KOMO. Kwaliteit zoals beloofd.

AD 0602
d.d. 17-06-2020

ASSESSMENT DIRECTIVE

FOR THE

PRODUCT CERTIFICATE

‘FIRE RETARDANT TREATED TIMBER AND TIMBER PRODUCTS USING THE VACUUM AND PRESSURE METHOD’

Adopted by the SKH Board of Experts on 15-05-2020
Accepted by the KOMO® Quality and Assessment Committee on 17-06-2020

Version: Certifying Body SKH

GENERAL INFORMATION TO THIS PUBLICATION

This assessment directive has been has been adopted by the SKH Board of Experts in which stakeholders in the field of this national assessment directive are represented. The Board also supervises the implementation of certification procedures and amends this assessment directive where necessary. Any reference to the "Board of Experts" or BoE in this assessment directive refers to the aforementioned Board.

This national assessment directive will be used by certifying bodies which have a licence agreement with the KOMO Foundation, in conjunction with their applicable regulations. These regulations lay down the method used by the certifying body for the implementation of this regulation:

- A study for obtaining the product certificate
- The external checks for an issued product certificate

This assessment directive was amended to make it possible to deliver products treated according this AD can be used to apply in FPC-systems for harmonized standards.
The requirements for fire retardant treated timber according this assessment directive therefor has to apply to the requirements for the harmonized standards.
This concerns the trust and reliability in the quality system (FPC) of
the company and the confirmation that the classification of the products meet the requirements of the Reaction to Fire classification. This quality system (FPC) can then be used
to customers to confirm the quality (KOMO) or serves as the basis for the CE marking
of specific products according to the corresponding hEN (harmonized standard).

This assessment directive replaces the assessment directive BRL 0602 "Treating of timber and timber products with a fire-retardant product using the vacuum and pressure method" of 01-03-2002 and the associated amendment sheet of 28-03-2013.

In case of arguments the Dutch version shall be consulted.

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zekerheid met meerwaarde

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1 INTRODUCTION

1.1 General

The certification requirements laid down in this assessment directive are used by the certifying bodies authorised by the Council for Accreditation or those that have submitted an application, and who have concluded a license agreement with the KOMO® Foundation, used during the handling of an application respectively the maintenance of KOMO® Product Certificate for “Fire retardant treated timber and timber products using the vacuum and pressure method”.

A product certificate for the fire-retardant treatment of timber using the vacuum and pressure method is issued based on the requirements of this assessment directive. This product certificate enables the certificate holder to demonstrate to its clients that an expert independent organisation supervises its production process, the quality of the product, and its quality assurance. As a result, it can be assumed that the product meets the quality requirements set out in this assessment directive.

In addition to the requirements laid down in this assessment directive, the certifying bodies will impose additional requirements, such as general procedural requirements for certification, as laid down in the general certification regulations of the body.

1.2 Subject and scope

This assessment guideline concerns the incorporation of a fire-retardant product in timber and timber products using the vacuum and pressure method in accordance with the method-specific regulations set out in NEN 2930 as described in Chapter 4.
The assessment guideline describes the performance and control requirements. The product certificates to be issued only concern timber and timber products treated with a fire-retardant product.

This assessment directive is applicable for fire retardant treated timber and timber products in use classes 1, 2 and 3 according EN 335.

Finishing by coating application is only assessed based on this assessment guideline to the extent to which it contributes to the effectiveness of the applied fire-retardant product and the associated fire class. The contribution of the finishing coat to the performance of the end product (construction element) is not within the scope of this assessment directive.
The treated timber or timber product is finished independently of the fire-retardant treatment and is not covered by this assessment directive.

1.3 Validity

KOMO® product certificates can be issued based on this assessment directive from the moment it is declared binding by SKH.
This assessment directive replaces National Assessment Directive 0602 “Treating of timber and timber products with a fire-retardant product using the vacuum and pressure method” of 01-03-2002 and the associated amendment sheet of 28-03-2013.
New product certificates based on the former version of the directive can be issued until 3 months before the existing certificates has to be reissued.

The product certificates issued based on the replaced assessment directive and its amendment sheet will lose their validity on 17-12-2020.

The product certificate is valid for an indefinite period. The validity can be limited (terminated) by:

- An amendment to this assessment directive
- A failure of the certificate holder to meet its obligations

If (temporarily) no production processes take place for a period longer than 6 months, the validity can be (temporarily) suspended at the request of the certificate holder. The certifying body can grant a suspension of the validity for a maximum period of 1 year. A suspension can be extended by the certifying body provided that the total duration of suspension does not exceed 2 years.
However, for a suspension period longer than 1 year, an additional periodic assessment must be carried out to determine whether the product certificate can be retained before the start of the production processes.
The certifying body will revoke the product certificate in case of a suspension which lasts more than 2 years.

