AD 0807
dated 12-07-2019

KOMO. Kwaliteit zoals beloofd.

ASSESSMENT DIRECTIVE

FOR THE

KOMO® PRODUCT CERTIFICATE

FOR

WOOD REPAIR PRODUCTS

As established by the SKH Board of Experts on 25-01-2019
Accepted by the KOMO Quality and Assessment Board on 12-07-2019

Publication: SKH Certification Institute

GENERAL INFORMATION CONCERNING THIS PUBLICATION

This KOMO Assessment Directive (AD) has been compiled by the SKH Board of Experts in which stakeholders within the scope of this AD are represented. This board also supervises the implementation of the certification as based on this AD and updates it if necessary. The term "Board of Experts" or BoE in this Assessment Directive refers to the aforementioned Board.

This AD will be used by certification bodies, which have a licence agreement for this with the KOMO Foundation, in connection with their established procedures for certification. In this Assessment Directive, the requirements have been established that an applicant or holder of a KOMO product certificate must adhere to as well as the way the certification body assesses this. In the established certification procedures, the working method is established that is used by the certification body when carrying out:

- Research for the provision and extension of a KOMO product certificate on the basis of this Assessment Directive;
- The periodic assessments for the benefit of retaining an issued KOMO product certificate on the basis of this AD.

Changes in comparison to the previous version:

- unclarities concerning the tests to be performed have been addressed;
- the involved market parties have decided that performing the confirmation assessment should, considering the already extensively inspected production, occur not once per year but once every three years.

Publisher:
SKH Certification Institute
PO Box 159
6700 AD Wageningen
The Netherlands
Telephone +31 (0)317 453425
Email mail@skh.nl
Website http://www.skh.nl

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1 INTRODUCTION

1.1 General

The requirements for certification set out in this Assessment Directive are used by the certification bodies, which have been accredited by the Council for Accreditation or which have submitted an application for this and have a licence agreement with the KOMO® Foundation for this purpose, in the handling of an application for and/or maintenance of a KOMO® product certificate for 'Wood repair products'.

Based on the requirements set out in this Assessment Directive, a product certificate is issued for Wood repair products. With this product certificate, the certificate holder can demonstrate to its applicants/manufacturers that an expert independent organisation supervises the production process of the certificate holder, the quality of the product and its quality assurance. As a result, it may be assumed that the product complies with the quality requirements set out in this Assessment Directive.

In addition to the requirements laid down in this Assessment Directive, the certification bodies impose additional requirements, in the sense of general procedure requirements for certification, as laid down in the general certification regulations of the relevant body.

1.2 Subject and scope

This Assessment Directive (AD) and the product certificate apply to Wood repair products.

The Assessment Directive describes the requirements for the manufacturing, performance and inspection of Wood repair products.

The test or assessment methods have been explicitly stated or indicated by a referral to an annex, standard or other designated document.

The wood repair products may be composed in various ways. The product requirements set out in this AD pertain to the performance of the product as a raw material/semi-manufactured product for a range of end products. In which usability is tested based on timber with a density of < 750 kg/m^3, types of timber with a density of > 750 kg/m^3, modified types of timber and timber containing tannins. For each wood repair products, a division is made into one of the following applications:

- Fine surface fillers;
- Surface fillers;
- Repair products.

1.3 Validity

As from the date of publication by SKH, KOMO® product certificates can be issued based on this Assessment Directive.
This Assessment Directive replaces the AD 0807 “Wood repair products”, dated 21-12-2016. After publication of this AD, new certificates can no longer be issued based on the preceding AD. The product certificates issued based on the replaced Assessment Directive and its amendment sheet lose their validity 6 months after publication of this AD.

The period of validity of the product certificate is indefinite. The validity period may be limited (terminated) due to:

- An amendment to this AD;
- The Certificate Holder’s failure to meet his/her obligations.

If no production processes are carried out (temporarily), at the request of the certificate holder, the validity can be (temporarily) suspended if production processes remain suspended for a period exceeding 12 months. A suspension of validity can be granted by the certification body for a maximum of one year. A suspension can be renewed by the certification body under the condition that the total duration of suspension does not exceed two years.
However, if the period of suspension exceeds one year, an additional periodic inspection must be undertaken to assess whether the product certificate can be retained, prior to production processes being resumed.
In case of a suspension longer than two years, the certification-body will have to revoke the Product certificate.

1.4 Requirements for conformity assessment bodies

With regard to the requirements included in this AD, the applicant may, as part of an external audit, submit reports from conformity assessment bodies to demonstrate that the requirements of this AD are met. It will have to be demonstrated that these reports were drawn up by a body that meets the applicable accreditation standard for the subject in question, namely:

- NEN-EN-ISO/IEC 17020 for inspection bodies
- NEN-EN-ISO/IEC 17021-1 for certification bodies that certify systems
- NEN-EN-ISO/IEC 17025 for labs
- NEN-EN-ISO/IEC 17065 for certification bodies that certify products.

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

1.5 Product certificates

KOMO® Product certificates are issued based on this Assessment Directive. The statements in these product certificates are based on sections 4, 5, 6 and 7 of this Assessment Directive.

The KOMO® Foundation website (www.komoquality.com) contains the template product certificate used for this Assessment Directive. Any product certificates issued must correspond to this.

2 TERMS AND DEFINITIONS

For terms relating to certification and CE marking, please refer to the website of the KOMO Foundation (www.komoquality.com) and the regulations of the certification body.

