Nordic wood protection classes and product requirements for industrially protected wood

Part 1: Scots pine and other permeable softwoods

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Contents

1 Background

Since 1976, the Nordic countries, initiated by the Nordic Wood Preservation Council, NWPC, have had an official standard for classification of preservative-treated wood. The standard was denoted INSTA 140 in 1989 with national designations SFS 3974 (Finland), DS 2122/INSTA 140 (Denmark), IST/INSTA 140 (Iceland), NS-INSTA 140 (Norway) and SS 05 61 10 (Sweden). This standard classified preservative-treated wood into four wood preservation classes: M, A, AB and B for end-uses in sea water (M), in ground contact (A), above ground (AB) and for windows and doors (B).

In connection with the implementation of the European standards for preservative-treated wood (EN 351) and wood preservatives (EN 599), INSTA 140 was withdrawn in 1997. With the attempt to maintain the well-established wood preservation classes, presently denoted wood protection classes, the NWPC decided to prepare a Nordic application document of EN 351, NWPC Document No 1, Part 1. Thus, the first edition of NWPC Document No 1, Part 1, came into force in 1998.

This edition will supersede NWPC Document No 1:2013, Part 1.

A significant technical difference between this and the previous edition is the introduction of a separate class for preservative treated poles, NTR A pole. This class meets the high requirements for transmission poles.

2 Scope

This Document defines five wood protection classes and corresponding product requirements for preservative-treated pine (*Pinus* spp) and other permeable softwoods according to EN 350. Permeable softwoods are those whose sapwood is classified in treatability class 1.

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

3 References

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

EN 335	Durability of wood and wood-based products. Use classes: definitions, application to solid wood and wood-based products
EN 350	Durability of wood and wood-based products – Testing and classification of the durability to biological agents of wood and wood-based materials
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 599-1	Durability of wood and wood-based products – Efficacy of preventive wood preservatives as determined by biological tests. Part 1: Specification according to use class
ISO 2859-1	Sampling procedures for inspection by attributes. Sampling schemes indexed by acceptable quality level (AQL) for lot-by-lot inspection.
NWPC Document No 2	Conditions for approval of wood preservatives for industrial wood preservation in the Nordic countries Part 1. Pine and other permeable softwoods
NWPC Document No 3	Nordic requirements for quality control of industrially protected wood Part 1. Scots pine and other permeable softwoods

4 Classification of preservative-treated wood

Preservative-treated wood according to this Document is classified into the following five wood protection classes: NTR M, NTR A, NTR A pole, NTR AB and NTR B. The classification is based on EN 351-1 and is related to the use classes defined in EN 335.

Production of preservative-treated wood according to this Document requires, in addition to compliance with requirements specified in Sections 5-7, that the production plant is approved and affiliated to quality control according to NWPC Document No 3, Part 1.

How the NWPC wood protection classes are related to EN 351-1 and EN 335 is shown in Annex 1, and examples of service conditions and commodities suitable for the wood protection classes are shown in Annex 2.

5 Product requirements

5.1 Wood to be treated

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 be free from bark and 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 shall as far as possible be carried out before treatment.

For treatment according to class B, water-stored timber shall not be used, and all machining shall be carried out before treatment.

For poles, stored in the open air for drying, the de-barked, green poles shall be marked with week and year when the first pole is stored.

5.2 Wood preservatives

Wood preservatives shall be approved by the NWPC according to NWPC Document No 2, Part 1.

Note 1 European restrictions (Biocidal Products Regulation), 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.

Note 2 A list of approved wood preservatives is available on the NWPC website www.ntr-nwpc.com.

5.3 Wood protection classes and treatment requirements

5.3.1 Requirements on penetration and retention of wood preservative

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

Wood protection class	Treatment requirements	
	Penetration class according to EN 351-1	Retention of wood preservative
NTR M, NTR A, NTR A pole and NTR AB	NP 5 Full sapwood penetration	According to NWPC approval for the wood preservative
NTR B	NP 3 Minimum 6 mm lateral penetration into the sapwood	

5.3.2 Compliance with the treatment requirements

5.3.2.1 General

Both the penetration and retention requirements must be fulfilled for compliance with the treatment requirements.

5.3.2.2 Compliance with the penetration requirement

For the wood protection classes NTR M, NTR A, NTR AB and NTR B, it is accepted that a maximum of 10 % of the number of units in a batch may deviate from the penetration requirement for compliance, i.e. accepted quality level AQL=10 according to EN 351-2 and ISO 2859-1.

For wood protection class NTR A pole, it is accepted that a maximum of 6.5 % of the number of units in a batch may deviate from the requirement for compliance, i.e. an accepted quality level AQL=6.5 according to EN 351-2 and ISO 2859-1.

5.3.2.3 Compliance with the retention requirement

The retention for a batch shall on average be at least as specified in the NWPC approval certificate for the wood preservative used.

5.4 Machining after treatment

If cutting, drilling of holes and other minor machining cannot be avoided for the wood protection classes NTR M, NTR A, NTR A pole and NTR AB before delivery from the treatment site, the machined surfaces must be treated with a suitable wood 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 wood treated according to class NTR B is machined before delivery, the classification will be lost.

6 Marking

Producers of preservative-treated wood have the right and obligation to mark their products with the NWPC quality marks, see below.

Wood protection class	NWPC quality mark
NTR M	
NTR A	
NTR A pole	
NTR AB	
NTR B	

Design and proportions shall comply with the images above and the size shall be adapted to the product to be branded.

Note National requirements may exist, and marking requirements are presented in NWPC Document No 3, Part 1.

7 Delivery

On delivery the treated wood according to this Document shall comply with the following requirements:

- For wood treated with water-borne wood preservatives, the manufacturer's recommendations concerning after-treatment, e.g. fixation shall be applied before delivery
- Most of highly volatile, organic solvents should have evaporated
- Wood treated with creosote shall, as far as possible, have a dry surface and be non-tacky

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.

8 Bibliography

European Union, The Biocidal Product Regulation (BPR, Regulation (EU) 528/2012)

Annex 1 (informative)

NWPC wood protection classes in relation to EN 351-1 and EN 335

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

* Applies to round-wood of resistant species only, i.e. treatability classified 3-4 according to EN 350.

** See NWPC Document No 1, Part 2, applicable to preservative-treated spruce.

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 there is relatively easy to replace damaged components and where the consequences of failure will be moderate.	3.1 Windows and doors etc. 3.2 External cladding, decking, garden timbers	NTR B NTR AB
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	NTR A pole NTR A
5	Wood constructions in sea water[2)] and constructions subject to extreme conditions or where there are special durability and strength requirements.	Wharf timbers, jetties, piles	NTR M

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