1.4 Relationship with the European Construction Products Regulation (CPR, EU 305/2011)

Products to which a fire-retardant treatment applied according to this assessment directive may be subject to CE-marking based on the following standards. This does not mean that the process and the result of the fire-retardant treatment are subject to CE-marking. Declarations based on this assessment directive may not be used to replace CE-marking and/or the Declaration of Performance (D.o.P.). The following standards can be applicable for CE-marking:

NEN-EN 13964	Suspended ceilings - Requirements and study methods
NEN-EN 13986	Wood-based panels for construction - Properties, conformity check, and marking
NEN-EN 14342	Wood floors and parquet - Properties, conformity check, and marking
NEN-EN 14915	Solid timber panelling and cladding - Properties, conformity check, and marking

1.5 Requirements for conformity-assessment bodies

With respect to the requirements set out in this assessment directive, the applicant may, as part of an external audit, submit reports of conformity-assessment bodies to demonstrate compliance with the requirements of this assessment directive. The applicant must demonstrate that these reports have been drawn up by a body that meets the applicable accreditation standard for the subject in question, being:

- NEN-EN-ISO/IEC 17020 for inspection bodies;
- NEN-EN-ISO/IEC 17021-1 for certifying bodies that certify management systems;
- NEN-EN-ISO/IEC 17025 for laboratories;
- NEN-EN-ISO/IEC 17065 for certifying bodies that certify products;

A body will be deemed to fulfil these criteria when an accreditation certificate for the subject in question can be submitted, issued by the Council for Accreditation (CfA) or another accreditation body accepted as a member to a multilateral agreement on the mutual recognition and acceptance of accreditation, drawn up within EA, IAF and ILAC; these agreements are respectively referred to as EA-MLA, IAF-MLA and ILAC-MRA. If no accreditation certificate can be submitted, the certifying body will verify whether the accreditation criteria have been met.

1.6 KOMO® Product Certificate

KOMO® Product Certificates are issued based on this assessment directive. The statements in these product certificates are based on Chapters 4, 5 and 6 of this assessment directive.

The KOMO® Foundation website (www.komo.nl) lists the model product certificate that applies to this assessment directive. The product certificates must comply with this model.

2 DEFINITIONS

Refer to the website of the KOMO® Foundation (www.komo.nl) and the regulations of the certifying body for the definitions related to the certification and the CE-marking.

Finishing (coating) treatment.	Application of a coating or coating system after
Autoclave, tube	Treatment chamber of the treatment installation.
Processing	All processing of the timber before it is treated (molding, sawing, planning, stickering,….).
Treatment	Application of fire retardant material to timber using the vacuum-pressure method.
Fire retardant	Chemical agent applied to timber to improve the Retention to Fire Class of the original material.
Concentration measurement	Measurement of the concentration of the treatment solution to be able to assess the reached retention after treatment.
Preservative (timber)	According the BPR approved timber preservative, used to extent the service life of a timber product.
Retention	Amount of fire retardant to apply to meet the requirements the Reaction to Fire Class in g/m^2 or kg/m^3.
Process solution	Prepared (diluted or solved) solution of fire retardant in the prescribed concentration to be used to treat timber or timber products.
Process stock:	Amount of process solution available in the treatment installation.

3 INITIAL ASSESSMENTS AND PERIODIC AUDITS

The certifying body conducts an admission study to be able to grant the product certificate. The certifying body carries out external audits once the product certificate has been issued.

3.1 Initial assessment

The applicant must indicate what must be included in the product certificate concerning the fire-retardant treated timber and timber products using the vacuum and pressure method. The applicant must provide all relevant data for the purpose of drawing up the 'technical specifications' of the fire-retardant treatment of timber and timber products using the vacuum and pressure method as these must be included in the product certificate.
In order to be able to grant the product certificate:

- The certifying body will carry out initial control and study
- The certifying body must determine that the applicant is able to:
  - Maintain the continued product process
  - Maintain the quality of the product

In such a way that the requirements set out in this assessment directive are met.

3.2 Scope of the initial assessment and periodic audits

The initial study and external audits consist of assessing whether:

- The fire-retardant treated timber and timber products using the vacuum and pressure method complies with the requirements (refer to Chapter 4) and the technical specification included in the product certificate.
- The processing and application instructions meets the requirements (refer to Chapter 5).
- The quality system of the applicant meets the requirements (refer to Chapter 6).

Where applicable, it must be verified whether the provided documents concerning the production process and/or internal quality control and the stated results meet the requirements of this assessment directive.

Note:
Companies certified in accordance with NEN-EN-ISO 9001 are deemed to comply with the requirements of Chapter 6, provided that all relevant requirements at the product level are included in the quality system and the specific auditors apply to the qualification requirements of chapter 8.3.

3.3 External quality assurance

After the KOMO® Product Certificate has been issued, the certifying body will carry out audits as described in Chapter 7 of this assessment directive.

4 PRODUCT REQUIREMENTS

This chapter contains the general requirements and references to standards that the timber or timber product treated with a fire-retardant product must comply with or for which information about the timber or timber product treated with a fire-retardant product must be supplied, as well as the assessment methods used to determine compliance with these requirements.

The results of each section can be included in the product certificate. If no performance is required and cannot be claimed (optional requirements), this will also be listed in the product certificate. 'Finished product' means the fire-retardant timber, dried to the moisture content required for the application.

