

High performance HydroWax dispersions

Micro protection and the
potential of synthetic
waxes



HydroWax's advantages

Wood-based panel products are continuously improved. The growing shortage of raw materials and increased final product requirements has resulted in changes in wood composition, density and gluing systems. Innovative wood-based panel products for new applications require accurately adjustable and more powerful hydrophobing additives. Increasing process performance standards demand constant quality and reliable delivery of dispersions in order to ensure optimal operation of the production facility. Safety, health and environmental standards, and the need for appropriate hydrophobing additives will continue to increase. As availability of paraffin waxes decreases, the security of supply of synthetic waxes will become even more important in the future.

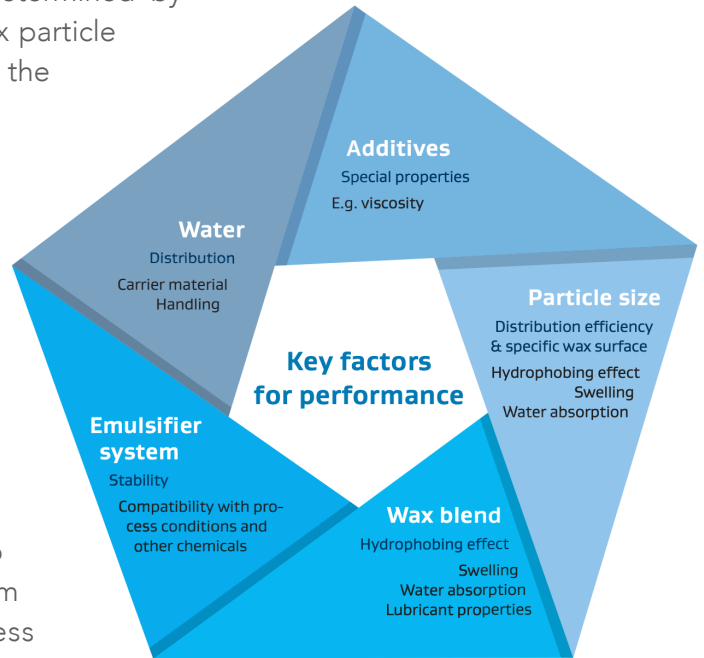
HydroWax dispersions in wood based panels and manufacturing.

- The optimised interaction of wax dispersion, press line and glue systems allow for significant cost reduction
- Improved efficiency and a homogeneous, fine distribution in the panel impart crucial advantages for high-quality subsequent treatments such as direct lacquering, coating and milling
- Micro-fine dispersions offer increased compatibility with dosing units to guarantee flexible processing, e.g. incorporation directly into the blow line
- Hywax's entire production process ensures constant product quality – from raw material manufacturing to final product transportation
- Synthetic waxes allow for exceptionally low levels of edge swelling
- Micro-fine dispersions reduce depositing in tanks and pipes, and ensure a stable production processes.

HydroWax system dispersion

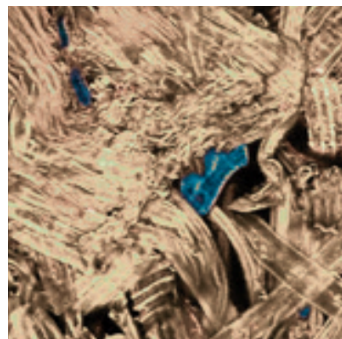
HydroWax system dispersion

A dispersion's hydrophobing properties are determined by the interaction of water content, wax blend, wax particle size, type of emulsifier and additives, and the emulsion process. Dispersions that are perfectly matched to each individual application provide best possible swell and process performance. HydroWax offers dispersions for different applications and wood based panels, that range from economic and highly efficient dispersions, to high-performance dispersions that provide maximum hydrophobing for special high-end HDF products with sophisticated production lines. Specialty emulsions can also be designed to address specific requirements such as long-term stability or compatibility with high process temperatures. We even offer dispersions for starting up production lines, and for adjusting press performance as agreed with the equipment manufacturer. Our product range includes dispersions that are entirely synthetic.

