

Flax & Hemp Solutions

Technical datasheets 2018

NAME OF THE COMPANY :

Technical datasheet - non crimp

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NAME OR REFERENCE :

Description of the fibres

	Nature	Composition ₂
Reinforcement ₁	<input type="checkbox"/> Roving* <input type="checkbox"/> Yarn	<input type="checkbox"/> Flax <input type="checkbox"/> Hemp <input type="checkbox"/> Other, specify:

	Type	Linear density		
Binding yarn	Unit	Standard	Value
		Tex (g/km)	ISO 1973 ±

¹ More details can be found on the roving/yarn datasheets from the manufacturer given in the «additional information» section

² Multiple options can be selected in case of special commingled roving or yarn, or in other special combined yarns

* The twist, measured according to ISO 17202, is lower as 10 twists/m

Description of the fabric

Property	Unit	Standard	Value
Areal weight	g/m ²	ISO 3801 ±
Mass fraction of binding yarns	%	
Stitching pattern Type Stitching density Stitching gauge	 /cm /cm		<input type="checkbox"/> Tricot <input type="checkbox"/> Chain
Orientation of layers			Layer 1 Layer 2 Layer 3 Layer 4
Weight distribution of layers	%		Layer 1 Layer 2 Layer 3 Layer 4
Standard width	cm	ISO 5025 ±
Standard length	m	
Standard mass	kg	

Footnote: Density of flax and hemp fixed at 1,45 g/cm³. More details can be found in the CELC guideline.

Footnote: Areal volume = $\frac{\text{areal weight}}{\text{density}} \times \frac{1}{1000}$

A glass fibre non-crimp fabric of 200 g/m² has an areal volume of 0,079 mm³/mm², while a flax noncrimp fabric of 200 g/m² has an areal volume of 0,138 mm³/mm²

Mechanical properties of the laminate

With a thermoset matrix

Stacking sequence:	<input type="checkbox"/> Regular*	<input type="checkbox"/> Other, specify:
Process:	<input type="checkbox"/> Hand lay-up <input type="checkbox"/> Resin transfer molding	<input type="checkbox"/> Vacuum infusion <input type="checkbox"/> Other, specify:
Name of matrix**:	

* All layers of non-crimp fabric oriented in machine direction

** Matrix properties can be found on the datasheet from the manufacturer given in section "additional information"

MECHANICAL PROPERTIES OF NON - CRIMPED FABRIC COMPOSITE	TENSION	FLEXION
$V_f(\%)*$ ± ±
Modulus in MD** (GPa)	E1 = ± (1)	E1 = ± (1)
Modulus in CD** (GPa)	E1 = ± (1)	E1 = ± (1)
Modulus in BD** (GPa)	E1 = ± (1)	E1 = ± (1)
Strength in MD (MPa) ± ±
Strength in CD (MPa) ± ±
Strength in BD (MPa) ± ±
Failure strain in MD (%) ± ±
Failure strain in CD (%) ± ±
Failure strain in BD (%) ± ±
Standards	ISO 527	ISO 14125

* More details on the calculation of the fibre volume fraction can be found in the CELC guideline.

** MD: machine direction

** CD: cross direction

** BD: bias direction

(1) E1 measured between 0 and 0,1% strain, adapted for natural fibres, more details can be found in the CELC guideline.

Mechanical properties of the laminate (2)

With a thermoplastic matrix

Stacking sequence:	<input type="checkbox"/> Regular*	<input type="checkbox"/> Other, specify:
Process:	<input type="checkbox"/> Compression molding	<input type="checkbox"/> Other, specify:
Name of matrix**:	

* All layers of non-crimp fabric oriented in machine direction

** Matrix properties can be found on the datasheet from the manufacturer given in section "additional information"

MECHANICAL PROPERTIES OF NON - CRIMPED FABRIC COMPOSITE	TENSION	FLEXION
$V_f(\%)^*$ ± ±
Modulus in MD** (GPa)	$E_1 = \dots \pm \dots (1)$	$E_1 = \dots \pm \dots (1)$
Modulus in CD** (GPa)	$E_1 = \dots \pm \dots (1)$	$E_1 = \dots \pm \dots (1)$
Modulus in BD** (GPa)	$E_1 = \dots \pm \dots (1)$	$E_1 = \dots \pm \dots (1)$
Strength in MD (MPa) ± ±
Strength in CD (MPa) ± ±
Strength in BD (MPa) ± ±
Failure strain in MD (%) ± ±
Failure strain in CD (%) ± ±
Failure strain in BD (%) ± ±
Standards	ISO 527	ISO 14125

* More details on the calculation of the fibre volume fraction can be found in the CELC guideline.

** MD: machine direction

** CD: cross direction

** BD: bias direction

(1) E1 measured between 0 and 0,1% strain, adapted for natural fibres, more details can be found in the CELC guideline.

Additional information

Add datasheet of the rovings or yarns used to manufacture the preform (mandatory)
Add datasheet(s) of the thermoset and/or thermoplastic matrix used for composite production (mandatory)

Treatment

Treatment: Yes No

Purpose(s) of treatment:

Compatibilised for use with:

Other:

Sizing: Yes No

Purpose(s) sizing:

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Recommended storage and use conditions

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Suggestions for additional information

- Unique properties: life cycle analysis and vibrational damping properties
- Non-crimp fabric structure
- Fatigue- and impact properties
- Sales aspects