Filling	Fine surface repairs, surface repairs, or repairing of timber.
Fine surface repairs:	Restoring of small holes/imperfections, such as pinholes and coarse pores (pore filling) without any mechanical pretreatment
Surface repairs:	Restoring small of superficial (max. 10 mm deep) deficiencies, smaller than 5 cm^3 in planed or painted timber, by filling it with a smoothing material.
Repairing	The restoring of deficiencies and/or imperfections in planed or painted timber, using a wood repair products. Also includes repairing through a combination of a wood repair products and partial replacement.
Fine surface fillers:	Materials intended for filling small imperfections, such as pinholes (Ø ≤ 2mm) and coarse pores (pore filling), to achieve a well-sealed paint layer. A plugging material can be applied directly onto the timber or as an interlayer in a multilayer paint system.
Surface repair products:	Material intended for sealing imperfections of up to 5 cm^3 in size.
Pore filler	See fine surface repair products
Repair material:	Material intended for repairing larger imperfections in timber, sized 5cm^3 and over.
Wood repair products:	Materials intended for plugging, smoothing, or repairing of imperfections in timber.
Partial replacement:	Repairing damaged timber by replacing it with a new piece of timber in combination with the use of a wood repair products. With partial replacement, a new piece of sill, jamb or combination thereof, if needed together with a reinforcing element, is placed in the door or window frame.
Laminating:	See partial replacement
Borer holes:	Defects or holes in timber, caused by insects (NEN-EN 844-11)
Pinhole:	a borer hole, usually no larger than 2 mm in diameter (NEN-EN 844-11)

Comment: The same material may be assigned different categories.

Within the framework of this Assessment Directive, plugging, smoothing, and repair materials are assessed on their suitability for plugging, smoothing, and/or repairing timber.

3 ADMISSION EXAMINATION AND EXTERNAL AUDITS

In order to renew the product certificate, the certification body shall carry out an initial inspection. After the Product certificate has been issued, the certification body carries out external audits.

3.1 Admission assessment

The requester indicates which wood repair products(s) should be included in the Product certificate to be issued and provides substantiation for this. In addition, there should be an indication of which statements should be included in the Product certificate, with reference to:

- The type of wood repair products;
- The processing instructions;
- The area of application within which the material is deemed suitable, including at least a statement for each wood repair products concerning its suitability for timber containing tannins, modified types of timber and timber with a density of more than 750 kg/m$^{3;}$

The requester provides all relevant data for the preparation of the 'technical specification' of the wood repair product(s), as it/they will be recorded in the product certificate to be issued.
For the issuing of the product certificate:

- The certification body carries out an admission assessment;
- The certification body must determine that the requester is able to:
  - Consistently safeguard the production process;
  - Safeguard the quality of the product;

  to such extent that the requirements set out in this Assessment Directive are met.

3.2 Scope of the admission assessment and external audits

The admission assessment and the external audits consist of inspecting whether:

- The wood repair product(s) that is/are manufactured by the requester/certificate holder meet(s) the requirements set for it (see section 4), as well as the technical specification as (will be) stated on the product certificate.
  For the sampling of test pieces, the requester must supply sufficient material from one specific batch. The characteristics from section 4 and the characteristics the manufacturer seeks to declare are performed on this material
  The sampling of test pieces and determining of the characteristics take place under supervision of the certification body.
- The inspection of the wood repair product(s) by the requester/certificate holder meets the requirements set for it (see section 6).
- The quality system of the requester/certificate holder meets the requirements set for it (see section 7).
- The processing instruction meets the requirements set for it (see section 5).

Where applicable, it shall be examined whether the provided documents concerning the production process and/or the internal quality control and the results stated therein, fulfil the requirements of this AD.

Comment:
Companies that have been certified based on NEN-EN-ISO 9001 are deemed to comply with the requirements of section 7 provided that all relevant requirements at product level are included in the quality system.

3.3 External quality control

After the product certificate has been issued, the certification body shall perform audits as described in section 8 of this Assessment Directive.

4 GENERAL PRODUCT REQUIREMENTS

This section sets out the general requirements that all wood repair productss must fulfil or for which information must be supplied.

The inspection is performed on the types of timber on which the manufacturer intends to apply the wood repair products. The timber quality must meet the SKH Publication 99-05, for which the provisions in paragraphs 4.2.2 and 4.5.2 must be carried out in fault-free timber. The test pieces are described in annex 1. All test pieces are rift sawn or half-rift sawn and fault-free. If the inspection result is positive, the material is deemed suitable for exterior joinery using the inspected type of timber (see SKH Publication 99-05). Prior to commencement of testing, the timber must be conditioned to the moisture level set out in SKH Publication 99-05.
For the different types of materials, an inspection programme is prescribed.
The wood repair product is assessed on the following aspects: see table 1.

Table 1:

	Fine surface fillers	Surface repair products	Repair products
Paintability (4.1)	X	X	X
Adhesion of the wood repair products (4.2)	-	-	X
Shrinking and swelling behaviour (4.3)	X	X	X
Outdoor durability (4.4)	-	X	X
Withdrawal capacity screws (4.5)	-	-	X
Determining angle connection strength (4.6)	-	-	X
Practical applicability (4.7)	X	X	X
Processing instructions (5)	X	X	X

For an overview of the inspection programme per category, refer to table 1a and 1b, which differentiate between whether mechanical pre-treatment is required.

Table 1a: Inspection programme for wood repair productss for which mechanical pretreatment is required, organised per category.