The following standards apply to the quality requirements of the production process insofar as they are not explicitly deviated from in this assessment directive:

NEN 2930	Timber preservation. Vacuum and pressure method. Treatment with substances other than creosote oil;
NEN-EN 335	Preservation of timber and timber-based products - Hazard classes: Definition, use on solid timber and timber-based panels
NEN-EN 350	Preservation of timber and timber-based products - Sampling and classification of resistance to biological agents, water permeability, and performance of timber and timber-based products;
NEN-EN 351-1	Preservation of timber and timber-based products. Solid timber treated with preservation agents. Section 1: Classification of penetration and retention of preservation agents.
NEN-EN 351-2	Preservation of timber and timber-based products. Solid timber treated with preservation agents. Section 2: Sampling and analysis of timber treated with preservation agents.
NEN-EN 13183-1	Moisture content of sawn timber - Section 1: Determination by weighing and drying in an oven;

4.1 Retention

The retention determines how much fire-retardant product has been absorbed by the treated timber. The product volume combined with the penetration profile, depending on the timber type or timber product, determines the classification of the finished product according to NEN-EN 13501-1 in relation to the initial tests.

If no retention is achieved, the party must treat the product again (multiple times, if necessary) until the prescribed retention is reached.

The fire class according to NEN-EN 13501-1 is captured in an official classification report (also refer to 4.3 contribution to fire).

Determination method
The retention calculation, expressed in g/m^2, will use the following formula:

$$E = (V_0 - V_e) * C \quad \text{.....A}$$

V_0 = Volume of initial stock (l)
V_e = Volume of final stock (l)
C = Concentration of the solution (g/l)
A = Surface area of the timber to be treated (m^2)
E = Retention (g/m^2)

Absorption per volume of timber can be used during the production, but this must always be linked to the quantity per surface determined during the initial tests.

Initial study
It will be checked whether the retention of the timber or timber product treated with a fire-retardant product meets the performance requirements.
The performance requirements are laid down in official classification reports.

KOMO® Product Certificate
The KOMO® Product Certificate lists the fire class of the timber or timber product treated with a fire-retardant product in accordance with NEN-EN 13501-1 and the associated retention in g/m^2.

4.2 Moisture content

The timber treated with a fire-retardant product will be dried to a moisture content required for the application. In case the measurements with an electric timber moisture meter are not reliable as a result of the used products, the moisture content must be determined using the oven-dry method described in NEN-EN 13183-1, 2 or 3.
The final moisture content can also be determined based on the absorption and the mass decrease during the drying process.
If the client does not have any requirements, a default moisture content of the end product will suffice.
Deviations from this final moisture content are possible at the express request of the customer.

Determination method
The moisture content of the timber or timber product treated with a fire-retardant product will be determined in accordance with NEN-EN 13183-1, 2 or 3 or a derived combination method.

Initial study
It will be checked whether the moisture content of the timber or timber product treated with a fire-retardant product meets the performance requirements for the final use.
The final moisture content of the finished product will be captured in the quality system or determined in consultation with the customer.

KOMO® Product Certificate
The KOMO® Product Certificate lists the default moisture content of the timber as ±2% of the finished product with the following comment:
“The moisture content of the delivered product may deviate from the default moisture content at the express request of the customer, depending on the ultimate use.”

4.3 Reaction to fire

Refer to the Dutch Building Decree for the requirements concerning the fire behaviour of the finished product, which decree describes various timber applications, functional requirements, and performance requirements.

The limitation of the propagation of fire and smoke is determined in accordance with NEN-EN 13501-1 for each type of timber to be used.
A classification report in accordance with NEN-EN 13501-1 must be available.

Timber types may be classified into groups for classification in Euroclasses in accordance with NEN-EN 13501-1, in which context the characteristics concerning fire behaviour are representative for each member of the group (density, impregnability, contents).
For this purpose, an indirection demonstration of study results in accordance with NPR-CEN/TS 15117 through Extended Application (Exap) must be used.

The determination of the classification in accordance with NEN-EN 13501-1 may only be done by a laboratory accredited for this standard.

Determination method
The fire behaviour of a timber treated with a fire-retardant product will be determined in accordance with NEN-EN 13501-1.

Initial study
It will be assessed whether a classification report is available for each type of timber and which parameters of the timber or timber product treated with a fire-retardant product meet performance requirement C-s2, d0 or better (timber meets D-s2, d0 by default).

Remark:
Certain positions in the building (<2,5 m and >13 m) require according the National Building Act (Bouw Besluit) a Reaction to Fire Class B. This is also applicable when assessing fire transfer according NEN 6068.

KOMO® Product Certificate
The KOMO® Product Certificate lists the fire class of the timber or timber product treated with a fire-retardant product with the corresponding critical parameters as stated in the classification report in accordance with NEN-EN 13501-1.

4.4 Durability of the fire-retardant treatment

Depending of the use of the finished product and the nature of the fire-retardant product, environmental factors may adversely affect the effectiveness of the fire-retardant product. The durability of the fire-retardant treatment is determined in accordance with NEN-EN 16755 for timber and timber products, and in accordance with NPR-CEN/TS 15912 for timber products covered by NEN-EN 13986.

4.4.1 Hygroscopicity under the influence of humidity

When using timber treated with a fire-retardant product or timber products in hazard classes 1 and 2 in accordance with NEN-EN 335, it must be demonstrated that the finished product does not exhibit extreme hygroscopic behaviour with respect to the humidity.

