Technical Information

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Light-fastness: Information on the light-fastness of furniture surfaces

Description/features:
Wood is a natural product, which is subject to fluctuations in his form, its texture and its colour due to growth, location and climate. The colour tone of a wood surface also changes over time as a result of exposure to light and heat.
This natural ageing process is common to all wood species to a greater or lesser degree. So, for example, oak gradually becomes more yellowish brown, ash becomes more yellow, mahogany and cherry become more red, maple, birch, pine and spruce become brownish, walnut becomes lighter, wengé wood becomes straw-coloured and the reddish tone of alder and muted beech changes to yellow.

Wood is not light-fast. Exposure to sunlight, but also to diffused daylight in interiors, has the greatest effect on colour change. The degree of colour change undergone depends not only on the time, but also on the location of the furniture.
The surfaces of living-room furniture change faster than the surfaces of bedroom furniture because living rooms are usually south-facing – and this effect is more pronounced the closer the furniture is to the window.
Compared with the effects of light exposure, exposure to heat is of secondary importance. However, it can still have an effect if furniture is placed close to radiators or is in some other way exposed to consistently higher surrounding temperatures.

Influence of lacquers:
Modern coating systems are without exception more light-fast than the various species of wood. While traditional nitrocellulose lacquers have at least the same or slightly better light-fastness, polyurethane lacquers, UV lacquers and hydro lacquers are notable for their clearly and even considerably better behaviour when exposed to light, meaning that these systems are, for the most part, resistant to yellowing.
It is clear from this that the influence of the coating on the colour change of furniture surfaces is insignificant, because the discolouration of wood takes place beneath the lacquer coating.

Influence of stains
One way of delaying the natural discolouration of the wood surface is to stain the wood before applying lacquer. Solvent-based and water-based stains based on soluble dyes are fully transparent and allow incident light to act on the wood surface unimpeded.
An improvement in the light-fastness can therefore hardly be expected.

Dye stains are used to lend wood an individual colouration – primarily for decorative or aesthetic reasons. In most cases, colours are sought which tend towards the later natural discolouration of the woods, e.g. with red mahogany and cherry stains or brown walnut stains.

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Pigment stains exhibit behaviour completely different to that of dye stains.
Colour pigments are significantly more light-fast than woods and also reflect the incident light, meaning that the wood substrate is also protected.
However, there are limits here, too:

- Pigments obscure the wood surfaces. As the pigment concentration increases, the texture of the wood is increasingly concealed and, as a result, the natural character of the wood is lost.
- In extreme cases, complete coverage of the substrate is achieved, although the species of wood can only be identified from the pore structure (ash, oak), but the wood then has excellent light-fastness.
- The use of pigment stains therefore means a compromise between improved light-fastness and preserving the unique character of the wood.

Influence of light stabilisers:
Another possibility of increasing the colour stability of wooden furniture is provided with the use of light stabilisers (UV absorbers) in the lacquer coating. This problem has been the focus of much work for many decades, but the philosopher's stone has yet to be found.
Modern light stabilisers have an exceptional effect on light woods (maple, ash) and many industrial veneers.
On other woods, in particular dark woods, they fail partially or completely, and in the worst cases they lead to greying.
With some species of wood (walnut, cherry), the use of light stabilisers is unnecessary and even undesirable, because the colour tone which develops with age is warmer and more beautiful.

The use of lacquer containing light stabilisers, where appropriate combined with a stain, should therefore be individually tailored according to the wood used, the item and the location, particularly in the case of dark woods.
However, light stabilisers are powerless against the effect of heat and the resulting discolouration.

Note:
This information is for advice and is based on the best knowledge available and careful research in line with current state of the art practice. This information cannot be held as legally binding. We also refer you to our terms and conditions of business.
The Material Safety Data Sheet according to the regulation (EC) No. 1907/2006 is available.