

# Grain definition - causes & treatment

## Maintenance guidelines

Grain definition in timber arises from the boundaries between summer and winter growth. It is the rings that are visible in the cross section of a felled tree trunk.

The grain pattern seen in joinery components varies, dependant on timber species, the region in which it grew, and the angle at which the board was cut from the original tree.

Grain profiling (the height variations sometimes seen across the timber surface) is caused by differential swelling of the summer and winter growth regions. The faster summer growth areas are less dense, more absorbant, and swell at a faster rate as the seasonal moisture content of the of the joinery varies.

Generally, grain definition and profiling are seen as appealing and natural features of a joinery product, though occasionally concerns arise where adjacent components have markedly different grain configurations or on laminated sections when dissimilar grain patterns are apparent on either side of a finger joint.

### Effect on performance

Grain profiling has no impact on the performance or expected service life of exterior joinery and modern waterbased coating systems are designed to cope with the natural flexing and movement of timber as its moisture content varies.

With a natural product like timber it is almost impossible to exactly match the grain configuration of individual

components. however, steps can be taken to minimise the visual variations which occur:

- Sharp cutters and routers will give a smooth profile after machining. Blunt cutters tear rather than shear the timber, exaggerating the swelling differences between winter and summer growth regions.
- The moisture content of the timber prior to machining should be in the range 12% - 19% (BS EN 942). Typically in the UK, the average moisture content of exterior joinery will vary between 12% - 18% over the year, so if machining is carried out on timber at close to the mid point of the recommended range swelling between grain boundaries will be reduced.
- Avoid excessive sanding. Sanding may appear to reduce profiling in the workshop, but it will tear the surface, increase surface porosity, and increase profiling when the joinery is subsequently exposed to moisture.