Category:	1a	2a	3a	4a	5a	6a	7a	8a	9a
To be used for	drying cracks/hairline cracks (l*w*d) 20mm*2mm*2mm	Longitudinal cracks up to 200 mm	Longitudinal cracks > 200 mm	Holes 0 – 5 cm^3	Holes 5 – 75 cm^3	Holes 75 – 200 cm^3	< 75 cm^3	75 – 200 cm^3	Holes and holes in (open) joints >200 cm^3 with partial replacement
Application type	Timber repairs	Timber repairs	Timber repairs	Timber smoothing	Timber repairs	Timber repairs	Restoring connections	Restoring connections	Laminating
Type of material									
Smoothing material	4.1 4.3 4.4 4.7	4.1 4.3 4.4 4.7	4.1 4.3 4.4 4.7	4.1 4.3 4.4 4.7					
Repair material	4.1 4.3 4.4 4.7	4.1 4.3 4.4 4.7	4.1 4.3 4.4 4.7	4.1 4.2 4.3 4.4 4.5 4.7	4.1 4.2 4.3 4.4 4.5 4.7	4.1 4.2 4.3 4.4 4.5 4.7			
Repair material (connections)							4.1 4.2 4.3 4.4 4.5 4.6 4.7	4.1 4.2 4.3 4.4 4.5 4.6 4.7	4.1 4.3 4.4 4.6 4.7

4.1 through 4.6 = refer to paragraph that contains the corresponding testing method.

Table 1b: Inspection programme for wood repair products for which no mechanical pretreatment is required, organised per category.

Category:	1b	2b
To be used for	Pinholes Ø ≤. 2 mm and coarse pores	Borer holes Ø 2 – 5 mm
Type of material		
Plugging material	4.1 4.3	4.1 4.3

4.1 and 4.3 = refer to paragraph that contains the corresponding testing method.

The admission assessment is performed on the timber-type spruce (*Picea abies)* which is the prescribed standard type of timber for testing. This is used to show suitability for the types of timber recorded in SKH Publication 99-05, with a density smaller than 750 kg/m^3, which do not contain tannins and the non-modified species.

For timber species containing tannins and types of timber with a density of ≥ 750 kg/m^3 the tests are performed on the timber-type Sapupira (*Hymenolobium excelsum Ducke).* For modified species of timber, testing is done per type of timber.

4.1 Coatability

The coatability of the product is tested using the colour RAL 9010 with two base coating systems (alkyd emulsion and acrylic), which fulfil the requirements set out in AD 0814. The manufacturer of the wood repair products indicate what pre-treatment is required.

4.1.1 Test pieces

For the inspection, test pieces measuring 70 mm x 25 mm x 150 mm (L x W x D) are manufactured from solid spruce (*Picea abies*) with the following specifications: completely free of defects, annual ring orientation angled 45˚ from plane surface, annual ring width between 1 and 3 mm and timber moisture level 14 ± 2%. In these pieces a groove measuring 30 mm x 5 mm x 150 mm (w x d x l) is cut in which the wood repair products can be applied and smoothed out to the surface of the panel. For fine surface repair products, a groove of 30 mm x 2 mm x 150 mm (w x d x l) is cut.

4.1.2 Inspection method

20 test pieces (10 for quick admission and a further 10 for definitive admission) are processed in accordance with the requirements of the manufacturer. After the drying period indicated by the manufacturer, the samples are painted (five samples per type of paint, each in the colour RAL 9010). Then the test pieces for quick admission are dried for seven days at 20°C and 65% relative humidity, after which the adhesion is determined in accordance with SKH Publication 05-01.
The test pieces for definitive admission are sealed on five sides, finished with a VOC 2010 paint system (RAL 9010) in two coats with a combined dry layer thickness of approximately 50 µm and dried for four weeks at 20°C and 65% relative humidity. After drying the test pieces, they are placed in outdoor exposure facing south-west at an angle of 9º for a period of 24 months. After 24 months, the adhesion is determined in accordance with SKH Publication 05-01. The discolouration of the paint on the timber and the discolouration of the paint on the wood repair products are also compared based on the NEN-ISO 105 A02 “Grey scale for assessing change in colour”.

4.1.3 Requirements

The average adhesion per type of paint must be class 1 or better. The maximum permitted discolouration is class 4, if there is more discolouration this will be remarked in the certificate and processing instruction.

Note. As the wood repair product is only tested on a limited number of systems, no statement can be made about ‘uniform coatability’.

4.2 Adhesion of the wood repair products

For each type of timber to be inspected, three test pieces are made to gain insight into the adhesion of the wood repair products on the relevant types of timber. These types of timber are inspected in addition to the standard type of timber, spruce (*Picea abies***).**

4.2.1 Test pieces

The test pieces are made from separate beams of 540 x 50 x 50 mm (L x W x D). In these pieces, five holes with a diameter of 15 mm and a depth of 35 mm are drilled in a set pattern. The centre-to-centre distance between the holes and the distance to the end is 90 mm.

4.2.2 Inspection method

For each type of timber to be inspected, but in any event for spruce (*Picea abies*), three test pieces are used, in which the recesses are filled with the wood repair products in accordance with the processing instructions of the manufacturer. The recesses are prepared and hardened in accordance with the instructions of the applicant/manufacturer.

After the test pieces have hardened in accordance with the guidelines from the applicant/manufacturer, test piece one is conditioned for seven days at 20 +/- 2 ºC and 65 +/- 5% relative humidity and test piece two is, after application, conditioned for seven days at 10 +/- 2 ºC and 90 +/- 5% relative humidity. Test piece three is kept in reserve and conditioned at 20 +/- 2 ºC and 65 +/- 5% relative humidity.

