



SLOVENSKI STANDARD
kSIST-TP FprCEN/TR 17809:2022
01-januar-2022

Trajnost lesa in lesnih izdelkov - Represivna zaščita lesa proti insektom s postopkom injiciranja

Durability of wood and wood-based products - Remedial treatment of wood against insects by injection

Dauerhaftigkeit von Holz und Holzprodukten - Nachbehandlung von Holz gegen Insektenbefall durch Injektion

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ICS:

71.100.50 Kemikalije za zaščito lesa Wood-protecting chemicals

kSIST-TP FprCEN/TR 17809:2022 **en,fr,de**

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Durability of wood and wood-based products - Remedial treatment of wood against insects by injection

Dauerhaftigkeit von Holz und Holzprodukten -
Nachbehandlung von Holz gegen Insektenbefall durch
Injektion

This draft Technical Report is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 38.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (FprCEN/TR 17809:2021) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by AFNOR.

This document is currently submitted to the Vote on TR.

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Introduction

Several national guidelines throughout Europe exist, on how to apply curative wood preservatives especially via drilled holes or through pressure injection into wood. This technical report summarizes the different national advices on how to properly use this kind of application. It focuses on treatments against wood boring insects like *Hylotrupes bajulus*, *Anobium punctatum* and other anobiids.

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1 Scope

This document provides guidance on how to apply curative acting wood preservatives by surface application, by filling pre-drilled holes, and by pressure impregnation through pre-drilled holes. It lists methods in a standardized form followed by additional detailed interpretive information.

This document also includes necessary preparations of structural timber prior to this kind of treatment. It gives guidance on how to calculate necessary retentions for filling pre-drilled holes or for pressure impregnation from test results obtained from surface applications (e.g. EN 1390).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14128, *Durability of wood and wood-based products - Efficacy criteria for curative wood preservatives as determined by biological tests*

EN 1390, *Wood preservatives - Determination of the eradicator action against *Hylotrupes bajulus* (Linnaeus) larvae - Laboratory method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

filling of drilled holes

application of a wood preservative through a pre-drilled hole without pressure or at low-pressure of less than 1 bar

3.2

injection

application of a wood preservative through a pre-drilled hole with pressures of 3 to 5 bar (max. 15 bar)

4 General

Curative acting wood preservatives shall only be applied by professional users.

Curative acting wood preservatives are usually applied through surface application by brushing or spraying all surfaces of the infested wood. If not all surfaces are accessible, an increase in the penetration depth of a curative acting wood preservative against wood boring insects can be achieved through filling drilled holes or by pressure treatment through drilled holes. However, it is important to ensure that wood dimensions are suitable for drilling. The overall structural integrity and the load-bearing capacity shall not be weakened.

5 Curative control measures

5.1 Preparatory work

If live infestation by dried wood insects (e.g. house longhorn beetles, anobiid beetles or powder post beetles) is detected, the spread of the infestation shall be determined based on the spread of their exit holes.

If damage caused by dry wood insects is present which might lead to a reduction in strength, all accessible wooden components shall be inspected at an appropriate complexity (e.g. by scratching, axing, drilling) so that the intensity and extent of the infestation can be adequately determined. Wood-based materials should only be checked for exit holes.

Additional information: Testing at “appropriate complexity” refers to the distances between the individual probing spots, which are to be determined by experts in accordance with the overall infestation situation. For probing, it is recommended that the affected woods in the infested areas be scored with a pinpointed tool at right angles to the grain direction. In this way, the superficial larval galleries are torn open and the damage pattern is exposed. The intensity of the infestation can also be determined without major damage e.g. by test-drilling or random tapping to check the soundness of the wood. Chopping the wood with an axe can cause severe additional destruction of the wood and should generally be reduced to a necessary minimum.

In addition, the flooring and, if necessary, cladding shall be taken up to such an extent that the ceiling beams or bedding timber can be inspected in areas at risk. If infestation is detected, the flooring is to be taken up further. Areas that are difficult to access (e.g. extensions, sides, roof overhangs) shall also be included in the inspection. If necessary, openings are to be created for this purpose.

Additional information: Other existing concealed structural timbers shall be included in the investigations in the same way. To test concealed joists, it is necessary to check whether and, if necessary, to what extent the infestation reduces the load-bearing capacity of the component. If an infestation is detected, further excavation work is required to determine the extent of infestation and the load-bearing capacity of previously concealed timber components. If areas that are difficult to access should or cannot be examined for cost or usage-related reasons, these shall be listed in detail in the examination report and the client shall be informed of the risk areas in which further insect damage might be possible.

If insect damage is present, all wooden components shall be carefully examined for live infestation. Curative control measures may only be carried out if live infestation is verified. The decision as to whether live infestation is present requires a high degree of specialist knowledge and experience. The following findings or characteristics allow a reliable proof:

- findings of living insects of wood-destroying insects as well as their antagonists, which presuppose the presence of pests (e.g. checkered beetles);
- findings of dead insects free of house dust (found especially on windows and other translucent openings);
- findings of living larvae or pupae of wood-destroying insects or of their antagonists in the wood;
- perception of feeding noises.
- furthermore, the following indications point to a live infestation:
 - detection of light yellow to brown coloured exit holes on surfaces or sides exposed to daylight; darker coloured exit holes indicate older extinct infestations;

- *finding light-coloured piles of frass on horizontal surfaces, or light-coloured drill dust under fresh exit holes. It should be noted that the ejection of frass and drill dust from old exit holes can also be caused by secondary colonisation by digger wasps or masonry bees.*

If the above-mentioned characteristics for a live infestation are missing at the time of investigation, a live infestation cannot be automatically excluded in all cases. In cases of doubt, monitoring for beetle presence should be carried out for some time.

