

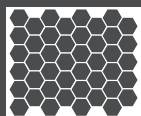
Looking for added  
value in your paper?



DISPERSION



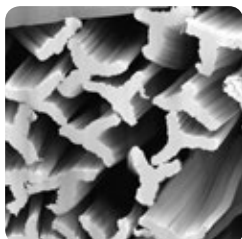
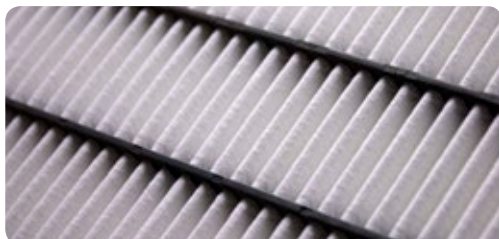
POROSITY



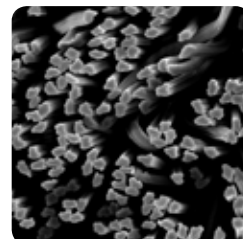
BULK



INTRINSIC  
FUNCTIONALITY



ABSORBENCY



STRENGTH



Find it in our  
viscose fibre specialities!

Kelheim  
Fibres

## Fine-tuning of Paper Characteristics

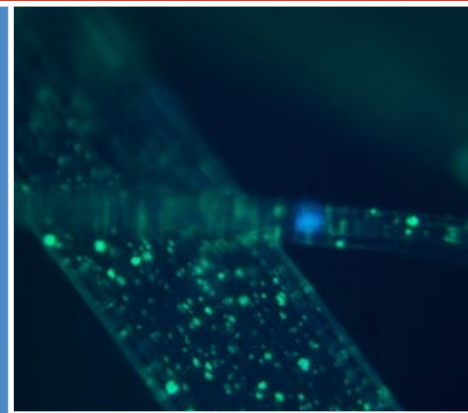
Controlling the quality of paper by using the right grade of pulp and auxiliary materials as well as selecting the appropriate process settings is a standard procedure in the paper making process. When the end product requires specific properties this may not be enough:

Our viscose specialities offer you a wide range of possibilities to extend the spectrum of your paper's characteristics or even add new functionalities to your product.



## Added Value with Viscose Fibres

- Tests have shown that the paper's porosity can be precisely controlled by incorporating viscose fibres – a feature already used by manufacturers of tea bags, cigarette papers as well as many kinds of filters.
- Our viscose specialities help increase the tear resistance of the paper without loss of tear strength.
- Specific fibre cross-sections can enhance the paper structure and introduce more bulk into wet-laid products.
- Being naturally hydrophilic, viscose fibres show excellent dispersion properties as well as high absorbency, making it the ideal material for wipes applications.
- Our viscose specialities are produced from 100% cellulose and can therefore easily be incorporated into a paper matrix having the same surface chemistry as pulp fibres.
- Completely natural in origin, viscose fibres are fully biodegradable and therefore an environmentally sound alternative to other additives.
- Viscose fibres offer uniform and constant levels of quality from batch to batch.
- Tailored Flushability, respecting the requirements of both the products and the subsequent processes.



**Top:** Leonardo with incorporated UV-pigments.  
**Bottom:** Distribution of 1% blue viscose fibre in paper

The viscose fibre process offers a broad and versatile tool box for the modification of viscose fibres, which enables us to create tailor-made solutions for the individual needs of our customers and a wide range of end uses.



### I. MODIFICATION OF CROSS-SECTIONS

The shape of the fibre cross section is the key to fibre properties. By adjusting the spinning conditions, the cross-sections of viscose fibres can be modified. This lends the fibre completely new characteristics and qualifies it for new applications.