After conditioning, the withdrawal capacity for screws is determined. The method used to determine the withdrawal capacity for screws, is derived from the method set out in NEN-EN 1382.

In this, steel screws with a diameter of 4.0 ± 0.2 mm and a length of at least 45.0 mm are screwed into the centre of the prepared holes (pre-drilling the holes with a 2 mm drill) to a depth of 27 ± 2 mm.
In the third spruce (*Picea abies*) test piece, five reference screws are screwed into the surrounding timber in the same manner. Then the screws are pulled out, straight upwards, at a speed of 2 mm / min. The force-deflection diagram is saved.

4.2.3 Requirements

After condition, the average withdrawal capacity of the screws from the wood repair products in the repaired spruce (*Picea abies*) should be equal to or greater than the withdrawal capacity of the screws in the surrounding timber.
For the other types of timber, a minimum average withdrawal capacity equal to or higher than the average withdrawal capacity as determined for the repaired spruce (*Picea abies*) applies.
Should the reparation be pulled out of the test piece completely, this will result in a fail.

4.3 Shrinking and swelling behaviour (accelerated weathering) in relation to durability

If the shrinking and swelling behaviour of the product deviates too much from that of the timber, it may come loose from the base. To gain insight into the durability of the wood repair products, ahead of the definitive admission, test pieces are subjected to accelerated weathering.

4.3.1 Test pieces

In this part, a spruce (*Picea abies*) frame is tested, in which recesses as indicated in annex 1 are repaired in accordance with the instructions of the applicant/manufacturer.

4.3.2 Inspection method

Depending on the purpose for which the wood repair products is deemed suitable, the recesses set out in annex 1 are repaired in accordance with the instructions of the applicant/manufacturer.

After the repairs have been made and hardened in accordance with the guidelines from the applicant/manufacturer, the frames are conditioned for 28 days at 20 +/- 2 ºC and 65 +/- 5% relative humidity. The frame is finished with an AD 0814 (RAL 7026) certified base coat system and dried for seven days at 20 +/- 2 ºC and 65 +/- 5% relative humidity.
A baseline measurement is taken prior to commencement of testing. During this baseline measurement, the shrinking and swelling of the repair material is measured, the humidity percentage of the timber in the sample is measured, and the test pieces are photographed. After that, the test pieces are exposed to the cycle described below for a period of three weeks:

- 8 hours spraying with water 15 +/- 5 °C;
- 8 hours radiating to an even surface temperature of 75 +/- 5 °C.

4.3.3 Requirements

After accelerated weathering, formation of cracks in the paint system around and/or on the repaired parts or loss of adhesion of the repair material to the timber is not permitted.

4.4 Outdoor durability (natural weathering)

The product must be sufficiently resistant against ageing. In this, the influences of UV light, water and temperature are taken into account. For the definitive admission, a frame is left fully exposed for a period of 24 months.

4.4.1 Test pieces

In this part, a spruce (*Picea abies*) frame is tested, in which recesses as indicated in annex 1 are repaired in accordance with the instructions of the applicant/manufacturer.

4.4.2 Inspection method

Depending on the purpose for which the wood repair product is deemed suitable, the recesses set out in annex 1 are repaired in accordance with the instructions of the applicant/manufacturer.

After the repairs have been made and hardened in accordance with the guidelines from the applicant/manufacturer, the frames are conditioned for 28 days at 20 +/- 2 °C and 65 +/- 5% relative humidity. The frame is finished with an AD 0814 (RAL 7026) certified base coat system and dried for seven days at 20 +/- 2 ºC and 65 +/- 5% relative humidity. After drying of the base coat system, the frame is varnished in two brush layers of VOC 2010 paint (brush quality) RAL 7026, after which a baseline measurement is taken. During this baseline measurement, the shrinking and swelling of the repair material is measured, the humidity percentage of the timber in the sample is measured, and the test pieces are photographed.
The frame is then subjected to outdoor exposure, unprotected, facing south-west for a period of 24 months. In consultation with the applicant/manufacturer, renewals for additional 12-month periods are possible.

4.4.3 Requirements

After the natural weathering, the formation of cracks in the paint system around and/or on the repaired parts or loss of adhesion of the repair material to the timber is not permitted.

4.5 Withdrawal capacity screws

The wood repair product's strength must be at least equal to the strength of the timber, that is why the withdrawal capacity for screws is determined.

4.5.1 Test pieces

In the test pieces made for accelerated and natural weathering, or in separate spruce (*Picea abies*) beams measuring 540 x 50 x 50 mm (L x W x D), a fixed pattern of five centred holes are then drilled, with a diameter of 15 mm and a depth of 35 mm.
The centre-to-centre distance between the holes and the distance to the end is at least 90 mm.

4.5.2 Inspection method

The method used to determine the withdrawal capacity for screws, is derived from the method set out in NEN EN 1382.

After the test pieces have been repaired and hardened in accordance with the guidelines from the applicant/manufacturer, the test pieces are conditioned for seven days at 20 +/- 2 °C and 65 +/- 5% relative humidity (test piece 1 from 4.2.2).

Prior to determining the withdrawal capacity, steel screws with a diameter of 4.0 ± 0.2 mm and a length of at least 45.0 mm are screwed into the centre of the prepared holes (pre-drilling the holes with a 2 mm drill) to a depth of 27 ± 2 mm.
Then the screws are pulled out, straight upwards, at a speed of 2 mm / min. The force-deflection diagram is saved.

