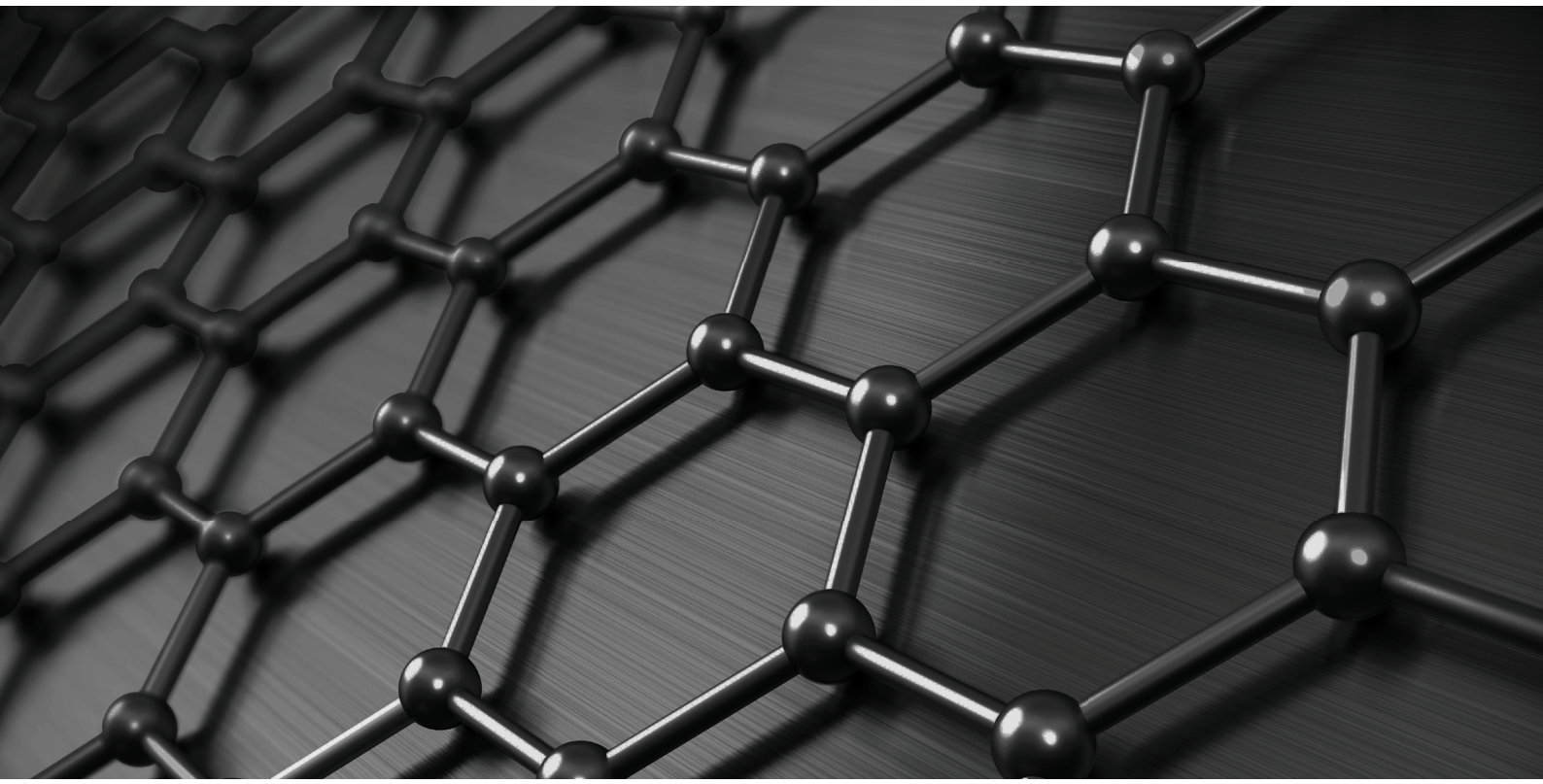
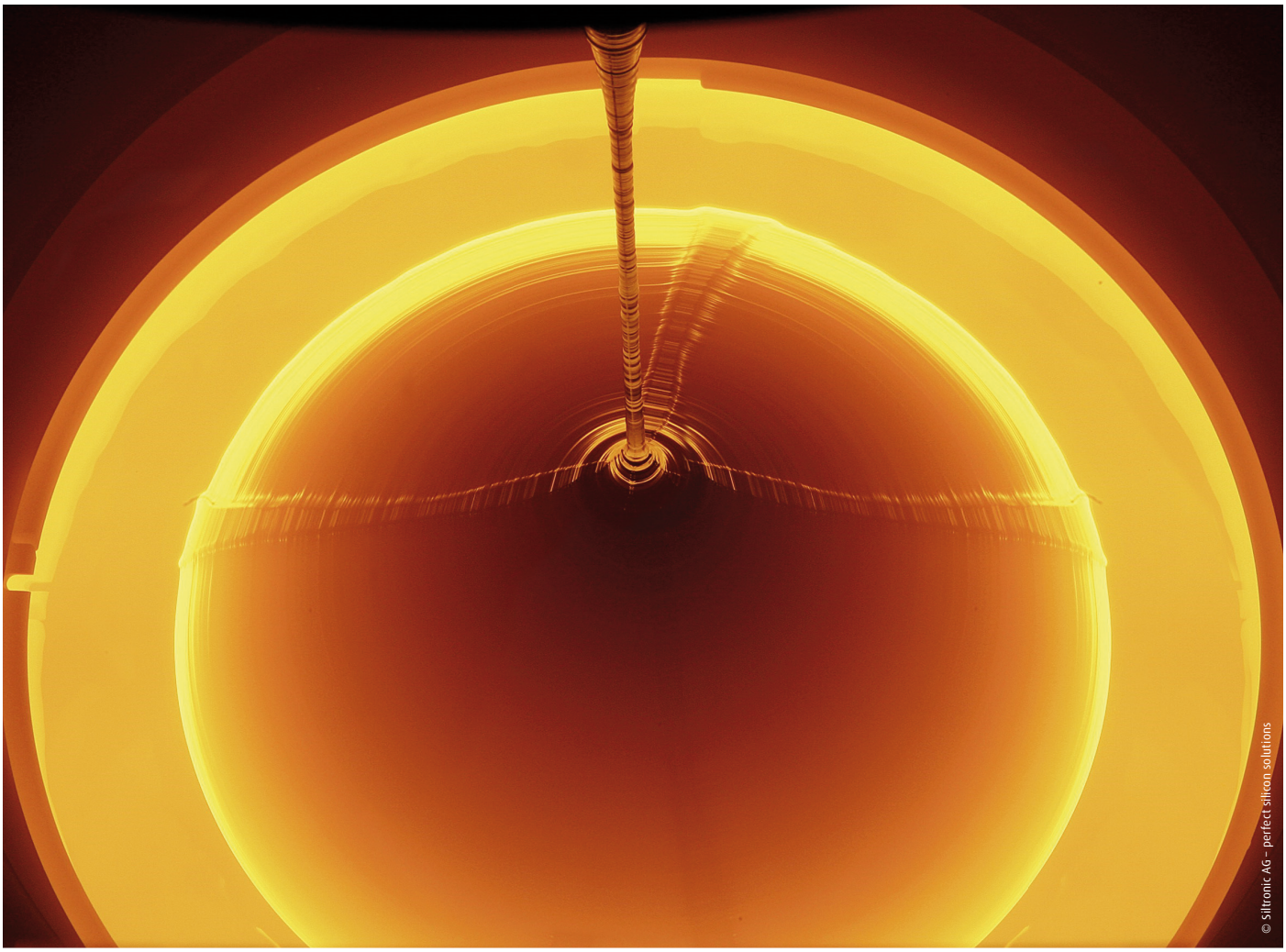