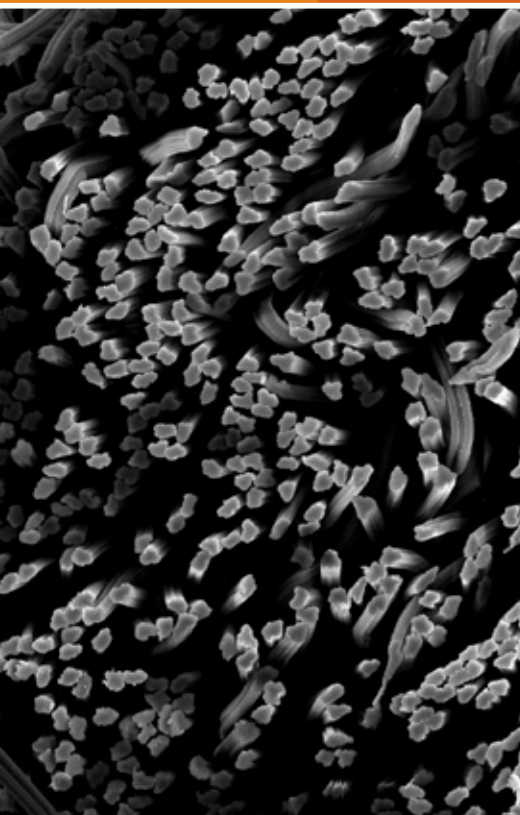
### II. MODIFICATION OF FIBRE DIMENSIONS

Unlike natural cellulosic fibres, viscose fibres can be produced in a constant and defined fibre length and fibre diameter as required by the final use. Kelheim Fibres produces short cut viscose fibres in a range from 0,5 to 28 dtex in the standard round cross section, corresponding to an equivalent diameter of 7 to 48 micrometers. For short cut applications the fibre can be supplied in a range of cut lengths between three and twelve millimetres.

### III. INTRINSIC ACTIVATION

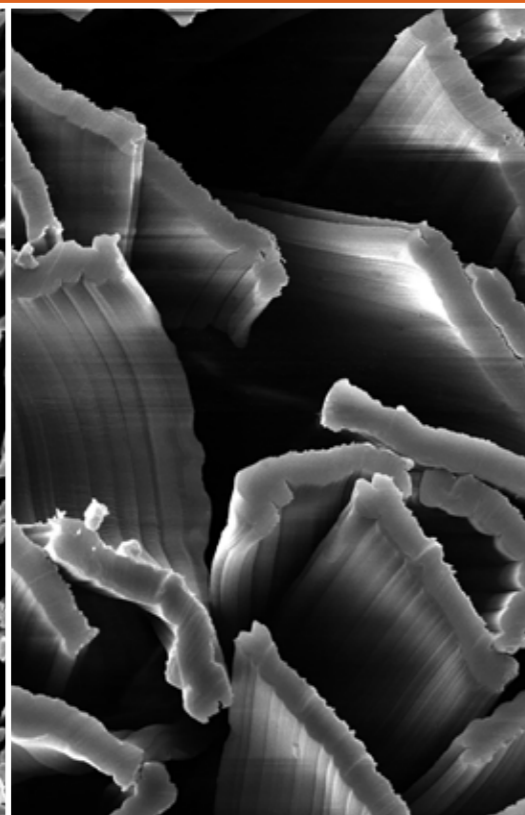
In addition to the parameters of cross section and dimension our R&D specialists have developed a number of modifications which give our fibres further special properties. New functional fibres can be achieved by incorporating special additives – such as pigments or micro-capsules – into the fibre matrix; The structure of the viscose fibre is modified by adapting spinning conditions and chemical modification of the fibres can deliver fibres with anionic or cationic properties.

## MICROFINE



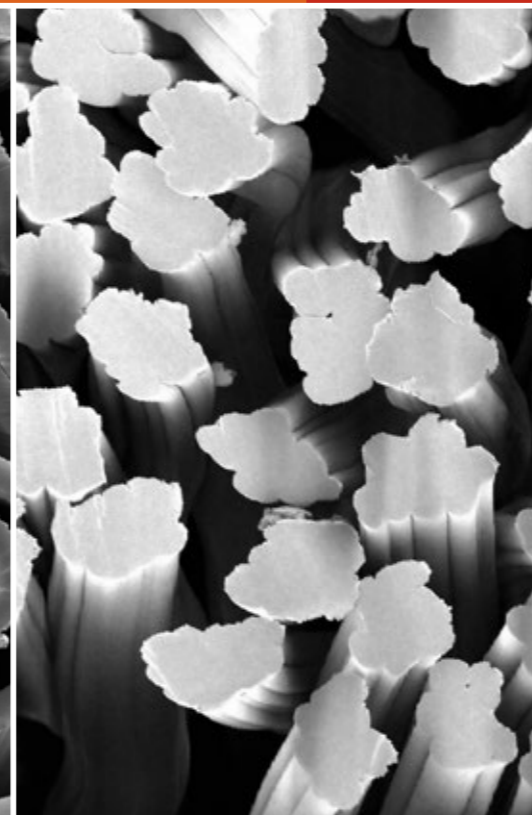
Finest fibre with 0.5 dtex for electrical papers and filtration.