4.5.3 Requirements

The average withdrawal capacity of the screws from the wood repair products after weathering must be equal to or greater than the average withdrawal capacity of the screws from the material after hardening in accordance with the guidelines from the applicant/manufacturer and conditioning for seven days (20 +/- 2 °C and 65 +/- 5% RH), as set out in paragraph 4.2.2.
If the withdrawal capacity after weathering is less than the initial value after hardening for seven days, a logarithmic trend line must be drawn based on the values after hardening for seven days, the value of test piece three from 4.2.2 (which has been conditioned for 8 - 10 weeks) and the value found after weathering.
The function of the trend line must have a regression coefficient $R^2 \geq 0.95$, and the result can never fall below the value for spruce (*Picea abies*).

4.6 Determining strength of a window joint

For the repair of joints, it is important that the repaired joint has a minimum strength, comparable to a standard window frame joint.

4.6.1 Test pieces

In this part, a frame is tested in which recesses, as described in annex 1, are repaired in accordance with the instructions of the applicant/manufacturer.

4.6.2 Inspection method

Depending on the purpose for which the wood repair products is deemed suitable, the recesses set out in annex 1 are repaired in accordance with the instructions from the applicant/manufacturer and the frame corners are tested for static load in accordance with paragraph 3.1.1 of AD 0819.

Comment: For category 9a, the connection is repaired preventively (reveal, up to groove and front side of frame).

4.6.3 Requirements

The break strength of the repaired corners is at least 220 Nm or full timber breakage occurs, both before and after weathering.

4.7 Practical usage

The material must be easy to process in practice. This means, among other things, that the hardening time should fit the production process of the timber-processing industry or the repair companies.

5 PROCESSING INSTRUCTIONS

The wood repair products must be accompanied by processing instructions or such instructions must be available (on the manufacturer's website). At a minimum, the following subjects must be included.

- EHS measures;
- Measures safeguarding the safety and wellbeing of employees;
- Safety information sheets;
- Storage;
- Storage method;
- Minimum and maximum climate conditions;
- Maximum storage duration;
- Processing / hardening time;
- Suitability for various types and densities of timber;
- Application category according to AD;
- Inspections to be performed (in advance, intermediary);
- Pretreatment of base (mechanical pretreat required or not);
- Preparation of product;
- Climate conditions during processing;
- Order of operations;
- Hardening time and pot life;
- Waste processing;
- Measures to observe;
- Follow-up phase;
- Sandability;
- Paintability;
- If applicable; discolouration/gloss differences that may occur;
- Adhesion;
- Instruction for type of fasteners to use;
- Strength;
- Maintenance.

6 REQUIREMENTS FOR THE INSPECTIONS OF THE REPAIR PRODUCTS

6.1 General

The product must come with comprehensive and updated documentation that concerns all the applicable requirements of this AD.

The manufacturer must ensure that the repair product holding a product certificate is clearly identifiable and separated from wood repair products without product certificate.

6.2 Registration

All relevant data concerning the raw materials (receipt data, expiry, analysis certificates, etc.) used for the production and the production process (including registration of batch numbers, added quantities and process parameters) must be recorded in writing by the manufacturer by way of registration and must be readily available to the certification body during audits, inspections and sampling.

6.3 Uniformity of the production process

The producer must demonstrate that the uniformity of the production process remains consistent. To ensure this uniformity, a sampling of every production batch must occur and be tested for the characteristics set out below.

- Processing;
- Hardening;
- Shore hardness;
- Appearance;
- Pot life;
- Viscosity.

The individual values must meet at least the requirements as stipulated by the manufacturer in the IQC. For audit purposes, a retain sample of each batch must be stored for the full duration of the shelf life of the product.

When it is or becomes known that changes have occurred in the production process, the manufacturer is required to notify the certification body accordingly. If, according to the assessment of the certification body, the production process has been modified to such an extent that changes in the product characteristics can be expected, the characteristics must be demonstrated and established again.

7 REQUIREMENTS FOR THE CERTIFICATE HOLDER AND ITS INTERNAL QUALITY CONTROL

7.1 General

The management of the certificate holder is at all times responsible for the quality of the production process, the operationality of the quality system, the internal quality control and the quality of the product. The internal quality control must meet the requirements as laid down in this section.

7.2 Quality system

The certificate holder must have a quality system that is tailored to the processes and the scope as laid down in this assessment directive.
The certificate holder's quality system must be recorded in a quality manual that 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 internal assessment procedures;
- The handling of complaints;
- The procedures for procurement and assessment of suppliers;
- The procedure for inspections of raw materials upon their arrival;
- The qualification procedure for assigning employees specific positions;
- The working methods and instructions described;
- The applicable safety instructions described;
- The procedures for handling deviations and follow-up of corrective actions;
- The internal quality control scheme (in accordance with paragraph 7.3).

7.3 Internal quality control

The certificate holder must have an actively applied internal quality control scheme (IQC scheme) which includes at least the requirements set out in this section.
The certificate holder must demonstrably record at least the following in this scheme:

- On which product characteristics inspections are performed;
- According to which methods these inspections take place and what equipment is used to perform them;
- How often these inspections are performed;
- Whether and, if so, how the results of the inspections are recorded and kept, including the management of retain samples;
- Identification and traceability of deliveries;

The internal quality control should enable the certificate holder to continuously demonstrate that the requirements set out in this Assessment Directive are met.