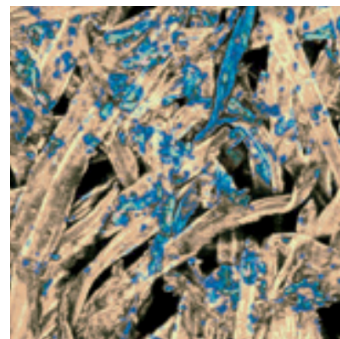


Influence of the particle size on the distribution of wax

The microscopic cross section shows wax particles (blue) covering fibres of an MDF panel (beige). The smaller the wax particles the better the wax distributes within the panel.



Large wax particles; liquid hydrophobing wax, particle size ~ 100 µm.



Conventional dispersion with wax particles sized ~ 1 to 5 µm.

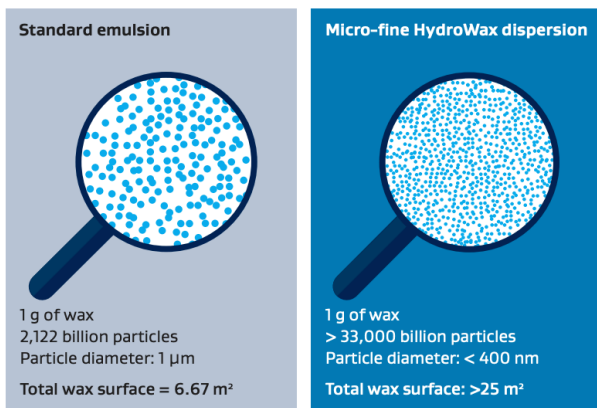
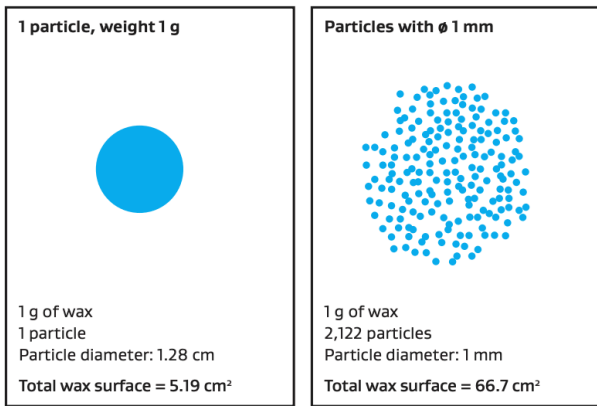
Micro-fine wax particles – a breakthrough in hydrophobing

HydroWax dispersions with micro-sized wax particles smaller than 400 nm significantly increase overall efficiency. This is due to a combination of the higher number of wax particles and a ~ 3.5 factor increase in wax surface area when compared to conventional emulsions with particle sizes of 1 to 5 µm. After extensive research and the development of a multistage manufacturing process, Hywax has succeeded in producing micro-fine dispersions that deliver substantial benefits to the wood-based panel industry:

- Measurably improved hydrophobing and a homogeneous distribution within the wood based panels
- More efficient use of wax and prevention of wax agglomeration (wax stains)

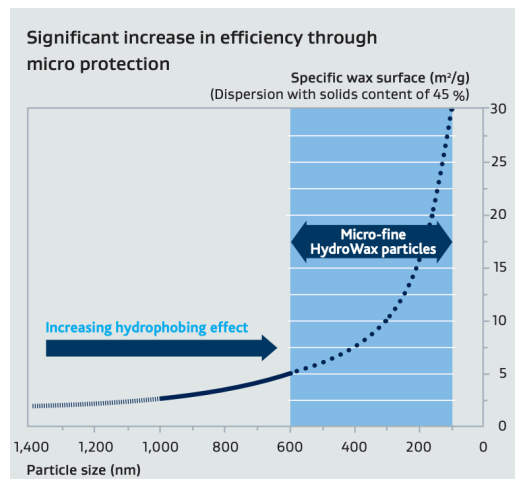
The new HydroWax dispersions with micro protection do not only enhance the wax’s performance, but also optimally distribute within the furnish and more efficiently cover from the smallest wood fibres (HDF) up to much larger strands (OSB).

