Structural applications with Platowood Spruce

Through a combination of good dimensional stability and durability, Platowood wood is an excellent building material. The durable wood is suitable for a wide variety of applications, such as traditional and open cladding, outbuildings, window frames, decking and fences.

There is, however, also great interest in using Platowood for structural applications. These are applications where high demands are placed on the material, particularly in terms of strength and stiffness. This information sheet elaborates on the possibilities of using Platowood Spruce for structural applications.

When calculating structures, the characteristic values of the wood are used. Normally, the density, the bending strength and the modulus of elasticity are taken into account. Based on these properties, the wood is classified into so-called (strength) quality classes (see table 1), based on NEN-EN 338 (Timber structures – Strength classes). In addition, when determining the design values, account must be taken of the degree of variability of the relevant strength properties, the species, the duration of the loads occurring in use, and incidental overloads.

Platowood **B.V.**
Westervoortsedijk 73, 6827 AV Arnhem
Postbus 5197, 6802 ED Arnhem

+31 88 60 500 60
info@platowood.nl
www.platowood.nl

Table 1. Density, bending strength and bending stiffness – Characteristic values according to NEN-EN 338

Quantity		Strength class softwood species and poplar wood								
		C14	C16	C18	C22	C24	C27	C30	C35	C40
Density - Characteristic value - Mean	Kg/m3 Kg/m3	290 350	310 370	320 370	340 410	350 420	370 450	380 460	400 480	420 500
Bending strength (MOR)	N/mm 2	14	16	18	22	24	27	30	35	40
Bending strength (MOE) - 5% value - Mean	N/mm 2 N/mm 2	4700 7000	5400 8000	6000 9000	6700 10000	7400 11000	8000 12000	8000 12000	8700 13000	9400 14000

During the Platowood process the wood is treated at a relatively high temperature (165-180°C), causing a change in the physical and mechanical properties. Research has now shown that as a result of the Platowood treatment there is a decrease in the characteristic value (the so-called 5% value) of the bending strength of spruce construction wood (SHR report 7.525). This decrease amounts to approximately 50% compared to the untreated raw material. On the other hand, the Platowood treatment has no negative effect on the characteristic value of the bending stiffness, which has even slightly increased.

With our many years of knowledge and experience we are happy to advise you on the structural application of Platowood wood. For load-bearing and/or spanning structures it is therefore advisable to determine which forces play a role and how large these forces can become. The use of the wood should be adjusted accordingly. This applies not only with regard to the mechanical properties of Platowood but also to the connections and fasteners to be used.

Since the bending stiffness is the limiting factor for many structural applications, Platowood can still offer more than sufficient possibilities for structural applications. This applies, for example, to light and semi-structural applications such as noise barriers, pergolas and carports. It should be taken into account that it is (still) not possible to supply thermally modified wood, including Platowood, strength-graded.

Platowood **B.V.**
Westervoortsedijk 73, 6827 AV Arnhem
Postbus 5197, 6802 ED Arnhem

+31 88 60 500 60
info@platowood.nl
www.platowood.nl