7.4 Quality system management

An officer in charge of quality system management must be appointed within the organisational structure. This officer shall also be responsible for the functioning of the quality system. This officer shall report directly to the management on the functioning of internal quality control. The official shall be granted appropriate powers for this purpose.

7.5 Notification of changes

All changes within the quality system, such as procedures, formulas, IQC scheme, etc. must be reported to the certification body.

7.6 Document and registration management

The certificate holder shall ensure that:

- The current versions of the quality documents are available to all employees who need them and, in all locations, where they are used. This also applies to product-specific manuals and instructions.
- The established procedures and instructions referred to in paragraph 7.2 are regularly assessed and, where necessary, updated and continuously effectively implemented.
- An appointed responsible person authorises and releases new and amended quality documents for use.
- The registrations that are relevant for demonstrating the controlled course of the production process in accordance with this Assessment Directive and other norm-compliant operations, correctly identified are legible and traceable.

The product documents and records referred to in this Assessment Directive shall be kept for a minimum period of 10 years and longer if required by law.
Exceptions to the storage period of registrations are the test samples from the entry inspection. These must be stored for a minimum period of one year, unless the shelf life is shorter.
Following an audit, the certification body may decide to shorten or extend the storage period.

7.7 Inspection of measuring equipment

Inspection equipment, measuring equipment and test equipment shall be calibrated at least once a year, unless the manufacturer of the equipment prescribes a different interval. Records must be kept of this. Calibration can be performed internally (calibrated reference measurement equipment) or externally (calibration company).

7.8 Inspection and testing

A product file must be kept for all products mentioned or to be mentioned in the certificate. The certification body will authenticate the product file during the admission assessment. The product file must contain at least the following information:

- The formula for the product, including the manufacturer of the raw materials used;
- The product characteristics to be determined, the target values for these specifications and the maximum permissible deviation therefrom, as well as the measured values;
- The changes in the formula.

At least the following characteristics must be determined for each batch produced:

- Processing;
- Hardening;
- Shore hardness;
- Appearance;
- Pot life;
- Viscosity.

The manufacturer must indicate the target values and the maximum permissible deviation from them.

7.9 Supply

Raw materials, semi-finished products, etc., for which reference is made to another Assessment Directive, must comply with the requirements of the relevant Assessment Directive. The goods received must be checked in accordance with the quality system. Records must be kept of this.

7.10 Laboratory

For the performance of laboratory activities, a (separate) fully equipped area and the prescribed measuring and testing equipment must be available. If an external laboratory is used, it must be approved by the certification body.
An external laboratory would preferably be independently accredited based on NEN-EN-ISO/IEC 17025.

The samples used for inspection and testing are clearly identified. Any applicable testing sequence must be clearly indicated.

7.11 Measures in the event of non-conforming products

If the results of the internal quality control show that certain products do not comply with the requirements set:

- The product must be marked, not supplied and be stored (separately) so as to be recognisable.
- The cause should be investigated and, where necessary, corrective action should be taken.
- A record must be kept of any anomalies found and of any corrective or additional measures taken.

If the imperfections referred to above only come to light after the product has already been supplied, the applicant must also be informed and involved in the follow-up steps to be taken.
There must also be a procedure for the handling of these products and a recognisable (separate) storage space.

7.12 Complaints handling

The certificate holder shall have a procedure for handling complaints in relation to the supplied product. This procedure should at least regulate:

- Who the responsible officers are for the assessment and handling of complaints;
- The registration of complaints and the associated follow-up and handling process;
- The intended follow-up and handling times;
- Adequate communication towards the complainant;
- Taking remedial and corrective action in response to complaints.

7.13 Procedures and working instructions

The certificate holder should be able to show procedures for:

- How to deal with abnormalities;
- The corrective actions to be taken in the event of identified deficiencies;
- The handling of complaints;
- The management of the work instructions and control forms used (registration, retention obligation, etc.).

The certificate holder must have work (space) instructions (including audit of the production process).

7.14 Markings

All repair products supplied under the product certificate must be clearly and legibly marked with:

- The KOMO® word or image/logo, at least 5 mm in size;
- The number of the KOMO® product certificate;
- statement of the products purpose or application;
- a batch number;
- a best before date or the production date in combination with the shelf life.

In addition, the certificate holder's product documentation shall include at least the following information:

- The toxicity indicator;
- The processing instructions (see section 5).

8 REQUIREMENTS TO BE SET FOR THE EXTERNAL AUDIT

8.1 General

The external quality control is recorded by the certification body in accordance with the product certification regulation of the certification body.

8.2 Nature and frequency of the external audit

Once a year the certification body performs an unannounced audit to confirm the technical specification is continuously being met, that the production is in accordance with the specifications set out by the manufacturer and agreed with the certification body (section 6), and whether the manufacturer's internal quality control system meets the requirements as set out in section 7. A written report is prepared for these inspections.
The Board of Experts can, with substantiating arguments, decide to adjust the frequency of the aforementioned inspections.

In addition, once every three years, the certification body must take a sample of each wood repair products for further inspection by an external laboratory (inspection in accordance with section 4.3 of this AD). Additional samples may be taken if necessary. The costs for such research are for the account of the certificate holder.

The country of the applicant must, generally speaking, be safe for inspection visits by the certification body. In the event of negative travel advisories, the country is not visited but the products are inspected upon arrival in the Netherlands. The manufacturer is then obliged to report the shipments, including time and place of receipt, to the certification body in good time and in writing.

