



GUIDANCE NOTE

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Preservative treatment of wood-based sheet materials

Scope

This Guidance Note applies to the preservation of panel and engineered wood products, examples of which are:

- Particle board (e.g. wood chipboard and flaxboard)
- Oriented strand board (OSB)
- Cement bonded particle board
- Fibreboard (e.g. softboard, hardboard and medium density fibreboard (MDF))
- Plywood

This guidance is also relevant to other products such as I-beams which include either a mixture of different wood-based composite products, or a mixture of wood based composite products and solid wood.

Whilst this note provides information on appropriate preservative treatments, many of these products are affected by water and so are unsuitable for use in situations where they will become wet or even damp and may also be unsuitable for preservation by certain preservative types. Therefore, before preservation is considered, it is essential to verify that the wood composite product in question will give satisfactory physical and mechanical performance in the intended end use.

The use of, for example, a Use Class 3 preservative will not render a wood composite product (suitable only for use in dry interior conditions on account of its susceptibility to moisture), suitable for use in anything other than a Use Class 1 situation.

Detailed information on these products is available in the WPIF Panel Guide available from wpif.org.uk

Decay Hazards

The heartwood of certain wood species may display natural resistance to degradation by insects and fungi (natural durability) while the sapwood of all timbers is susceptible to biological deterioration. Because of the mixture of timber species which may occur in wood-based composite materials, and the mixture of heartwood and sapwood of which composite materials are composed, no wood based composite material can be regarded as naturally durable in the conventional sense. However, cement bonded particle board is resistant to biological deterioration.

Due to the specific structure of particleboard, OSB and fibreboards (i.e. high density, lack of splits or checks, randomised glue lines and small size of particles/fibres or strands) they are resistant to infestation by wood boring beetles. Products with veneers e.g. plywood, equal to or thicker than 2mm will not be intrinsically resistant to wood-boring beetles. The frequency and importance of this risk depends upon the geographical region. All wood-based composite materials are susceptible to attack by termites.

Preservative Penetration and Retention

Table 1 overleaf, contains information on the selection of a suitable preservative, plus the appropriate penetration class. The preservative manufacturer can give guidance as to how specifications can be met for a given preservative and wood-based product along with appropriate guidance on, for example, drying after treatment. **Creosote is not suitable for the treatment of board materials.**

Application

The penetrations and retentions of preservatives required may be achieved either by incorporation of preservative during the manufacturing process, or by application of preservative to finished composites.

Different wood-based composite materials respond differently to treatment. Because of the high surface area / volume ratio and the relative thinness of many boards compared with solid timber, uptakes are often high and special handling and drying procedures may be required. For this reason, processors are advised to contact their preservative suppliers for advice on treatment methods.

Glue Bonding & Board Strength

Plywood grades are based on BS EN 636 (Dry, Humid, Exterior classifications) which are themselves based on bonding classes 1, 2 and 3 from BS EN 314 Part 2. Plywood that is BS EN 636 Exterior (BS EN 314 Part 2 bonding class 3) should be specified where treatment is required. Humid grade (bonding class 2) might be acceptable but the board manufacturer or supplier should be asked to confirm that Humid grade board can be put through a vacuum/high pressure treatment process where that is required.

Care must be taken to ensure that the resin system used to bind the product is not solubilised in the preservative carrier solvent. Products designed for service in Use Class 2 – 4 situations have to use moisture resistant resins.

Particular consideration needs to be given to the effect of preservative treatment on the strength of treated composites. Wood-based materials to be used in structural situations and which are covered by BS EN 13986, must

either have their compliant characteristics re-tested after treatment so that marking (UKCA or CE) and Declaration of Performance can be confirmed, or not used as structural components. Because different materials respond differently to different treatments, advice should be sought from the manufacturer of the preservative, and/or composite material under consideration.

Retreatment of cut ends

Most pre-treatments provide an envelope of protection around untreated material underneath. So it is critically important that the envelope remains intact if the value of the preservative treatment is to be maintained.

Therefore it is best practice to treat wood based composite products in their final dimensions. Reworking, when unavoidable, should be limited to cross cutting. Any surfaces exposed by cross cutting must be given two liberal brush coats - or equivalent - of a suitable end grain preservative.

Table 1: Preservative type and Penetration Class suitable for the treatment of wood-based board and engineered wood products (consult the WPA Code of practice for information on penetration classes)

EXAMPLES	USE CLASS	DESIRED SERVICE LIFE (years)	COPPER ORGANIC	ORGANIC SOLVENT OR MICRO-EMULSION
Roof timbers (dry)	Pitched roof components	1	NP1 ¹	NP1 ¹
Roof timbers (dry) in areas with house longhorn beetle		1	NP1 ¹	NP1 ¹
Roof timbers (risk of wetting)	Flat roofs components, timbers exposed to risk of condensation	2	NP2	NP2
Roof timbers (risk of wetting) in areas with house longhorn beetle		2	NP2	NP2
External walls (inner leaf)	Timber frames that form a separate inner leaf or where there is a space behind the exterior finish	2	NP2	NP2
External cladding and fittings (coated) ²	External cladding, soffits, fascias and barge boards	3c	NP2	NP2
External cladding and fittings (uncoated)	External cladding, soffits, fascias and barge boards	3u	NP2	x
Ground contact components ³	In contact with ground, soil, manure.	4	x ³	x ³

NOTES TO TABLE 1

- NP2 is necessary when protection against termites is required.
- Treatment specifications for these uses require the exposed surfaces of the woodwork to be painted or given some other protective finish which will be maintained in service.
- Veneer composites (e.g. plywood and LVL) may be suitable for UC4 15 year desired service life using treatment guidance in the WPA Code of practice - Industrial Wood Preservation. No recommendations for treatment are given for other composites because at the time of writing, no non-veneer composites are known which are suitable for use in UC4.

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