MAJOR FEATURES OF THERMO-TREATED WOOD

Parameter	Effect	Comments
Equilibrium moisture	Reduced 50% compared untreated wood. The difference is higher, the relative humidity is higher.	This difference remained after years of exposure. After thermo treatment the wood is dry - moisture content is 4-6%.
Dimensional stability	The swelling and shrinkage (both tangential and radial) reduces 3-5 times for softwoods and up to 15 times for hardwoods. This parameter is strongly depends on the relative humidity (at 100% reduces 2 times for softwoods and 3-5 times for hardwoods)	This because of the decrease in absorptive qualities, lower equilibrium moisture content and also due to lignin depolymerization the length of chains of cellulose decreases and this leads to the deformations decrease.
Color	Attractive golden brown appearance and even color at all depth.	The color is affected by the treatment temperature and time. It is possible to receive several gradations of color based on the process.
Appearance	Attractive golden brown appearance and even color at all depth. Color becomes more sated and homogeneous on all section; the structure of wood effectively comes to light.	The color is affected by the treatment temperature and time. It is possible to receive several gradations of color based on the process. The effect of valuable breeds of wood is reached.
Density	Lower density at 5-10%.	Due to the emissions during the thermo-treatment process and lower equilibrium moister content. This feature might improve the cost-efficiency of shipping of the treated material.
Cell structure	Changes as if after ageing for 120-250 years.	The color is affected by the treatment temperature and time. It is possible to receive several gradations of color based on the process. The effect of valuable breeds of wood is reached while the absorption of moisture is decreased.
Resin	Is almost fully removed.	
Brinell hardness	Increases as the treatment temperature increases. However, the relative change is very small, as the density decreases.	Certain kinds of timber change their place on the hardness scale, as some of them become harder, while others softer as a result of the treatment temperature and specie.
Permeability	The water uptake reduced up to 5 times depending on treatment temperature.	The surface of the thermo-treated wood is not porous but solid, also the chemical composition of the wood changes. Reduced water absorption has to be taken into account when working with water solvent glue or paint.
Thermal conductivity	Decreased by 10-30%.	Thanks to the lower water content and structural changes.
Fire resistance	The same as non-treated wood. Thermo--treated wood is in fire class D.	The time of ignition a little decreased, but better than the normally dried softwoods in terms of heat and smoke release.
Resistance to insect attack and termites	Significantly increased resistance to the hardwood and softwood insects, but only a little increased resistance to the termites (it is expected that termites will choose normal wood over thermo-treated).	Tests have been carried out in Europe to evaluate the resistance to attack from the three most common wood boring insects found in Europe. House Longhorn beetles (Hylotrupes bajulus) are found in the sapwood of softwood, the common furniture beetle (Anobium punctatum) preferentially attacks hardwoods and the Powderpost beetle (Lyctus brunneus) is found in some hardwood species. The results of the tests found that Thermo-treated wood was resistant to all three of the above insect species. Southern European Subterranean termites (Reticulitermes spp) found in Europe only attack buildings from the earth below, avoid-ing direct sunlight where possible. Termites will attack both wood and concrete based materials in their quest for a strong food base. Various measures have been developed to control the problem including polythene membranes being installed in the foundations and various bituminous paint products are available to seal possible routes up the building.
Rot resistance	Improved.	However it is not suitable for conditions where it would be saturated with water or in prolonged contact with damp ground.