

Glulam strength grades

In specifying Canadian glulam products, it is necessary to indicate both the stress grade and the appearance grade required.

The specification of the appropriate stress grade depends on whether the intended end use of a member is for a beam, a column, or a tension member as shown in Table 2.

Table 2: Canadian Glulam – Stress Grades			
Stress Grade		Species	Description
Bending Grades	20f-E and 20f-EX	D.Fir-L or Spruce Pine	Used for members stressed principally in bending (beams) or in combined bending and axial load.
	24f-E and 24f-EX	D.Fir-L or Hem-Fir	Specify EX when members are subject to positive and negative moments or when members are subject to combined bending and axial load such as arches and truss top chords.
Compression Grades	16c-E and 12c-E	D.Fir-L Spruce Pine	Used for members stressed principally in axial compression, such as columns.
Tension Grades	18t-E and 14t-E	D.Fir-L Spruce Pine	Used for members stressed principally in axial tension, such as bottom chords of trusses.

For the bending grades of 20f-E, 20f-EX, 24f-E and 24f-EX, the numbers 20 and 24 indicate allowable bending stress for bending in Imperial units (2000 and 2400 pounds per square inch). Similarly the descriptions for compression grades, 16c-E and 12c-E, and tension grades, 18t-E and 14t-E indicate the allowable compression and tension stresses. The “E” indicates that most laminations must be tested for stiffness by machine. The lower case letters indicate the use of the grade as follows: “f” is for flexural (bending) members, “c” is for compression members, and “t” is for tension members.

Stress grades with EX designation (20f-EX and 24f-EX) are specifically designed for cases where bending members are subjected to stress reversals. In these members the lamination requirements in the tension side are the mirror image of those in the compression side.

Unlike visually graded sawn timbers where there is a correlation between appearance and strength, there is no relationship between the stress grades and the appearance grades of glulam since the exposed surface can be altered or repaired without affecting the strength characteristics.