8.3 Sanctions policy

The sanctions policy (the measures to be taken by the certification body in the event of shortcomings) must be laid down in the procedure of the certification body referred to in paragraph 9.1 or in a document drawn up separately for this purpose.

9 REQUIREMENTS FOR THE CERTIFICATION BODY

9.1 General

The certification body must be accredited by the Council for Accreditation for the subject of this Assessment Directive and must have a licence agreement with the KOMO® Foundation or be working on the application procedure.

The certification body must have a procedure in which the general rules used in certification are set out.

9.2 Certification staff

The staff involved in the certification process can be divided into:
- Inspector: charged with carrying out the external inspection;
- Preliminary inspector: charged with carrying out the pre-certification tests and Assessing the reports of inspectors;
- Assessor: in charge of the assessment of the investigator and inspectors; decisions on the need to take corrective action
- Decision-maker: charged with taking decisions based on the initial inspection carried out, the continuation of certification based on inspections carried out.

9.3 Qualification requirements

Employees involved in the qualification process must be demonstrably qualified to perform the required activities. In regard to the training and expertise/experience, the following qualification requirements apply:

Certification staff	Training	Knowledge and Experience
Inspector Preliminary inspector	Vocational Education level	- Production and application of wood repair productss or coatings or equivalent - Training for ISO 9001 auditor - Two years of experience in the timber industry or equivalent
Assessor	Higher Professional Education level	- Bachelor or Master in Chemistry or equivalent - Production and application of wood repair productss or coatings or equivalent - At least 2 years of management experience in the chemical industry or equivalent.
Decision-maker	Higher Professional Education level	- Management experience or equivalent - Certification or equivalent - Accreditation criteria or equivalent - Knowledge of relevant certification systems

Certification staff must be qualified, which should be demonstrated through measuring education and experience against the requirements stated above. If qualification takes place based on deviating criteria, this must be recorded in writing. The authority to determine qualification must be recorded in the quality process of the certification body.

9.4 Admission and certification examination dossier

The certification body records the results of the assessment and certification audit in a dossier. The dossier must meet the following requirements:
- ***Completeness:*** the dossier addresses all the requirements stated in the directive.
- ***Traceability:*** the findings on which statements are based must be recorded in a traceable manner.

The decision-maker on the granting of the KOMO® product certificate must be able to base his decision on the findings recorded in the file.

9.5 Decision regarding the KOMO® product certificate

The decision to grant the KOMO® product certificate and/or the imposing of sanctions and/or the suspension or revocation thereof must be made by a qualified decision-maker, who was not himself involved in the certificate examination. Based on the assessment, the decision maker decides whether the KOMO® product certificate can be granted or whether additional data and/or assessments are required before the KOMO® product certificate can be granted. The decision must be recorded in traceable manner.

9.6 Reporting to the College of Experts

The certification body reports at least once a year about the certification activities performed. This report must address the following issues:

- Changes in the number of certificates (new/expired);
- Number of audits carried out in relation to the determined frequency;
- Results of the audits;
- Corrective measures imposed where deficiencies were identified;
- Complaints received from third parties about certified products.

9.7 Interpretation of requirements

The Board of Experts may record the interpretation of the requirements of this Assessment Directive in a single, separate interpretation document. Where applicable, this interpretation document is available on the website of the scheme manager who has drawn up this assessment guideline. Every certification body that uses this Assessment Directive is obliged to use the interpretations recorded therein.

10 LIST OF REFERENCED DOCUMENTS

NEN-ISO 105-A02:1994+C2:2005 assessing	Textiles — Tests for colour fastness — Part A02: Grey scale for change in colour
NEN-EN-ISO 9001:2015	Quality management systems - Requirements
NEN-EN-ISO/IEC 17020	Conformity assessment — Requirements for the operation of various types of bodies performing inspection
NEN-EN-ISO/IEC 17021-1	Conformity assessment — Requirements for bodies providing audit and certification of management systems
NEN-EN-ISO/IEC 17025 + C1:1:2007	General requirements for the competence of testing and calibration laboratories
NEN-EN-ISO/IEC 17065	Conformity assessment — Requirements for bodies certifying products, processes and services
NEN-EN 1382:2016	Timber Constructions - Test Methods - Withdrawal capacity of Timber Fasteners in Timber Constructions
NEN-EN 844-11:1998	Round and sawn timber - Terminology - Part 11: Terms relating to degrade by insects
AD 0814: 2016	Film-forming coatings for application on timber
AD 0819: 2010	Connection techniques in timber facade features
SKH Publication 99-05: 2018	List of approved timber types for application in facade carpentry.
SKH Publication 05-01: 2018	Determining the adhesion of paints to wood

