

SPECTRE ENGINEERING  
PRIVATE LIMITED

# CAVIWAX

WAX EMULSION SYSTEM

# Introduction

‘CaviWax Wax Emulsion System’ is a new technological equipment, which performs the following functions simultaneously -



**Grinding to less than 10 Microns**



**Homogenization With Additive**



**Heating & Stabilization (Up to 90°C)**

The operating principle of CaviWax is based on the destruction of high molecular weight polymeric linkages of hydrocarbon compounds, and subsequent blending with water clusters to produce homogenous emulsions.

In the process, water and paraffin wax are intensively mixed, crushed and finely dispersed as emulsions. In CaviWax, the wax is ground to small droplets of 6 – 8 microns and water is ground to small droplets of 5 – 10 microns.

## CAVIWAX MODELS FOR PARAFFIN WAX EMULSIONS

MODEL	TOTAL POWER (KW)	WAX EMULSION CAPACITY (KGS PER HOUR)
CW 50	15	50
CW 100	22	100
CW 150	30	150
CW 200	36	200
CW 300	44	300
CW 400	60	400
CW 500	74	500
CW 600	90	600

# Importance of Paraffin Wax in Panelboard Industry

Paraffin wax is a white, odorless and tasteless waxy solid, with a typical melting point between  $46^{\circ}\text{C}$  and  $68^{\circ}\text{C}$ . It has a density of  $0.9\text{ g/cm}^3$  and is insoluble in water. Paraffin wax is a crystalline mixture of hydrocarbons ranging from  $\text{C}_{20}$  to  $\text{C}_{34}$ . It is solid at the room temperature ( $25^{\circ}\text{C}$ ) and has a low viscosity when melted.

Paraffin wax is successfully being used in the woodworking industry as a protective coating to ensure that the panel materials such as MDF, OSB & Particleboard do not swell, and hence maintain their durability for a long time -



