

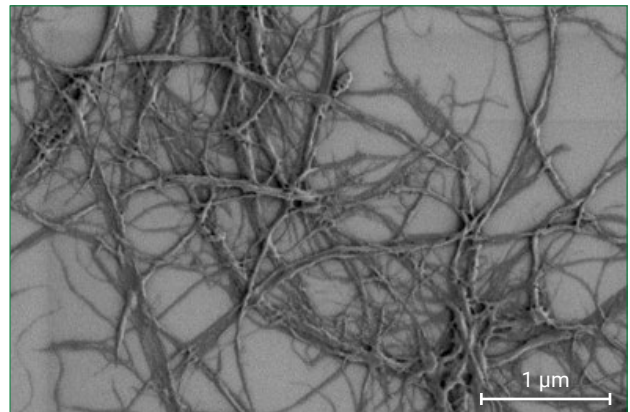
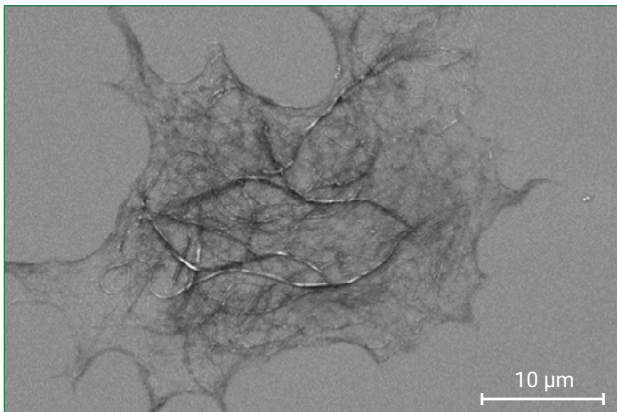


EXILVA® CELLULOSE FIBRILS

# THE **BIO-BASED** PROBLEM SOLVER



Exilva® is a three-dimensional network of cellulose fibrils suspended in water. The fibrils form flexible aggregates with a high surface area allowing for very efficient interactions with the surroundings/matrix (other components in the formulation). These interactions have a huge impact on the rheology (the flow properties) and are very dependent on the shear/force applied.



Micrometer size aggregate of cellulose microfibrils. Image on the left is 10 μm, image on the right is a magnification of the image to the left.

### CHARACTERISTICS OF EXILVA:

- Very high viscosity at low shear
- Extreme shear thinning properties
- High and tunable yield stress ("gel strength")
- Extreme high water retention value (WRV)
- Excellent film forming properties
- Excellent air and gas barrier properties
- Highly compatible and stable at wide pH range (1-13)



Borregaard

AVAILABLE IN **TWO GRADES:**BOTH GRADES IN **TWO TYPES:**

The differences between **Exilva P** and **Exilva F** are related mainly to the surface area of the fiber bundles, consequently to the 3D-network properties. These differences are reflected by the parameters in the table below:

BROOKFIELD VISCOSITY IN WATER	HIGHER FOR EXILVA F
SURFACE AREA / WATER RETENTION VALUE	HIGHER FOR EXILVA F
MECHANICAL PROPERTIES (TENSILE STRENGTH)	HIGHER FOR EXILVA F
EASE OF INCORPORATION / REDISPERSSION IN WATER	EASIER FOR EXILVA P

**THE THICKENING OF EXILVA IS BASED ON HYDROGEN BONDING AND PHYSICAL ENTANGLEMENT OF THE FIBRILS**

The performance of the formed 3D network can be enhanced and changed by the different ingredients in the formulation:

- Charge, density, size and load of particles in the matrix
- Ionic strength of matrix (mono or multivalent ions)
- Polarity of liquids / materials / solvents
- Ratio of organic phase to water phase

The Exilva network is not sensitive to pH changes, addition of surfactants or other associative compounds.

**INCORPORATION**

- 2% suspension: low shear
- 10% paste: 6 m/s tip speed

**DOSAGE**

- 2% suspension: 5–15 wt-%
- 10% paste: 1–3 wt-%

**PHYSICAL PROPERTIES**

Bio-based and biodegradable. White, opaque and odor free.

**STORAGE**

Both grades should be stored in closed container protected from heat (<20°C) and direct sunlight. Damaged if frozen.

**SHELF LIFE**

Stored as advised, both grades have a shelf life of at least 18 months.

