

FiberVisions® Binder Fibers the sensible alternative

The idea of combining a matrix material with a reinforcing element was invented over two thousand years ago. Today, this technique is still in use and is being continuously improved.

Reinvented by the need of the aerospace industry for high performance, lightweight materials, this technology has spread to other industries and applications.

Today, composites are a primary method to achieve:

- lightweight constructions with associated benefits of faster speeds, increased loads, and reduced power
- reduced or eliminated need for supporting framework.
- increased product life, i.e. high resistance to fatigue, impact, environmental and corrosion.

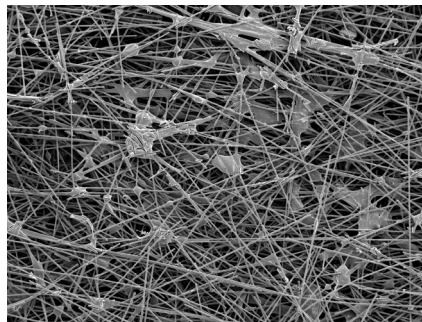
Polypropylene (PP) and polyethylene (PE) fibers are well accepted for uses in composites. They are also environmentally friendly, recyclable binders which can be used in place of chemical binders. They are suitable for use in both matrix and reinforcement applications.

FiberVisions® contribution

FiberVisions® manufactures a full range of PP and PE mono- and bicomponent fibers which are suitable for use in composites.

- Nonwovens: our fibers contribute efficiently to the strength and integrity of many sandwiched nonwoven products used for support in cars and construction.

- Binders: fibers for use as binder fibers in blends with natural fibers allow the production of lightweight, strong, and stiff composites with good stability and acoustic properties. These products are used in car interior parts, construction elements, furniture and housings.



FiberVisions® is always in close dialogue with the customer to ensure that fiber development matches their requirements which, often results in fibers designed for the individual customer.

Environmental friendly materials

Polypropylene and polyethylene are thermoplastic polymers; these materials melt when exposed to heat. When cooled, the materials become solid again. This process can be repeated several times.

Polyolefins have a low carbon footprint compared to other polymers, as indicated by the net cradle to factory gate greenhouse gas emissions (CO₂ equivalents/kg polymer). At the end of use, PP and PE can either be incinerated or recycled. These products contain no dioxins or heavy metals and their complete incineration

produces only water and carbon dioxide.

Recycling of PP and PE is common in the plastics industry.

Technical solutions

Polypropylene and polyethylene both have a very low density (0.9 g/cm³) and are lighter than water. In contrast to other polymers which are denser, this results in a larger number of reinforcing elements or binding points per kilogram of material used in the composite, and results in a significant contribution to composite strength and durability.

Economics

Polypropylene and polyethylene materials are very economic materials due to their large use in the plastics industry.

The low density of the materials provides the capability to ensure lightweight constructions.

The trends toward the use of natural or renewed resources such as natural fibers require new ways of bonding.








Lightweight fibers of polypropylene and polyethylene give opportunities for

- large number of fibers per kilogram of material.
- large number of bonding points to deliver stronger composites.
- weight reductions compared to traditional binder chemicals
- production cost savings.

Typical Properties



**FiberVisions®
Binder Fibers**

	Nom. Value	Property	Reference
 9 km	3 - 10	Titer (denier per filament)	ASTM D1577
	1.6 - 3.6	Tenacity (g/denier)	ASTM D3822
	160 - 375%	Elongation at break	ASTM D3822
	19 - 100	Fiber length (mm)	ASTM 5332
	100% PP 140 - 150°C 162 °C	Raw material Softening point Melting point	As described in ASTM D276
	Adjustable	Crimp Frequency	ASTM D3937
	Adjustable	Finish level as weight %	Internal FV test

**All measurements are conducted under standard atmosphere according to ISO 554 (23°C/50% relative humidity).*

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.

Performance profile of polypropylene fibers.

FiberVisions® fibers have a number of advantages over other man-made fiber types:

Density. The density of polypropylene is 50% lower than polyester and 25% lower than polyamide. This means that lightweight fabrics can be made with excellent bulk and cover from lower denier yarns than from other fiber types.

Comfortable. Polypropylene is a very comfortable and soft fiber. It has a low modulus which ensures good drapeability, and it has excellent resistance to static build-up.

Insulation. Polypropylene has the lowest conductivity of all textile fibers, and it absorbs no moisture.

Resistance. Polypropylene is inert to acids, alkalis and other chemicals. It is resistant to rot, mildew and bacteria. Polypropylene fiber is highly resistant to abrasion and has a toughness superior to most fibers.

Technical Service. FiberVisions believes in offering extensive technical service to its customers. This includes fiber innovation programs, exclusive fiber development, color matching and fiber quality enhancements.

Request a trial for your next application!



FiberVisions

3700 Crestwood Parkway, Suite 900
Duluth, Georgia 30096
Tel.: +1 678 578 7240
Fax: +1 678 578 7276
email: sales.industrial@fibervisions.com

FiberVisions a/s

Engdraget 22
DK-6800 Varde, Denmark
Tel.: +45 7994 2200
Fax: +45 7994 2201
e-mail: fibervisions@fibervisions.dk

FiberVisions Textile Products, Ltd.

No. 29 Heng Shan Road
Suzhou, China 215009
Tel.: +86 512 6823 1099
Fax: +86 512 6823 0021
email: sales.suzhou@fibervisions.com

www.fibervisions.com

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