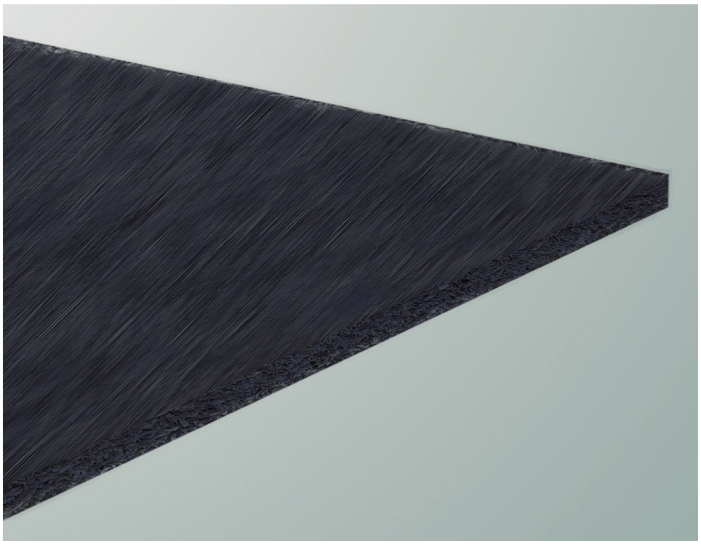
Viscose Precursor for Carbon Fibres