Drilling dust trickling out of cracks or dark-coloured exit holes is usually caused by shocks or vibrations of the components and is no evidence of a live infestation.

If live infestation can be denied or only a small residual infestation is to be assumed, the necessity of control measures shall be carefully balanced. In any case, the extent of the damage shall be determined even if the infestation has deceased in order to determine whether there has been any impairment of the construction.

In the case of infested timber components, the load-bearing residual cross-sections and the load-bearing capacity shall be determined. If necessary, a structural engineer shall be consulted. The verification of stability shall be re-established if cross-sections are reduced more than statically permissible. In this case, parts with reduced cross-sections shall be reinforced or replaced. A visual inspection is usually sufficient to check the load-bearing capacity of timber with small cross-sections (e.g. roof battens).

Additional information: If there are doubts about the load-bearing capacity of the examined timber components, they shall be assessed by appropriate experts (structural engineers). As a rule, these refer to geometric details (residual cross section of the component) determined by the wood preservation expert.

The selection of the location of a cross-section determination is to be carried out in cooperation with a structural engineer - especially in the case of complicated structural systems.

Before the subsequent treatment with wood preservatives, the structural members shall be cleaned. Heavily rotten parts shall be removed. The removed material shall be disposed of in an orderly manner.

Additional information: Cleaning and removing rotten parts allow the preservative to take full effect in the deeper layers of the infested wood. If the mossy edges, e.g. of a beam, are not removed, they absorb most of the applied wood preservative, so that it cannot penetrate the deeper layers of infestation in sufficient quantity. In addition, the biocidal active substances contained in the wood preservatives can be released into the environment in an uncontrolled manner through the detachment of contaminated debris.

At the same time, the removal of the mined wood removes a considerable proportion of larvae by mechanical means. It is sufficient to simply open the innermost feeding tunnels and brush them out carefully without removing them completely in order to avoid additional static weakening.

Coatings shall be removed to such an extent as to ensure successful application of wood preservatives.

If paint coats are to be retained (e.g. due to requirements of cultural heritage conservation), alternative control measures might be more applicable (heat treatment, fumigation).

5.2 Treatment with wood preservatives

5.2.1 Surface treatment

Treatment shall be carried out with wood preservatives registered under the European Biocidal Directive and specified according to EN 14128. According to EN 14128 the following three types of insecticidal products are considered: fast acting, slow acting and products with deferred effects. The type of action for a single product might differ for different target species of wood destroying insects.

All surfaces of the infested wood are to be treated evenly with the wood preservative by brushing or spraying.

Additional information: In the case of treating wooden ceiling structures, the infested timbers shall be exposed from any cover before the application of the wood preservative.

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If the wood has previously been treated with wood preservatives, it shall be ensured that the effectiveness of the wood preservatives to be used is not impaired.

If there is apparently only a local infestation and the wood components are accessible and controllable for at least 6 years, only the immediate infested area is to be treated with preservatives:

Additional information: Additional treatment of uninfested timber components with a wood preservative of preventive efficacy is only required if continuous monitoring of the wood at risk is not possible.

With increasing age of the wooden components, the risk of infestation decreases as the attractiveness of older wood for the house longhorn beetle decreases. Therefore, it should be checked in each individual case whether it is necessary to additionally treat the non-infested wooden parts of the construction with a wood preservative.

However, it should also be noted that when installing new wood the overall attractiveness of a wooden construction can increase, the timbers of wooden constructions do not always have the same age, and that the attractiveness of old wood can be partially reactivated by mechanical removing oxidized wooden surfaces.

Additional information: From long-term experience, it can be concluded that hardly any living house longhorn beetle infestation occurs in older wood. The "age of the timber components" is to be understood as the time that has elapsed since the timber was felled (and not the age of the tree from which the timber originated). As a rule, the "age of the timber components" corresponds to their service life. However, in case of subsequent renovations, less old timber might also be present. After about 60 years of service, the risk of significant damage by new infestations of previously uninfested wood is considered low. Mass development of house longhorn beetles in the old wood caused by new infestation and the associated structural damage can thus be largely excluded in older wooden constructions.

Nevertheless, an already existing infestation might continue further in older wood. Therefore, the above statement only refers to a new infestation of previously uninfested wood. For other wood-destroying insects (e.g. anobiids), wood stays attractive regardless of its age.

Care shall be taken during the inspection to ensure that replaced wooden components are not younger than 60 years of age.

To ensure that the required retention of a wood preservative is evenly applied through surface application (by spraying or brushing), usually at least two operations are necessary.

When treating the wood surface, particular care shall be taken to ensure that the wood preservative penetrates sufficiently deep into existing cracks, gaps, exit holes and carpentry joints.

Additional information: In practice, the following working steps have proven to be useful:

- *cleaning of the wood, especially cracks, gaps and carpentry connections;*
- *in the case of water-based wood preservatives, moisten the wood to improve absorption of the active ingredient;*
- *it is necessary to treat the wood surfaces as evenly and completely as possible. Care shall be taken to treat cracks, crevices and carpentry joints thoroughly and deeply. These are preferred by the wood-destroying insects to deposit their eggs. The requirement of at least 2 working cycles is intended to ensure that the wood preservative is distributed as evenly as possible.*

When using wood preservatives, any paint that prevents the wood preservative from being absorbed shall be removed.