

# FiberVisions® HY-Strength

## Broad Application Scope

FiberVisions® HY-Strength has been developed to widen the existing opportunities of carded, thermal bonded nonwovens: It allows the production of much stronger nonwovens than previously seen in the industry.

The new polypropylene staple fiber, FiberVisions® HY-Strength, is second to none with regard to

- **Strength**  
The CD strength reaches levels never seen before compared to other PP fibers
- **Speed**  
Modern carding lines are easily able to run steady speeds of 250 m/min. or more.
- **Bondability**  
A broad bonding window and low bonding temperatures

The HY-Strength fiber offers new opportunities and cost reductions to nonwoven producers within hygiene and medical or other applications.

## Versatile Fiber

Due to a flexible production set-up the fiber is very versatile:

- It is available with different spin finishes:
  - semi-durable (permanent) hydrophilic,
  - standard hydrophilic,
  - and hydrophobic
- Available in 1.7, 2.2, and 3.3 dtex
- Available with crimp levels according to customer requirements.

Furthermore, FiberVisions® HY-Strength has the advantages of any FiberVisions longspinning fiber:

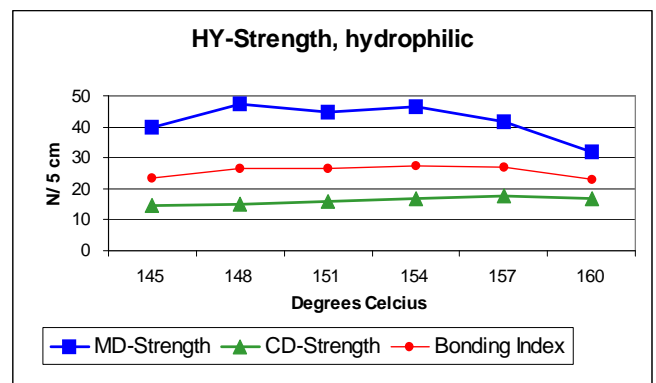
- The fiber adds softness and elongation properties to the nonwoven. The fiber is comparable with other FiberVisions® fiber types.
- Controlled surface characteristics ensure optimum bonding conditions.
- The uniformity of the fibers ensures stable processing conditions, minimizing downtime and downgraded materials.
- The FiberVisions concept of adapting the fiber to suit the individual carding line maximizes nonwoven tenacities and elongation, and ensures optimum production economy.

# Stronger than Ever

## Nonwoven Properties

### Results from FiberVisions a/s Pilot Carding & Calendering Line

FiberVisions has obtained the following nonwovens data from tests on the carding & calendering line at a carding speed of 100 m/min.




















(Typical data for a 20 g/m<sup>2</sup> product)

As the FiberVisions® HY-Strength fiber is available in several varieties, the following conclusions (based on our pilot trials) can be used as a guideline:

- Optimum bonding conditions will typically be between 151 and 157 degrees Celcius (for hydrophilic types) in the speed area of 100 - 175 m/min.
- Changes in dtex: going from 2.2 dtex to 1.7 dtex will normally result in a drop of nonwoven tenacities (on average: MD: 6 - 7%, CD: 10 - 11%). Softness and coverage of the nonwoven will however, increase substantially, and rewet value will improve.
- Speed increases will also result in lower nonwoven strength: from 100 m/min. to 175 m/min. The loss is about 5%.
- Reducing the gramme per square meter will decrease nonwoven tenacities. From 20 gsm to 18 gsm will result in 15 - 17% lower strength (in both MD and CD direction).
- Hydrophobic fibers normally have slightly lower nonwoven tenacity figures and lower production speed maximums. See details in HY-Strength, Hydrophobic data sheet.

# Typical Fibre Values and Nonwoven Properties

 <b>FiberVisions®</b> <b>HY-Strength, PHIL</b>			
	Nom. Value	Measure	Method
 <b>10km</b>	1.7, 2.2 dtex	The weight in grams of a fiber of 10 km length	Internal FV test
	1.7 - 2.0 cN/dtex	Tensile strength of the fibre	Internal FV test
	375 - 425%	Elongation at break	Internal FV test
	40, 50 and 60 mm	Fiber length (under a prescribed load)	Internal FV test
	100% PP 140 - 150°C 162 °C	Raw material: Softening point Melting point	
 <b>10 cm</b>	Variable	Crimp frequency (KD) no. of crimps/10 cm	Internal FV test
	0.35% as weight %	Spin finish level	Internal FV test

 <b>Typical Data obtained on FiberVisions Pilot Thermal Bonding Line</b>			
	Nom. Value	Measure	Method
 <b>m²</b>	All values refer to a 20 g/m² hydrophilic nonwoven, produced under optimum conditions at 100 m/min.		
	26 - 28	Bonding Index, multiplying MD and CD tenacities	Formula
	40 - 45 N/5 cm	MD Tensile Strength	Internal FV test
	14 - 18 N/5 cm	CD Tensile Strength	Internal FV test
	50 - 70%	MD Elongation	Internal FV test
	90 - 110%	CD Elongation	Internal FV test
	< 3 sec	Strike through time	WPS 70.3
 <b>kg</b>	<0.15g	Rewet	WPS 80.10

\* All measurements are conducted under standard atmosphere according to ISO 554 (23 °C/50%).  
 Polyolefin fibers consist of 99% carbon and hydrogen. The remaining 1% consists of water and applied spin finish.  
 The fiber bales are protected with polyolefin foil and closed with polyester straps. The product and the packaging materials are suitable for recycling and combustion. Inhouse waste should be kept clean to facilitate direct recycling. In disposal of any waste, ensure that all applicable regulations are met.  
 For further information contact your FiberVisions representative.

The FiberVisions® HY-Strength is presently produced at the FiberVisions a/s plant in Denmark  
 HY-Strength is a trademark of FiberVisions.

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