The hygroscopic behaviour of the treated timber may be tested on pine sapwood for a general claim which will apply to the achieved retention. The relationship must be reassessed in case of higher retentions.

In specific cases, a study may be conducted on different types of timber and products, in which the results will apply only to these specific products.

The study can be conducted with and without coating.

Determination method
The hygroscopicity of the timber treated with a fire-retardant product or timber products can be determined in accordance with NEN-EN 16755 (or NPR-CEN/TS 15912) with the prescribed climates for:
- Hazard class 1: none;
- Hazard classes 2 and 3 (90 ± 3) % RH at (27±2)°C.

Initial study
The balance moisture content of the samples may not exceed 28% mc after the testing period for hazard classes 2 and 3.

KOMO® Product Certificate
The KOMO® Product Certificate lists whether the balance moisture content was achieved at (90 ± 3) % RH at (27±2)°C in hazard classes 2 and 3 and whether it is below 28%.

4.4.2 Durability of the fire-retardant treatment, use class 3 (optional)

If the finished product is used in hazard class 3 in accordance with NEN-EN 335, it must be demonstrated that the fire-retardant effect of the product continues to meet the requirements of the intended fire class. For this purpose, the timber treated with a fire-retardant product must be subjected to a rapid weathering study or an outdoor exposition study and be tested in accordance with NEN-EN 16755 (or NPR-CEN/TS 15912 for products covered by NEN-EN 13986).
If accelerated weathering tests have been performed in accordance with NEN-EN 16755 which are not covered by NPR-CEN/TS 15912, the results can also be used for products covered by NEN-EN 13986 in case of Extended Application (NPR CEN/TS 15117).

4.4.2.1 Durability of the treatment on an unfinished product (optional)

For application of fire retardant treated products without finishing in use class 3, a (accelerated) weathering test in accordance with NEN-EN 16755 must be conducted (this also valid for products according NEN-EN 13986).

If this test is not conducted, the product may not be used in an unfinished state in hazard class 3 and must be finished with a coating to maintain the fire behaviour performance.

Determination method
In order to check whether a fire-retardant (without additional measures, such as applying a coating to the treated timber) is suitable for use in hazard class 3, it is sufficient to only subject pine to an (accelerated) weathering test in accordance with NEN-EN 16755 followed by determining the contribution to fire in accordance with NEN-EN 13823 (SBI) or ISO 5660-1 (cone calorimeter).

Initial study
It will be determined whether a (rapid) weathering has been conducted in accordance with NEN-EN 16755 (or NPR-CEN/TS 15912) and whether the requirements set out in Table 1 (based on table 1 of NEN-EN 16755) are met after testing (NEN-EN 13823 (SBI) or ISO 5660-1 (cone calorimeter).

Table 1: Requirement for the use of fire-retardant timber in hazard class 3 without and/or with finish.

NEN-EN 16755 (Table 1)	NEN-EN 13823 (SBI)	ISO 5660-1 (cone calorimeter)
Class B products:	Relevant classification according to EN 13501–1. At least the same classification level as initially shall be reached	$RHR_{30s\ ave}$ ≤ 150 kW/m2 during 600s after ignition and THR_{600s} **increase < 20 % compared to testing before the weather exposure**
Class C products	Relevant classification according to EN 13501–1. At least the same classification level as initially shall be reached	$RHR_{30s\ ave}$ ≤ 220 kW/m2 during 600s after ignition and THR_{600s} **increase < 20 % compared to testing before the weather exposure.**

If the samples show a significant deterioration in fire behaviour compared to the samples that have not undergone rapid weathering (Table 1), the product will be unsuitable for use in hazard class 3 without additional measures.

If no accelerated weathering has been carried out, it will not be possible to use the finished product in hazard class 3 without a finishing coating.

KOMO® Product Certificate
The KOMO® Product Certificate will list whether the timber treated with a fire-retardant product or timber or timber product is suitable (or not) to be used in hazard class 3 without a finish.

4.4.2.2 Durability of the treatment on a finished product (optional)
A finishing system applied to timber treated with a fire-retardant product or timber products can negatively affect the fire-retardant treatment. The contribution of the finish to the fire propagation, expressed in fire class D, C or B, is not part of the scope of this assessment directive
(also refer to 1.2).

If the timber or timber product treated with a fire-retardant product can only be used in hazard class 3 in combination with a paint system, at least one product used on samples of one type of timber treated with a fire-retardant product must be subjected to the rapid weathering study in accordance with NEN-EN 16755 (or NPR-CEN/TS 15912) for each finishing system.

If the results of the accelerated weathering test are used for other timber types, the performance must be related to the absorption/retention of the tested samples (in accordance with
NPR-CEN/TS 15117).

Determination method
In order to check whether a fire-retardant (without additional measures, such as applying a coating to the treated timber) is suitable for use in hazard class 3, it is sufficient to only subject pine to an (accelerated) weathering test in accordance with NEN-EN 16755 followed by determining the contribution to fire in accordance with NEN-EN 13823 (SBI) or ISO 5660-1 (cone calorimeter).

