Nordic wood protection classes

Part 3: Heartwood of Scots pine and other durable woods

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Content

1. Background

The Nordic industrial wood protection industry has requested to extend the NWPC classification of the well-known and established classes for preservative-treated pine and other permeable wood species, M, A, AB and B to also comprise preservative-treated heartwood of durable woods. The Nordic Wood Preservation Council (NWPC) has, therefore, decided to prepare this Document that defines Nordic wood preservation classes for heartwood within the framework of existing European standards, Annex 1.

2. Scope

This Document defines two wood preservation classes, HC (heartwood cladding) and HW (heartwood for window) and corresponding product requirements for preservative treated heartwood. The preservative treatment is applied superficially e.g. by dipping, flowcoat, spraying or brushing. The wood specie involved must be classified according to EN 350-1 at a durability class of 3 or better (1 and 2).

The wood preservation classes refer only to the protection against biological deterioration. Any other requirements on the treated wood, such as wood quality grading, machining before treatment, moisture content and surface treatment on delivery must be specified separately.

3. References

For undated references, the latest edition of the referenced document applies.

EN 335-1:	Durability of wood and wood-based products - Definition of use classes Part 1: General Part 2: Application to solid wood
EN 350:	Durability of wood and wood-based products - Natural durability of solid wood Part 1: Guide to the principles of testing and classification of the natural durability of wood. Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe.
EN 351:	Durability of wood and wood-based products - Preservative-treated solid wood Part 1: Classification of preservative penetration and retention. Part 2: Guidance on sampling for the analysis of preservative-treated wood.
EN 599:	Durability of wood and wood-based products - Performance of preventive wood preservatives as determined by biological tests- Part 1: Specification according to hazard class. Part 2: Classification and labelling.
ISO 2859-1	Sampling procedures for inspection by attributes.

4. Wood Protection Classes

Preservative-treated heartwood according to this Document classified into the following two wood preservation classes: HC and HW. Wood preservation class HC is restricted to "exterior cladding" and wood preservation class HW is restricted to "window components" only. The classification is based on EN 351-1 and is related to the use classes defined in EN 335-1, cf. Annex 2. Production of preservative-treated wood according to this Document requires, in addition to requirements specified in sections 5-7 that the production plant is approved and affiliated to quality control according to NWPC Document No 3, Part 3.

All the NWPC wood preservation classes according to EN 351-1 and EN 335-1 are shown in Annex 1.

5. Product Requirements

5.1. Wood to be treated

The treated wood must be heartwood from a durable wood specie classified according to EN 350-1 at a durability class of minimum 3, meaning 1,2 or 3.

The wood must not have any visible attack of wood destroying fungi or other micro-organisms which lead to softening of the wood or reduction of its strength and/or mass, and shall in principle be free from inner bark.

Drying and conditioning of the wood before treatment shall be carried out in such a way that the penetration requirements can be fulfilled and that the properties of the treated wood are not adversely affected with respect to intended end-use.

All machining of classes HC and HW must as far as possible be carried out before treatment.

5.2. Wood Preservatives

Wood preservatives must be approved by the NWPC for wood protection classes HC and HW respectively according to NWPC Document No 2 part 3. This document only covers preservatives that are applied by dipping, flowcoat, spraying and brushing.

Note 1 National restrictions, e.g. a maximum retention level set for a wood preservative by a national environmental authority, may restrict the use of NWPC approved wood preservatives fully or partially.

Note 2 A list of approved wood preservatives can be obtained from the NWPC Secretariat. It is also available on the NWPC website www.ntr-nwpc.com.

5.3. Wood Protection Classes and Treatment Requirements

The wood preservative penetration and retention requirements for each wood preservation class are shown in the scheme below.

NTR Class	Treatment requirement		
	Penetration class	Analytical zone	Retention of wood preservative
HW	NP 1: No requirement on penetration, cf. EN351-1: 2006	Outer 3 mm	According to the NWPC requirement in the analytical zone, NTR Doc. 2 part 3
HC			

5.4. Machining after Treatment

If cutting, drilling of holes and other minor machining cannot be avoided for wood preservation class HC before delivery from the treatment site, the machined surfaces must be treated with a suitable preservative. If other wood working, such as rip sawing and planing is carried out and if the wood is profiled after treatment, the classification will be lost. If class HW treated wood is machined before delivery the classification will be lost.

6. Marking

Producers of preservative-treated wood and affiliated to a quality control according to this Document have the right and obligation to mark their products with the NWPC quality marks, see below.

Wood protection class	Nordic quality marking	Colour code
NTR HW	NTR HW	Brown
NTR HC	NTR HC	Orange

7. Delivery

On delivery, the treated wood according to this Document must comply with the following requirements: For wood treated with water-borne wood preservatives, the manufacturer's recommendations concerning after-treatment, e.g. fixation, must be applied before delivery.

The preservative-treated wood shall also comply with any customer, delivery (e.g. use of stickers, moisture content) or national requirements concerning environment and occupational safety.

Annex 1 (Informative)

NWPC wood preservation classes M, A, AB, B, GRAN, GW, HW, HC in relation to EN 351-1 and EN 335-1.

Penetration class according to EN 351-1		**Use classes UC1-UC5 according to EN 335-1 and their relation to the wood preservation classes M, A, AB, B, GRAN and GW**				
Class	**Penetration Requirement**	**UC 1**	**UC 2**	**UC 3**	**UC 4**	**UC 5**
NP 1	None			GRAN GW HC HW		
NP 2	Min 3 mm lateral into sapwood					
NP 3	Min 6 mm lateral into sapwood			B B mod		
NP 4	Min 25 mm					
NP 5	Full sapwood			AB AB mod	A A mod A pole	M M mod
NP 6	Full sapwood + 6 mm into heartwood					

Annex 2 (informative)

Example of end-uses for preservative-treated wood

Use class according to EN 335	Service conditions	Example	Recommended wood protection class
1	Interior timbers in dry conditions.	Furniture, interior cladding	[1)]
2	Wood above ground and under cover and fully protected from the weather, but where high environmental humidity can lead to occasional but not persistent wetting.	Roof trusses, exterior timbers under cover	[1)]
3	Wood above ground and either continually exposed to the weather or subject to frequent wetting; where it is relatively easy to replace damaged components and where the consequences of failure will be moderate.	3.1 External joinery, such as windows, doors etc. 3.2 External cladding, garden timbers	B, GW, HW AB, GRAN, HC
4	Wood in contact with the ground or fresh water or severely exposed to the weather; or if a wood component is inaccessible, or where the consequences of failure will be particularly serious.	Transmission poles, railway sleepers, fence posts, bridges	A A pole A mod
5	Wood constructions in sea water[2)] and constructions subject to extreme conditions or where there are special durability and strengths requirements.	Wharf timbers, jetties, piles	M M mod

[1)] Preservative-treated wood normally not necessary to use in these use classes
[2)] Salinity > 0,6%