 200 up to 1.200 gr/m<sup>2</sup>

**Construction (fibers orientation):** UD, Biaxial (0/90° or ±45°), Triaxial (0/-45/+45°), Quadriaxial (0/-45/+45/90°)

**Packaging:** Width (m): 1.270 mm.  
Length (m): full package is about 400 m. roll

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

**Sizing:** Engineered for high-end structural 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

**Thermal resistance** (% of residual values (after 24 h ageing):

- - 200 °C: 100%
- 200 °C: 100%
- 850°C: 40%

**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.

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