Initial study
It will be determined whether a (rapid) weathering has been conducted in accordance with NEN-EN 16755 (or NPR-CEN/TS 15912) and whether the requirements set out in Table 1 (based on table 1 of NEN-EN 16755) are met after testing (NEN-EN 13823 (SBI) or ISO 5660-1 (cone calorimeter)).

KOMO® Product Certificate
The KOMO® Product Certificate lists whether the timber or timber product treated with a fire-retardant product is suitable to be finished with a coating and can be used in hazard class 3 while maintaining its fire performance.

4.5 Performance requirements: Wood preservative in combination with fire-retardant product (optional)

If a combination of a timber preservative and a fire-retardant product is desired, it must be determined to what extent the fire behaviour changes.

It must be determined in what order the products must be applied, depending on the fire-retardant product and the preservation method.

Determination method
The influence of timber preservation in combination with the fire-retardant product and their contribution to fire propagation must be determined in accordance with NEN-EN 13823 (SBI study) or by means of the ISO 5660-1 (cone calorimeter).

Initial study
It will be determined whether the requirements set out in Table 1 (based on table 1 of NEN-EN 16755) are met after testing (NEN-EN 13823 (SBI) or ISO 5660-1 (cone calorimeter)).

KOMO® Product Certificate
The KOMO® Product Certificate lists whether the fire-retardant treatment can be combined with a timber preservative and method.

4.6 Material requirements

Material requirements can be find in paragraph 6.13.1

5 PROCESSING AND APPLICATION INSTRUCTIONS

Processing and application instructions must be provided with the timber treated with a fire-retardant product and timber product. These instructions must contain at least the following:

- Measures that must be taken during transport and storage, and for the protection of the timber or timber product treated with a fire-retardant product during the processing phase;

- Any other aspects and instructions that are important to use the timber treated with a fire-retardant product and timber product correctly;

- Stainless steel fasteners can be used to install the timber or timber products treated with a fire-retardant product. The quality of the stainless steel must meet at least one of the following requirements:
  - AISI 304 (A2) in accordance with NEN-EN 10088-1;
  - “grade 4” (NEN-EN 1670).

KOMO® Product-certificate
Het KOMO® Product-certificate lists the processing and application instructions or include a reference to it (e.g. to supplier's website).

6 INTERNAL QUALITY CONTROL REQUIREMENTS

6.1 General

The board of the certificate holder will always be responsible for the quality of the production process, the effectiveness of the quality system, the internal quality control system, and the quality of the product. The internal quality control system must comply with the requirements laid down in this chapter.

6.2 Quality system

The certificate holder must have a quality system tailored to the processes and the scope as laid down in this assessment directive.
The quality system of the certificate holder is laid down in a quality control manual which contains at least the following elements:

- a description of the company and its organisation.
- a management statement with the principles and objectives of the quality policy.
- the procedures for managing quality documents and records.
- the produces for internal assessment.
- the handling of complaints.
- the procedures for purchasing and assessing suppliers.
- the procedure for qualifying employees for specific positions.
- the described working methods and instructions.
- the described applicable safety instructions.
- the procedures for handling deviations and monitoring corrective measures.
- the internal quality control diagram (in accordance with paragraph 6.3).

6.3 Internal quality control

The certificate holder must have an internal quality control diagram (IQC diagram) which contains at least the requirements of this chapter.
The certificate holder must demonstrably record the following in this diagram:

- What aspects are controlled by the organisation of the certificate holder.
- The methods used for these assessments and the used equipment.
- How often these assessments are carried out.
- Whether and, if yes, the manner in which the assessment results are registered and kept.
- Identification and traceability of deliveries.

The internal quality control must enable the certificate holder to continuously demonstrate that the requirements of this assessment directive are met.

6.4 Quality system management

The organisational structure must include an official responsible for managing the quality system. This official will also be responsible for the effectiveness of the quality system. This official must report directly to the management on the effectiveness of the internal quality control. This official has all appropriate mandates necessary.

6.5 Notification of changes

All changes to the quality system, such as procedures, IQC diagram, and the like must be reported to the certifying body.

6.6 Documents and registration management

The certificate holder will ensure that:

- Current versions of the quality documents are available to all employees who need these and at the sites where they are used. This also applies to project and/or process-specific manuals and instructions.
- The determined procedures and instructions referred to in paragraph 6.2 will be assessed regularly and, where necessary, updated and will continuously be implemented effectively.
- New and amended quality documents are authorised and released for use by a designated responsible person.
- The registrations that are relevant to the demonstrability of the controlled production process and other standard-compliant conduct in accordance with this assessment directive must be correctly identified, legible, and traceable.

The project documents and registrations referred to in this assessment directive will be kept for a period of at least 10 years and longer if required by law.
The certifying body may decide to shorten or extend the retention period following an audit.

6.7 Control of measuring equipment

Test, measurement and sample equipment will be controlled or calibrated at least once a year, unless a different period is specified by the manufacturer of the equipment. Records must be kept of this.
Calibration can be performed internally (calibrated reference calibrators) or externally (calibration firm).

6.8 Supplies

Raw materials, semi-finished products, etc., that are the subject of another assessment directive must comply with the requirements of this assessment directive. The received goods must be checked in accordance with the quality system. A record must be kept of this.

