

# **Nordic wood protection classes and product requirements for industrially protected wood**

## **Part 4: Modified wood**

**NTR Document no. 1, Part 4:2017**

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**Nordic Wood Preservation Council 2017**

## Part 4: Modified wood

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## 1. Background

The Nordic industrial wood protection industry has requested extension of 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 modified wood. The Nordic Wood Protection Council (NWPC) has, therefore, decided to prepare this Document that defines Nordic wood protection classes for modified wood within the framework of existing European standards.

## 2. Scope

This Document defines four wood preservation classes, M mod, B mod, AB mod and A mod and the corresponding product requirements for modified wood. The treatment is applied by typically vacuum pressure, physical treatment (heat or steam), superficial treatment or super-critical treatment. The wood specie involved must be applicable with the chosen modification method used.

The wood protection classes refer only to 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 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.
- EN 15083-1 Durability of wood and wood-based products – Determination of the natural durability of solid wood against wood-destroying fungi, test methods –Part 1: Basidiomycetes
- ISO 2859-1 Sampling procedures for inspection by attributes.  
Sampling schemes indexed by acceptable quality level (AQL) for lot-by-lot inspection.

## 4. Wood Protection Classes

Modified wood according to this Document classifies into the following four wood protection classes: M mod, B mod, A mod and AB mod. 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 modified 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 4.  
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 suitable for the modification treatment used and the intended purpose of the product. The manufacturer must have procedures ensuring that the raw materials arriving for modification complies with the requirements.

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 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 of modification classes must as far as possible be carried out before treatment.

### **5.2. Modification methods**

The modification treatment must be approved by the NWPC for wood protection class's M mod, B mod, AB mod and A mod respectively according to NWPC Document No. 2 part 4. This document covers modification treatments that can be either chemical or physical (e.g. heat or steam).

**Note 1** A list of approved wood modification treatments is available on the NWPC website [www.ntr-nwpc.com](http://www.ntr-nwpc.com).

### **5.3. Wood modification 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	Retention of wood preservative
B mod	NP 3 Minimum 6 mm lateral penetration into the sapwood	According to the NWPC requirement in the analytical zone, NTR Doc. 2 part 4
AB mod	NP 5: Full sapwood penetration, cf. EN351-1	
A mod M mod		

#### 5.4. Machining after Treatment

If cutting, drilling of holes and other minor machining cannot be avoided for the wood modification class before delivery from the treatment site, or wood working, such as rip sawing and planing is carried out and if the wood is profiled after treatment, it must be justified that this will not affect the performance.

### 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	NWPC quality mark	Bundle/package marking
NTR M mod		Blue
NTR A mod		White
NTR AB mod		Yellow
NTR B mod		Red

### 7. Delivery

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

The modified 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, AB mod, A mod, M mod, B mod in relation to EN 351-1 and EN 335-1.

Penetration class according to EN 351-1		Use classes 1 to 5 according to EN 335-1 and their relation to the wood protection classes				
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					

\*\* See NWPC Document No 1, Part 3, applicable to preservative-treated heartwood

## Annex 2 (informative)

Example of end-uses for industrial protected wood

Use class according EN 335	Service conditions	Example	Recommended wood preservation class
1	Interior timbers in dry conditions.	Furniture, interior cladding	<sup>1)</sup>
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	<sup>1)</sup>
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, AB mod, B mod
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 mod
5	Wood constructions in sea water <sup>2)</sup> and constructions subject to extreme conditions or where there are special durability and strength requirements.	Wharf timbers, jet-ties, piles	M, M mod
<sup>1)</sup> Preservative-treated wood normally not necessary to use in these use classes			
<sup>2)</sup> Salinity > 0,6%			