ANNEX 1 Test pieces for tests as described in section 4

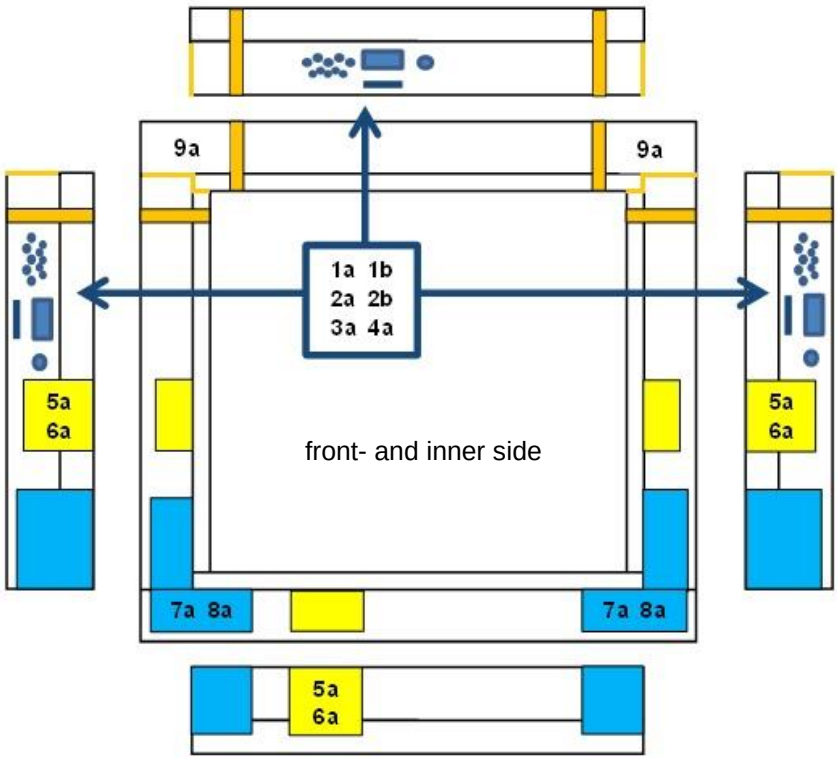
Frame test pieces, where frame corners are manufactured using a PVAc glue for the provisions described in sections 4.2 through 4.6.

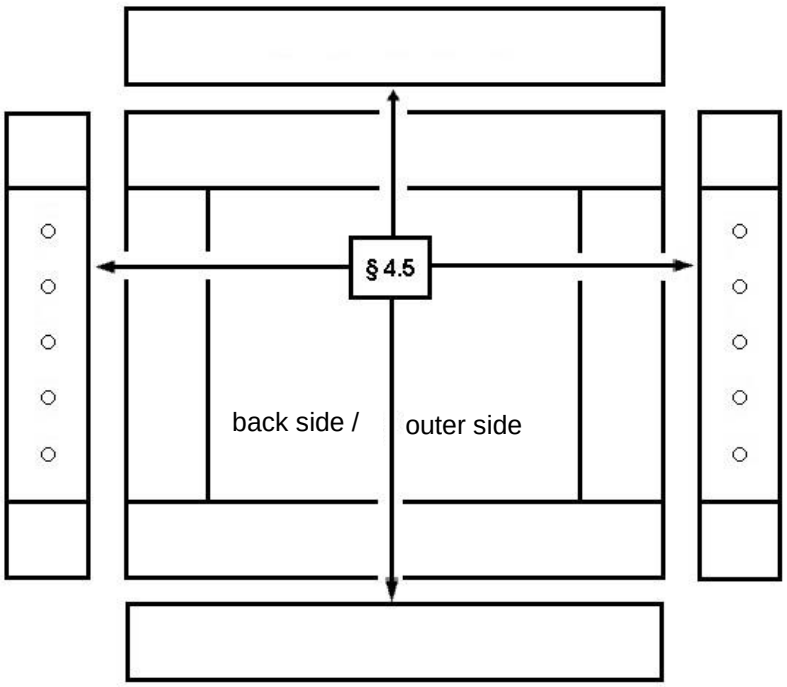
Recesses for the provisions described in sections 4.2 though 4.6 for category **1a, 1b, 2a, 2b, 3a** and **4a,** are shown below (for category 1b only number 1 and for category 2b only number 2 is required to be repaired).
1: Five holes measuring 30 mm deep and Ø 2 mm
2: Five holes measuring 30 mm deep and Ø 5 mm
3: A U-groove (burr) measuring 50 x 5 x 5* mm (L x W x D)
4: A U-groove (round head) measuring 50 x 24 x 20* mm (L x W x D)
5: A hold measuring 30 mm deep and Ø 15 mm (n/a for smoothing materials)
These recesses are applied in stiles and transoms or in solid blocks measuring (500 mm x 70 mm x 56 mm, L x W x D).
* *For smoothing materials a depth of 2 mm is used*

Recesses for the provisions described in sections 4.2 through 4.6 for categories **5a and 6a**.
6: One recess measuring 70 mm x 30 mm x 35 mm (L x W x D) for holes < 75 cm^3 or one recess measuring 200 mm x 30 mm x 35 mm (L x W x D) for holes measuring 75 – 200 cm^3.
This recess is applied in stiles and transoms or in solid blocks measuring (500 mm x 70 mm x 56 mm, L x W x D).

Recesses for the provisions described in sections 4.2 through 4.6 for categories **7a and 8a.**
7: One recess measuring 70 mm x 30 mm x 35 mm (L x W x D) for repairs < 75 cm^3 or one recess measuring 200 x 30 x 35 mm (L x W x D) or 200 cm^3 in the connection up to the first slat and 40 mm deep in the sill and stile for repairs of 75 – 200 cm^3.
This recess is applied in the angle connection in the sub-sill.

Recesses for the provisions described in sections 4.2 through 4.6 for category **9a**
8: Part replacement of complete angle connections up to 40 mm in stile and sill
These are applied in angle connections in the transom. Moreover, the connection must be preventatively repaired (reveal, up to the groove and front side of frame)
Recesses for the screw-withdrawal capacity test are, preferably, applied in spruce *(Picea abies)* beams measuring 540 x 50 x 50 mm (L x W x D) in which 5 centred drill holes can then be made. In the alternative, the recesses can be made in the same frame, on the outside (spacer side) of the stiles, as shown schematically in the image below




§ 4.5
back side /
outer side