6.9 Measures in case of non-conforming products

If the internal quality control shows that certain products do not meet the requirements, the following must be done:

- The product must be labelled, not delivered, and stored is a recognisable manner (and separately).
- The cause must be determined and, if necessary, corrective measures must be taken.
- The found deviations and the corrective or additional measures must be registered.

If the above shortcomings are only found after the completion of the project, the client must be informed and involved in any follow-up steps.
There must also be a procedure for handling these products and a recognisable (separate) storage facility.

6.10 Complaints

The certificate holder must have a procedure for the handling of complaints concerning the delivered product.
This procedure must arrange at least the following:

- The officials responsible for handling and assessing complaints;
- The registration of complaints and the corresponding follow-up and handling process.
- The intended follow-up and handling periods.
- Adequately informing the complainant.
- Taking recovery and corrective measures in response to complaints.

6.11 Procedures and work instructions.

The certificate holder must be able to submit procedures on:

- The handling of deviations;
- The corrective measures in case of shortcomings;
- The handling of complaints;
- The management of the used work instructions and audit forms (registration, retention duty, etc.).

The certificate holder must have work instructions (including transport and storage).

6.12 Markings

For each lot of timber and timber products treated with a fire-retardant product using the vacuum and pressure method delivered based on the certificate, a written specification must be provided to the buyer in which each order line indicates:

- KOMO® word mark or logo;
- KOMO® Product Certificate number;
- Name of the product used to treat the timber;
- Treatment year;
- Unique batch, production, or project number;
- Scope of application in hazard class in accordance with NEN-EN 335;
- Fire grade in accordance with NEN-EN 13501-1.

6.13 Requirements for the production process.

6.13.1 Raw materials requirements

6.13.1.1 Timber

To be controlled before every treatment batch.

- The treated timber may not contain:
  - paint or other finishes which may adversely affect the fire-retardant product (in accordance with (NEN 2930));
  - sawing or planing residues to prevent an undesired waste stream (sludge, etc., to be determined visually);
  - freezing, dirt, ice, snow, etc. (in accordance with NEN 2930);
  - visual deterioration caused by fungi or other micro-organisms affecting the quality of the preservation process. By way of deviation, blue mould is permitted up to a maximum of 5% of the timber surface;
  - the timber may not contain a bark and cambium layer;
- In case of temporary storage of the processed product, the timber must be covered to such extent that it does not come into contact with liquid moisture;
- The spot of the timber with the highest moisture content is decisive when determining the moisture content. Quality level AQL 10 in accordance with NEN 5461, Table 24, is used as approval criterion;
- The timber may not contain frost;
- Planed and sawn timber must be put on stickers to improve the accessibility of the product. If no residues may be left on the stacker bar, timber may be stacked in two layers (with the visible sides on top of each other);
- All processing must be completed before the treatment takes place. If unavoidable, some drilling and trimming is permitted after the treatment;
- Only timber with equivalent impregnability may be treated in one batch. Refer to NEN-EN 350 for the impregnability of timber types.

6.13.1.2 Fire-retardant product

It must be demonstrated for each timber type that this type can be treated and what fire class can be achieved with this. This can be demonstrated in two ways: directly using a classification report, and indirectly by using Extended Application ((Exap) expansion of scope of validity) of the study results (paragraph 4.3) conducted by a correspondingly accredited or notified test laboratory.

The following general requirements apply in relation to the fire-retardant product:

- The certificate holder must work in accordance with the safety instructions and usage instructions of the manufacturer and/or supplier of the product;
- The certificate holder must have a current material safety data sheet approved by the supplier, issued by the manufacturer of the fire-retardant product;
- The certificate holder must have an analysis report of each delivery of the product which demonstrates that the batch meets the specifications of the manufacturer;
- The minimum net retention of the product is based on the combination of timber type, product, and achieved study results (refer to Chapter 5), based on the requested fire propagation contribution class and/or smoke production. The net retention can be expressed in g/m^2 and/or kg/m^3, depending on the study results.
- The configurable minimum concentration of the product is, based on the requested class(es) for the limitation of the propagation of fire and smoke, based on the demonstrable performance of the product using a classification report in accordance with NEN-EN 13501-1;
- The temperature of the product must be at least 5 °C in the installation.

6.13.1.3 Production composition

The composition of the working stock of the fire-retardant product must be studied at least twice per year concerning the amount of active substances in accordance with the method indicated by the supplier of the fire-retardant product. This analysis may also be carried out by the supplier of the products. In case of disturbances in this chemical balance, the study frequency can be increased by the certifying body.

The certifying body has the right to have an independent accredited analysis laboratory study the amount of active substances at least once per year in accordance with the analysis method, as indicated and used by the supplier. An identical sample will always be kept for possible contra-expertise. All active substances will be analysed in the studied sample.

6.13.1.4 Concentration check

The concentration of the product in the working stock must be determined daily before the first batch and when a new solution is created. If necessary, the concentration of the inventory must be adapted to the prescribed concentration.