Multiplication of the wax surface through micro-fine particles



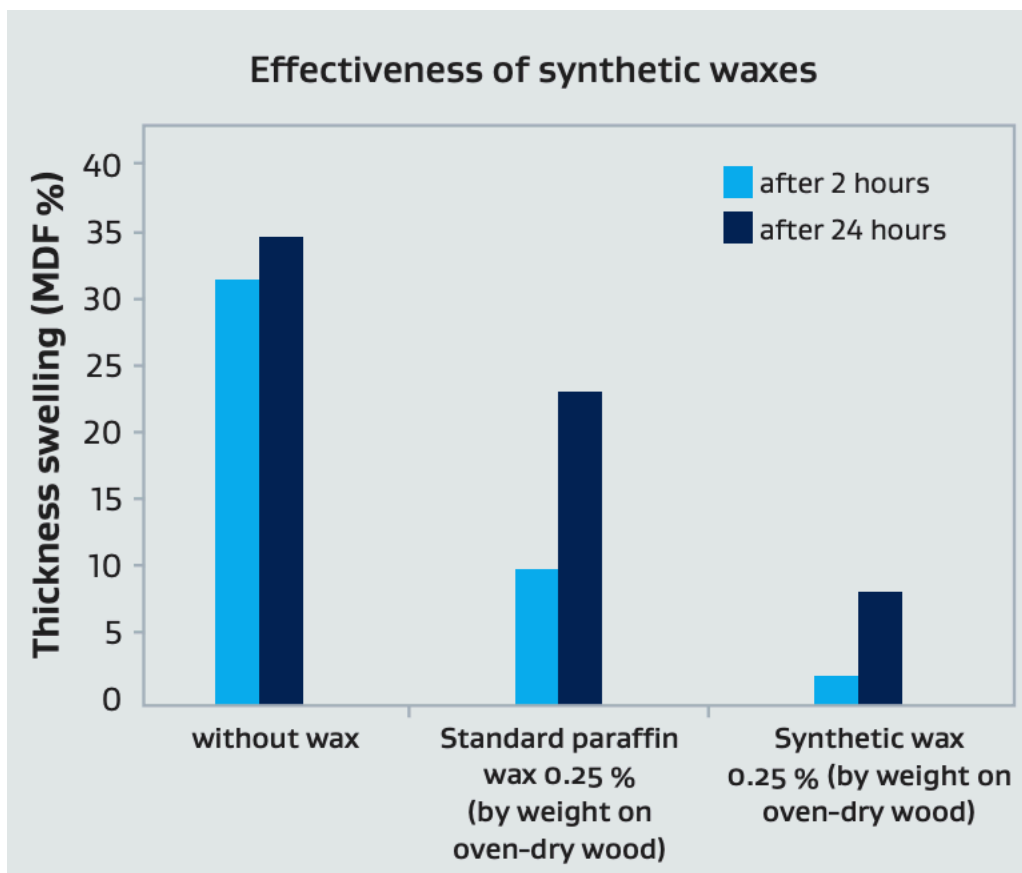
Micro-fine HydroWax dispersions have the ideal particle size

Wax particles smaller than 400 nm can effectively cover even fine wood fibres. The wax particles distribute more evenly within the wood-based panel and perfectly combine with the glue system. Micro-fine wax particles significantly enlarge the total surface area, resulting in significantly higher efficiency and hydrophobing performance compared to conventional dispersions with wax particles larger than 1,000 nm.



Synthetic waxes – superior effectiveness

Different paraffin waxes exhibit varying hydrophobing properties when used in wood based panels. Synthetic waxes have proven to be particularly effective. These waxes, produced primarily from natural gas, possess excellent hydrophobing characteristics. Their special composition results in considerably less edge swelling. The superior hydrophobing properties become particularly apparent when the wax is used in small quantities. This means dispersions with a high content of synthetic wax and a relatively low solid content are capable of achieving highly efficient hydrophobing. The synthesis manufacturing process results in synthetic waxes of consistently high quality. Synthetic waxes are fully compatible with paraffin waxes.



Source: Roffael, E. and Schneider, T., 2004, Institute of Wood Technology and Wood Biology



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