## VILOFT



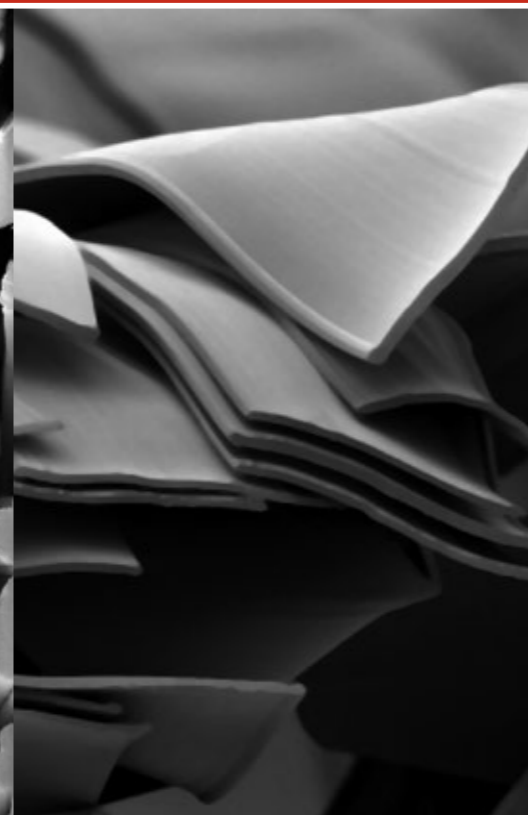
Flat cross section for highest flushability.

## DANUFIL



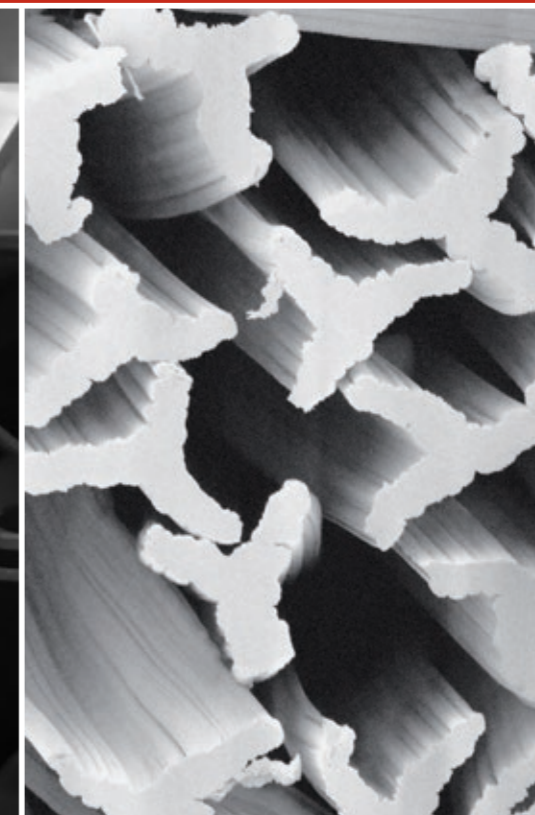
“All-round fibre” – supreme quality for a multitude of different applications.

## LEONARDO



Extremely flat viscose fibre with a thickness to width ratio of 1:20 to 1:40 and a very even surface. For transparent papers as well as for the improvement of paper quality.

## GALAXY



Trilobal cross section with a very large surface area for an outstanding absorption capacity and more bulk in paper structures.

Innovation is the key to a successful future – for us and for our customers! Our R&D team is focused on continuously improving our existing products and developing new fibres to meet our customer’s specific needs. Our aim is to develop fibres that are genuinely tailor-made and deliver value-added solutions. An understanding of our individual customer’s products and an appreciation of our customer’s business is crucial for our work. Our understanding is based on customer dialogue and proven on pilot plants, which allow us to produce a range of products incorporating our new fibres – a service which is available for our customers, too. Feel free to contact us!

## The Nature of Viscose

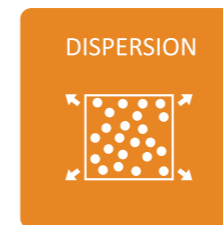
Viscose fibres are made of 100% natural cellulose. They are therefore fully biodegradable and deliver sustainable solutions. In the paper industry they are fully compatible with the most commonly used raw material and can therefore be easily incorporated in the papermaking process. At the same time, they offer an environmentally sound alternative to synthetic additives. Our new fibre developments are the basis for innovative tailor-made and value added solutions meeting individual requirements of our customers in a diverse range of applications.