6.13.2 Requirements concerning the equipment of the producer

In order to qualify for a product certificate, an applicant must be in the possession of equipment which meets the following requirements:

- If an environmental permit has been issued for the certificate holder, it will be assumed that all described requirements have been met;
- If no environmental permit has been issued, the requirements can be substantiated using technical specifications and inspection reports concerning the relevant equipment or determined on-site during the admission study (measurement, markings, visual observation);
- No unacceptable mixing of the fire-retardant product with other products may take place in installations that are used for multiple purposes;
- When multiple products are used in an installation, the certifying body must be informed to ensure this can be assessed during the admission study.
- The company equipment and processes must be adapted in order to prevent undesirable concentrations of harmful substances ending up in the air of work spaces,

everything in accordance with the regulations of the Dutch Occupational Health and Safety Decree and laid down in the MSDS. This particularly applies during peak loads, for example, directly after opening an installation in which timber is being treated. There must also be a Material Safety Data Sheet concerning the product available at the company.
- The certificate holder must have access to the means and methods that are demonstrably suitable to check the end product.

6.13.2.1 The vacuum installation

The vacuum installation must meet the following requirements:
- A mixing installation, suitable to bring the fire-retardant impregnation product to the right concentration;
- Equipment to measure the use of the amount of fire-retardant impregnation product per treatment. The use must be measures by determining the absorption after the end of the entire impregnation process. Measuring the amount of pressurised litre is not sufficient due to the initial absorption when filling and the release during the post-vacuum. The accuracy is (converted) set as at least X litres/kg product per m^2/m^3. It must be possible to measure at least with a 10 l/m^3 accuracy. When the minimal accuracy is bigger it will be sufficient to apply a over pressing factor (1.1 or more) to assure the tretention to be reached.
- The material of the installations (including the storage tank, pipes, pumps, etc.) must be such that the composition (and effectiveness) of the fire-retardant product is not adversely affected or contaminated. Pipes must be above ground, may not be part of a permanent connection between the drinking water pipeline and the mixing installation, and may not be fed to waterproof facilities;
- Waterproof containers and floors must be resistant to the fire-retardant product and have a free capacity of at least 110% of the maximum processed or stored fire-retardant product;
- The structure of the container must be sufficiently strong to resist any fluid pressure arising from leakage;
- The autoclave loaded with timber must be able to maintain an air pressure ranging from 20 kPA to the required pressure (technical specifications, inspection report);
- The storage reservoir must be sufficiently large to fill the autoclave completely (technical specifications);
- Vacuum and pressure pumps must be suitable to achieve the required air and fluid pressure in the preparation autoclave (technical specifications);
- A manometer which reads the air and fluid pressure in the preparation autoclave with an accuracy of no more than 10 kPa (technical specifications);
- Registration equipment which records the entire process and immediately shows the current situation;
- The vacuum/pressure installation and associated equipment (including inventory and mixing reservoir) must be placed in or above a waterproof tray (visual observation);
- The vacuum pump and pressure release valves must be equipped with a water ditch or a similar facility (pressure valve, visual observation).

6.13.3 Registration

All relevant data concerning the production process must be captured in writing using automatic registration. Each batch must have a unique number for the purposes of traceability, in which context the numbering of combined batches ensures this traceability until batches are no longer combined.

7 REQUIREMENTS FOR THE EXTERNAL CONTROL

7.1 General

The external quality audit is determined by the certifying body in accordance with its product certification regulations.

7.2 Nature and frequency of the external audit

Three times a year, the certifying body will, unannounced, investigate whether the technical specifications are still being complied with, whether the production complies with the specifications laid down by the manufacturer and agreed with the certifying body, and whether the internal quality control system of the manufacturer complies with the requirements laid down in Chapter 6.

These audits will be captured in writing.
The Board of Experts may adjust the above audit frequency based on substantiated grounds.

The country of the applicant must generally be safe for control visits by the certifying body. In the event of negative travel advice, the country will not be visited and the controls can not be performed on the production location. In case that it is not possible to perform a control visit the validity of the KOMO® product certificate will be (temporary) suspended.

7.3 Sanction policy

The sanction policy (the measures that will be taken by the certifying body in case of shortcomings) must be laid down in the procedure of the certifying body referred to in paragraph 8.1 or in a separate document.

8 REQUIREMENTS CONCERNING THE CERTIFYING BODY

8.1 General

The certifying body must have a procedure which sets out the general rules that are used for the certification procedure.
The certificate holder's quality system must be recorded in a quality manual that contains at least the following elements:

- procedure concerning informing the applicant about the handling of the application;
- procedure for the initial study/assessment;
- procedure for the decision made based on the initial assessment;
- general rules for decisions procedures and the aspects concerned;
- actions to perform in case of non-conformities;
- procedure to end certificates;
- the possibility to make an appeal to the decision made on action taken by the certifying body.

8.2 Certification staff

The staff involved in the certification process can be divided into the following categories:

- Auditor: in charge of carrying out the external audit;
- Initial assessor: responsible for the initial study/assessment and assessing the reports of the auditors;
- Assessor: responsible for the assessment of the preliminary auditor and the auditor; takes decision on the need for corrective measures;
- Decision-maker: responsible for making decisions based on the admission studies, maintaining certification based on the audits.