## Moisture Protection

Shields the board from short-term and long-term water exposure



## Dimensional Stability

Reduces water swelling



## Stronger Resin Bonds

Enhances transverse and longitudinal strength



## Smoother Surface Finish

Provides refined surface quality for coatings



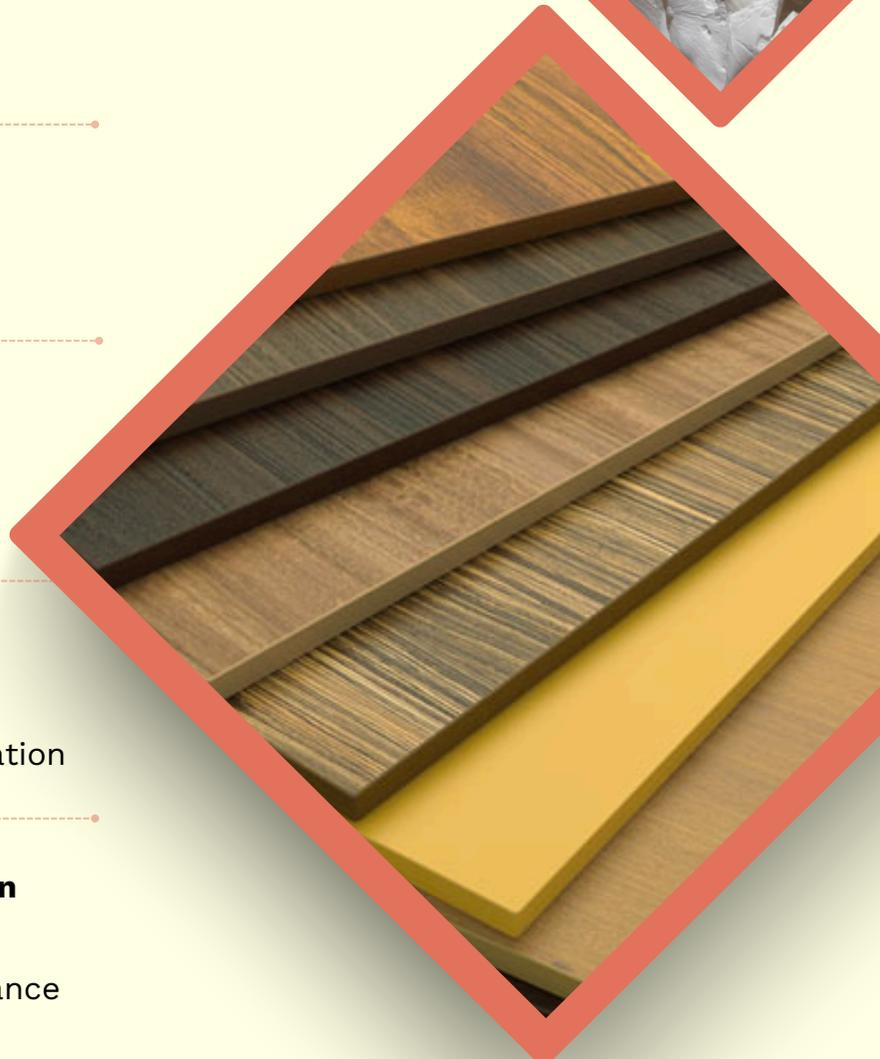
## Load Resistance

Withstands stress and pressure without deformation



## Improved Layer Formation

Enhances overall board consistency and performance



# Wax Emulsions

Engineered wood products such as MDF, OSB & Particleboard are spray-coated with molten paraffin wax or a wax emulsion, to impart many properties including Water repellency, dimensional stability, an anti-dust effect and a smooth & softer feel to the final product.

A wax emulsion is a mixture of paraffin wax with the desired quantity of water, to produce a stable and uniform paraffin emulsion of the desired concentration.

## SPECIFICATION OF WAX EMULSION

### APPEARANCE

Liquid

### COLOR

Off white  
Beige (with emulsifier)

### SOLIDS

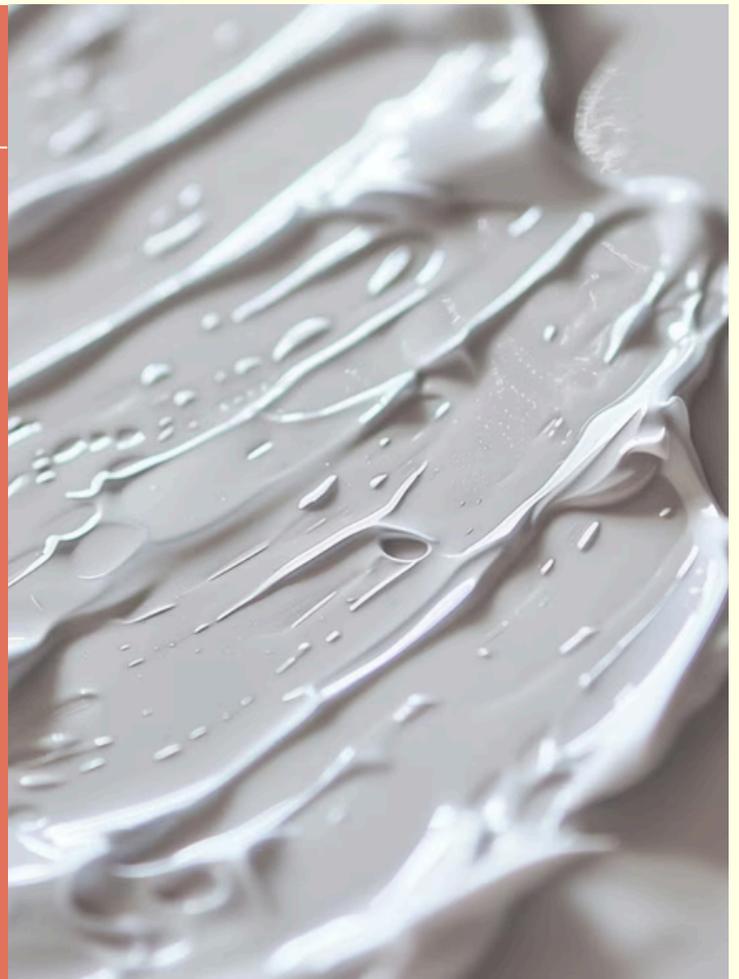
25 - 75%

### BOILING POINT

100° C

### DENSITY

0.910 to 0.970 g/cm<sup>3</sup>



25 - 75%

PARAFFIN WAX



25 - 75%

WATER



# Advantages of using wax emulsions over molten paraffin wax in MDF, OSB & Particleboard

**01**

Wax emulsions make the board's surface smoother & softer, and also increase the lifetime of the sanding belts (by even distribution of the wax particles on the board surface).

