TIMBER DEVELOPMENT UK

Supply

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Timber Sizes and Tolerances

While timber can be any size permitted by the raw material's dimensions, there are customary sizes that are most widely available, most often used, and suitable for the vast majority of uses.

Timber Sizes and Tolerances

Whatever its size, structural timber is available in two dimensional tolerances:

- Tolerance Class 1, with a sawn edge
- Tolerance Class 2, with a planed or machined edge.

Timber sizing tolerances are defined in **BS EN 336: 2012 Structural Timber. Sizes, permitted deviations**.

Tolerance Classes

Timber cut from a log has a high moisture content and must be dried for most construction applications. Timber is sawn oversize but reduces in size as moisture is lost during drying to a moisture content of 20%.

Tolerance Class 1 for sawn timber reflects the natural variance in the initial drying process, with the following deviations assuming a 20% moisture content:

- -1mm or +3mm for thicknesses or widths of ≤ 100mm
- -2mm or +4mm for thicknesses or widths of > 100mm
- Regardless of deviations, the average dimensions of square-edged timber may not be less than the target size.

Tolerance Class 2 timber is further planed or milled to achieve the specified size and edges at right angles, with the following deviations:

- ±1mm for thicknesses or width of ≤ 100mm
- ±1.5mm for thicknesses or width of > 100mm
- Regardless of deviations, the average dimensions of square-edged timber may not be less than the target size.

To meet construction demands, Tolerance Class 1 timber is milled or planed down to the smaller, but more accurate, Tolerance Class 2 sizing. This is why Tolerance Class 2 timber has smaller standard dimensions and a smoother surface - often with eased edges - to aid installation.

BS EN 1309-1:1997 Round and sawn timber provides guidance on measurement of dimensions.

Standard Target Sizes for Softwood Structural Timber

Softwood is sawn to standard target sizes for use in construction. These sizes and tolerances assume a total moisture content of 20%.

While the UK National Annex to **BS EN 336: 2012** lists the Tolerance Class 1 sizes below as commonly available in the UK, this increasingly requires some of the sizes to order within a few days.

Standard Target Dimensions for Sawn Softwood Structural Timber to Tolerance Class 1									
Thickness (mm)	Width (mm)								
22	-	100	-	-	-	-	-	-	-
38	-	100	-	150	175	200	225	-	-
47	75	100	125	150	175	200	225	250	300
63	-	-	-	150	175	200	225	-	-
75	-	100	-	150	175	200	225	250	300
100	-	100	-	150	175	200	225	250	300
150	-	-	-	150	-	-	-	-	300
300	-	-	-	-	-	-	-	-	300

The more concentrated range of Tolerance Class 2 sizes, listed below, now form the mainstay of structural timber supply in the UK, and are available off the shelf at most merchants. The sizes above for Tolerance Class 1 can be processed within a few days to meet Tolerance Class 2 tolerances where required. Increasingly, products produced to Tolerance Class 2 will have rounded corners to aid handling and installation.

Standard Target Dimensions for Machined / Planed Softwood Structural Timber to Tolerance Class 2									
Thickness (mm)	Width (mm)								
44/45	70	95	125	145	170	195	220	245	-
72	-	95	-	145	170	195	220	-	-

Standard Target Sizes for Structural Timber (continued)

Imported timber may have been milled to the **Canadian Lumber Standard** (CLS) dimensions prior to shipping. Many UK vendors sell this timber for use in framing and internal timber work. It has been planed all round, kiln dried and all four edges are rounded. This further processed timber is produced to Tolerance Class 2. This timber is always square edged with no negative tolerances permitted.

Standard Target Dimensions for CLS Machined / Planed Softwood Structural Timber Sold in the UK							
Thickness (mm)	**Width (mm)**						
38	63	89	-	-	140	-	-

The manufacture of trussed rafters in the UK utilises a specific set of sizes only available through specialist suppliers.

Standard Target Dimensions for Trussed Rafters Members Sold in the UK									
Thickness (mm)	**Width (mm)**								
35	60	72	84	97	122	147	172	197	-
46.5	-	72	84	97	122	147	172	197	222

Standard Timber Target Lengths (mm)					
2400	3000	4200	5100	6000	7200
-	3300	4500	5400	6600	-
-	3600	4800	-	-	-
-	3900	-	-	-	-

Even lengths are commonly available up to 6000mm.
Odd lengths are available from some outlets but are increasingly to order.
6600mm and 7200mm are specialty lengths available to order and increasingly contain structural finger joints. Engineered wood products are also available in these and longer lengths.

Common Strength Classes for Structural Timber

The most common strength classes for softwoods, including CLS softwoods, are C16 and C24. TR26 is a strength grading specific to trussed rafters. Hardwoods range from strength class D18 to D70, depending on the species, and are produced to order only.

For timber machined after grading, it is considered to have maintained its strength grading - where the grading stamp is reinstated - if:

- For timbers with dimensions ≤ 100mm, the machining has removed no more than 5mm from that dimension.
- For timbers with dimensions > 100mm, the machining has removed no more than 10mm from that dimension.

Structural Hardwoods

Timber sizing tolerances for structural hardwoods are defined in **BS EN 336: 2012 Structural Timber. Sizes, permitted**. For other hardwood sizes see **BS EN 1313-2, Round and sawn timber – Permitted deviations and preferred sizes – Part 2: Hardwood sawn timber**.

Structural hardwoods are produced to order, meaning there is no clearly defined set of commonly available sizes.

All sizes listed above for Tolerance Class 1 for softwoods will be available in some form of hardwood. However, individual species will only be available in a small sub-set of these sizes. Please contact Timber Development UK specialist hardwood suppliers for more information.

In addition to the lengths listed above for softwood, hardwood specifications also include longer lengths such 7800mm and 8400mm, while shorter lengths like 1800mm are common.

Impact of Moisture Content

All standard timber sizes and tolerances assume a moisture content of 20%, as this is the level which dry-graded structural timber must achieve.

Additional moisture will cause the timber to swell, and less moisture will reduce its size. This means that timber cut with a high moisture content may shrink as it dries while timber milled to size while its moisture content is lower than 20% may expand over time.

- The thickness or width of a piece of timber is likely to increase by 0.25% for every 1% increase in moisture content over 20%, up to 30%.
- The thickness or width of a piece of timber is likely to decrease by 0.25% for every 1% or moisture content below 20%.