## Flushability

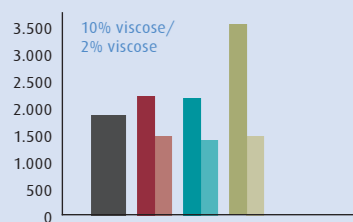


Kelheim Fibres offers modified viscose short-cut fibres to meet the different needs of a flushable wipe product. While meeting the flushability criteria, properties such as softness, absorbency or strength can be tailored to the requirements of different applications. As an example, Viloft® fibre with its flat cross section and a thickness-to-width ratio of 1:7 delivers sufficient bonding area to lock in other cellulosic fibres such as pulp. At the same time, the crenellated fibre surface allows water to penetrate during flushing, so the wipe can disperse easily. The fibres' special stiffness properties and the increased surface area result in a high flow resistance leading to a more effective dispersion of the tissue.

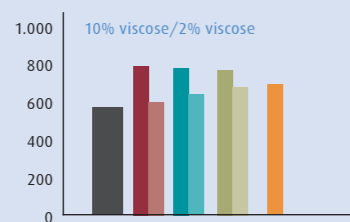


## Technical Data

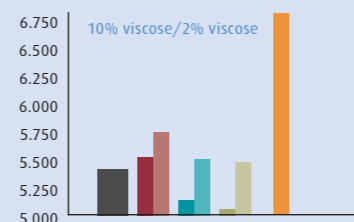
Porosity of sheets in viscose/pulp blends;  
air permeability test (Bendtsen ml/min)



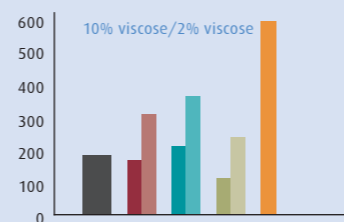
Tear resistance of sheets  
in viscose/pulp blends (mN)



Tensile strength of sheets  
in viscose/pulp blends (metres)



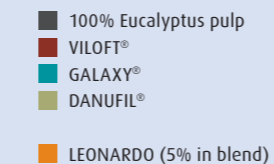
Number of double folds of sheets  
in viscose/pulp blends (n)



- Manufacturers of filter papers can improve the porosity control of their product by using our fibres: As a result of the different cross sections available, a blend with our viscose fibres enables paper porosity to be tailored to meet the needs of specific end uses.

- Even small quantities of our viscose fibres can significantly increase the tear resistance of a speciality paper.
- In a blend with eucalyptus pulp, by incorporation of 10% viscose fibres tear resistance increases on average by 40%, at an incorporation of 2% viscose the increase in tear resistance still amounts to 15%.

- A blend with our viscose specialities can enhance the tear strength of paper sheets.
- The use of our fibres delivers an improvement in tear strength with an increase of tear resistance – which can not be achieved by simply higher refining.



- Blends with viscose fibres show a significantly better result in double fold testing than the 100% pulp reference.



A detailed understanding of the customer's products and an appreciation of the customer's business is crucial for development work. Only this allows fibres to be offered that are genuinely tailor-made and meet the customers' needs as precisely as possible. We operate pilot plants which allow us to produce – on a small scale – different products using our speciality fibre technologies. For paper applications we run an inclined wire machine – so we are able to test our fibres under production conditions on site.



Kelheim Fibres GmbH  
Regensburger Straße 109  
93309 Kelheim, Germany

## Our Values

Kelheim Fibres' success is based on three principles that we actively practice and support. They are trust, innovation and engagement and shape our day-to-day operations.

### **Trust**

It is our responsibility to earn and retain the trust of our customers and consumers. Beyond this, trust also marks the relationships within our company, with our suppliers and other stakeholders. We actively work in their interests and consider safety, occupational health and environmental protection as keys to our success.

### **Innovation**

We promote an open and creative corporate culture where ideas can flourish, enabling us to meeting our customers' needs and set industry standards. Continuous improvement of our products and production processes also enables us to sustainably increase our company value and competitiveness.

### **Engagement**

Engagement with our customers, as well as with our employees and suppliers is of the highest priority. Being engaged means always giving our best and remaining fully focussed at all times.

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