**02**

To achieve a good water-proof performance of the panels, the added wax should be evenly distributed and absorbed into the fibre / particle surface.

The small particle size of emulsions (5 – 10 microns) contributes to a better wax penetration into the wood fibre / particles, providing higher protection (especially on the edges).

**03**

Wax emulsions mix well with resins (based on Urea Formaldehyde / Melamine Formaldehyde) and reduce the net consumption of wax.

**04**

There is no danger of frequent blocking of spray nozzles while spraying the wax emulsion; there is also no risk of hardening in the pipelines. Wax emulsions are able to withstand higher shear conditions of the spraying process.

**05**

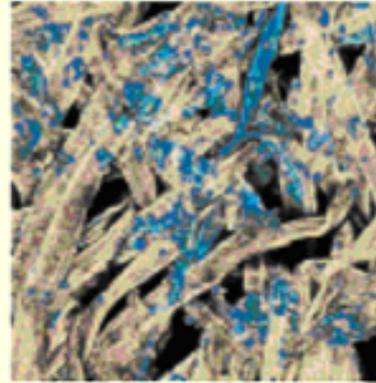
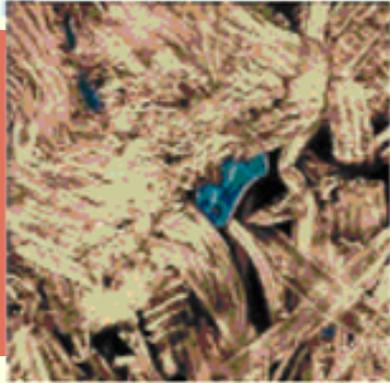
Wax emulsions are not fire-hazardous. They improve the board properties for varnishing & coating.

**06**

Wax emulsions which spread across the board fibres / particles, prevent the absorption of UF resin. As a result, there is a saving in the resin, without changing the physio-chemical properties of the boards.

# Wax emulsions with micro-sized wax droplets significantly increase the efficiency of wax distribution in the wood particles

DISPERSION  
OF MOLTEN  
PARAFFIN  
WAX -  
PARTICLE  
SIZE 100  
MICRONS



DISPERSION  
OF WAX  
EMULSION -  
PARTICLE  
SIZE  
5-10  
MICRONS

After passing through CaviWax, the wax surface area multiplies through the wood particles -

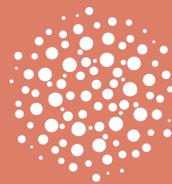
1 Particle, weight 1 g



1g of wax  
1 particle

Particle diameter - 1.28 cm  
Total Wax Surface = 5.19 cm<sup>2</sup>

Particles with 1 mm



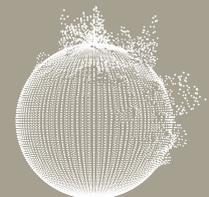
1g of wax

2,122 particle

Particle diameter - 1 mm

Total Wax Surface = 66.7 cm<sup>2</sup>

Wax Emulsion with 10 micron particles



1g of wax

2,122 billion particle

Particle diameter - 10 μm

Total Wax Surface = 6,670 cm<sup>2</sup>



# Advantages of using CaviWax Emulsion System to make water-paraffin wax emulsions

In CaviWax, the mix of water & paraffin wax is finely ground and uniformly homogenized, with the following benefits -

**01**

To make several grades of wax emulsions with solid contents from 25% to 75%, as per the specific needs of the customers.

**02**

To have all the benefits of using a commercial wax emulsion, without paying for it.

**03**

To save on the equipment to re-heat the wax emulsion before spraying; CaviWax can supply the wax emulsion at temperatures from 70° – 90° C, as per the needs of the customers.

**04**

To save on the cost of a high capacity and expensive wax emulsion plant, which is presently imported.

**When 1 - 2% emulsifier is used, the wax emulsion can be stored for 7 - 14 days.**

**Spectre Engineering Private Limited is pleased to bring this innovative technology to India, by importing the critical equipments from Europe and constructing the entire system as per your specific needs.**

# Our Services

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Installation and Commissioning



Modernization and Automation



Spare Parts



On-Site & Remote Service



Operator Training

# Contact Us

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