Characteristics. Applications. Innovation.

Kelheim Fibres





Kelheim Fibres
the Specialist for Viscose Precursor

For more than 80 years, viscose fibres have been produced in Kelheim, Germany. From the beginning, when viscose was explored as precursor for carbon fibres, Kelheim Fibres has been involved as a reliable and innovative partner for the carbon fibre industry.

Over several decades, Kelheim Fibres has developed a strong expertise in the production and development of viscose precursor. An intensive partnership with customers and a strong research focus with numerous publications have made Kelheim Fibres a leading supplier of viscose precursor products.

Recent research has opened the door for further product innovation for high temperature insulation materials, as well as new applications. The viscose fibre tool box allows Kelheim's specialists to engineer tailor made viscose fibres for carbon products with new properties.

Discover the potential of precursor fibres from Kelheim for your application and be inspired by their innovation potential.

General Properties of Viscose Based Carbon Fibres

SUSTAINABILITY

Made from Renewable Resources

Viscose is a cellulosic fibre, manufactured from wood pulp. This makes viscose precursor a sustainable raw material for carbon fibres.

CONDUCTIVITY

Thermal Conductivity

The special graphite structure and porosity of viscose based carbon fibres leads to outstanding thermal insulation properties.

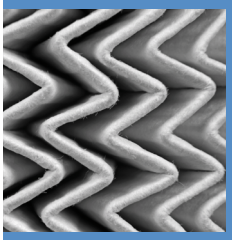
CONDUCTIVITY

Electrical Conductivity

Similar to carbon fibres made of other precursor materials, viscose based carbon fibres show good electrical conductivity.

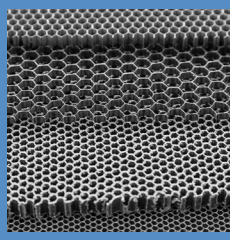
New Applications

Carbon fibres from activated viscose precursor can also be used for applications like:


Gas Filtration


Supercapacitor Electrodes


Compounds


Composites

Applications

High Temperature Insulation Materials

The largest area of application for viscose based carbon fibres is high temperature insulation materials. Due to their unique porosity, carbon fibres made of viscose have a large advantage over other precursor materials. By intrinsic activation of the precursor, current insulation products can be produced more efficiently or with improved properties.

Kelheim Fibres

THE VISCOSE FIBRE TOOL BOX

Innovation
The Toolbox Concept

Kelheim Fibres is able to modify viscose fibres in various ways. The underlying concept is the toolbox. A new fibre can be engineered by choosing from a broad range of options for the three key properties: dimension, intrinsic activation and cross section.

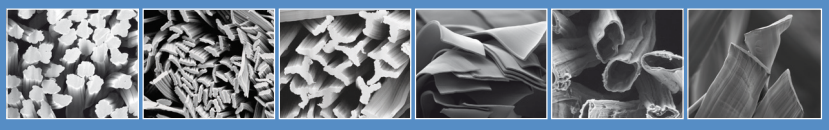
Adjustable Dimension
The diameter of the viscose precusor fibre can be adjusted between 6.5 µm and 48 µm. The cut length can be adjusted from 4 mm to endless tow. Ground flock is available from our specialist suppliers.

DIMENSION

Intrinsic Activation
By incorporating different kinds of additives, the viscose fibre can be activated. During carbonization, the activation can improve the yield, reduce tar formation and change the inner surface as well as the surface morphology of the carbon fibre.

INTRINSIC FUNCTIONALITY

Versatile Cross Section
Flat, round, hollow – there are many choices for the shape of the fibre cross section.