8.3 Qualification requirements

Staff involved in the certification process must be demonstrably qualified to carry out the necessary work. The following qualification requirements apply for education, expertise/experience:

Certification staff	Education	Knowledge and experience
– Auditor – Preliminary auditor	Lower vocational education	– Production and use of fire-retardant products, timber preservation products, or equivalent; – Auditor ISO 9001 training; – At least two years of experience in the timber industry or equivalent.
– Assessor	Higher Vocational Education	– Production and use of timber treated with a fire-retardant product – At least two years of experience at a management level in the timber industry or equivalent.
– Decision-maker	Higher Vocational Education	– Management experience or equivalent; – Certification or equivalent; – Accreditation criteria or equivalent; – Knowledge of relevant certification methods.

Certification staff must be demonstrably qualified through verification of their training and experience based on the above requirements. Qualification based on different criteria must be captured in writing. The qualifications mandates must be captured in the quality process of the certifying body.

8.4 Initial assessment and certification file

The results of the initial and certification assessment will be captured in a file by the certifying body. The file must meet the following requirements:

- ***Completeness***; the files concerns all requirements set out in the assessment directive.
- ***Traceability***; the findings on which the statements are based must have been recorded in a traceable manner.

The person who decides to grant the KOMO® Product Certificate must be able to substantiate his decision based on the findings captured in the file.

8.5 Decision on the KOMO® Product Certificate

The decision to grant the KOMO® Product Certificate and/or to impose sanctions and/or to suspend or revoke the KOMO® Product Certificate must be made by a qualified decision-maker who was not involved in the certificate study. The decision-maker will decide whether the KOMO® Product Certificate can be granted based on the study or whether additional data and/or studies are required before the KOMO® Product Certificate can be granted. The decision must be laid down in a traceable manner.

8.6 Reporting to the Board of Experts

The certifying body will report on its certification work at least once a year. This report must discuss the following topics:

- changes to the number of certificates (new/expired);
- number of studied carried out compared to the determined frequency;
- results of the studies;
- measures imposed in case of found shortcomings;
- complaints about certified products received from third parties.

8.7 Interpretation of requirements

The Board of Experts may capture the interpretation of the requirements set out in this assessment directive in one separate interpretation document. If applicable, this interpretation document will be available on the website of the diagram administrator who has created this assessment directive. Each certifying body using this assessment directive is required to use the interpretations set out in this document.

9 LIST OF MENTIONED DOCUMENTS

CPR	Construction Products Decree EU No. 305/2011
ISO 5660-1:2015	Determination of fire behaviour - Heat creation, smoke production, and speed of mass loss - Section 1: heat creation speed (using cone calorimeter) and smoke production speed (dynamic measurement)
NEN 2930:1991	Timber preservation. Vacuum and pressure method - Treatment with substances other than creosote oil
NEN 5461:1999/ A1: 2004	Quality requirements for timber (KVH 2000) – Sawn timber and round timber – General section
NEN-EN 335:2013	Preservation of timber and timber-based products - Hazard classes: Definition, use on solid timber and timber-based panels
NEN-EN 350:2016	Preservation of timber and timber-based products - Sampling and classification of resistance to biological agents, water permeability, and performance of timber and timber-based products;
NEN-EN 351-1:2007	Preservation of timber and timber-based products - Solid timber treated with preservation agents - Section 1: Classification of penetration and retention of preservation agents
NEN-EN 351-2:2007	Preservation of timber and timber-based products - Solid timber treated with preservation agents - Section 2: Sampling and analysis of timber treated with preservation agents
NEN-EN 1670:2007/ C1:2008	Latches and hinges - Corrosion resistance - Requirements and study methods
NEN-EN 10088-1:2014	Stainless steel types - Section 1: List of stainless-steel types
NEN-EN 13183-1:2002	Moisture content of sawn timber - Section 1: Determination by weighing and drying in an oven
NEN-EN 13183-2:2002/ C1:2017	Moisture content of sawn timber - Section 2: Approach using electronic moisture meter
NEN-EN 13183-3:2005	Round timber and sawn timber - Method to measure moisture content - Capacitive method to determine the moisture content of sawn timber
NEN-EN 13501-1:2019	Fire classification of construction products and components – Section 1: Classification based on results of fire behaviour study
NEN-EN 13823:2010+ A1:2014	Determining fire behaviour of construction products - Construction products, except for floor finishing, exposed to thermal attack with burning object
NEN-EN 13964:2014	Suspended ceilings - Requirements and study methods
NEN-EN 13986:2004+ A1:2015:	Wood-based panels for construction - Properties, conformity check, and marking;
NEN-EN 14342:2013	Wood floors and parquet - Properties, conformity check, and marking
NEN-EN 14915:2013+ A1:2017:	Solid timber panelling and cladding - Properties, conformity check, and marking

NEN-EN 16755:2017+ C1:2018	Technical sustainability of the performance in relation to fire behaviour - Classification of timber products treated with fire-retardant products for indoor and outdoor use
NEN-EN-ISO 9001:2015	Quality management systems – Requirements
NPR-CEN/TS 15117:2005	Directive for direct and extensive scope of validity of study results
NPR-CEN/TS 15912:2012	Technical sustainability of the performance in relation to fire behaviour - Classification of timber treated with fire-retardant products for indoor and outdoor use