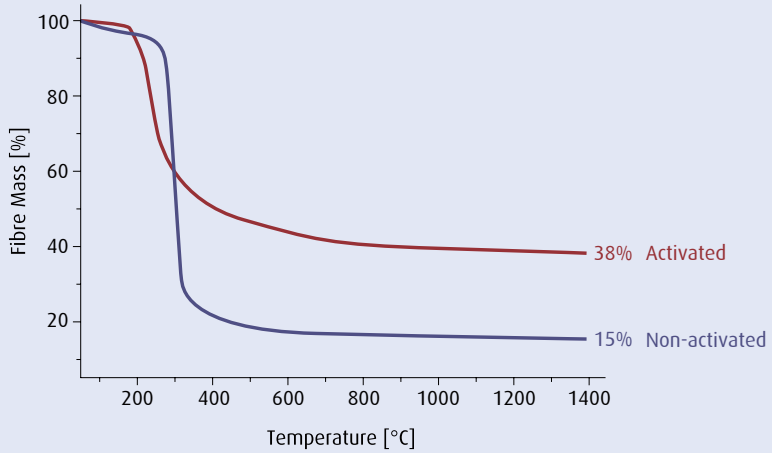
CROSS SECTION

Characteristics of Modified Viscose Precursor

Higher Yield

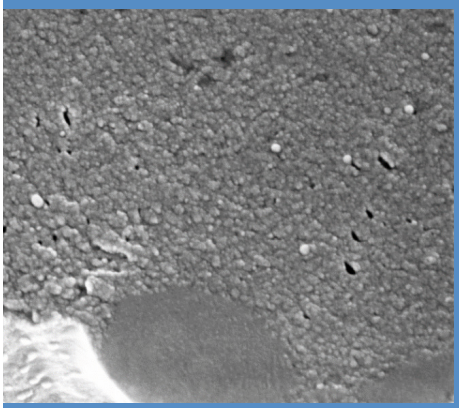
By intrinsic activation, the yield after carbonization can be doubled.

Carbonization profile of activated and non-activated precursor.

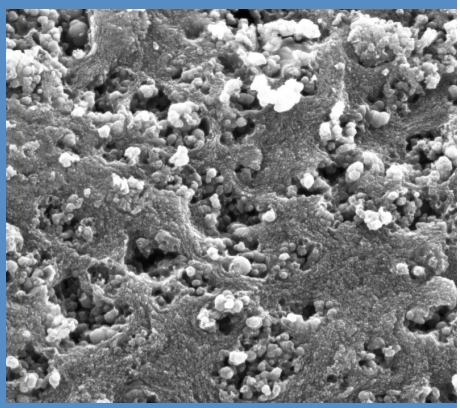


Increased Inner Surface

The incorporation of additives can vastly increase the inner surface of the carbon fibre from 1 m^2/g to 200 m^2/g.



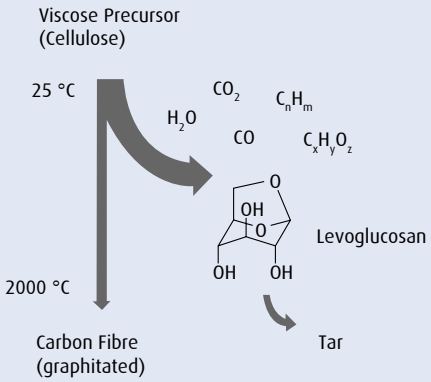
Non-activated Precursor



Activated Precursor

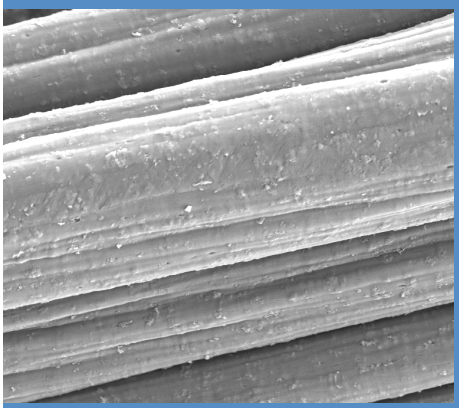
Reduced Tar Formation

During the carbonization process, by-products are formed of which levoglucosan is the most significant. Levoglucosan leads to the formation of tar which covers the carbonization equipment with impurities. By intrinsic activation of the precursor, the formation of levoglucosan can be controlled and tar levels can be reduced by 75%.

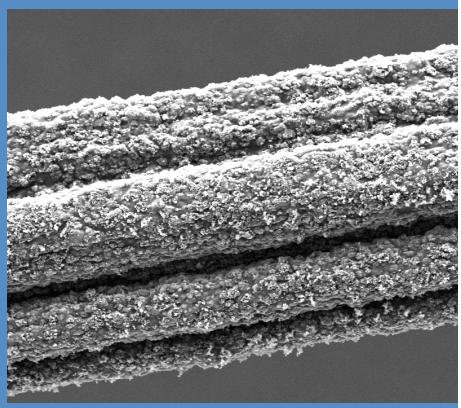


Changed Surface Morphology

Through intrinsic activation the surface morphology of the carbon fibre can be changed from smooth to rough.



Non-activated Precursor



Activated Precursor

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