



# Quality Mark TMT



# Certification Programme

## 1 Principles

Objective of product certification is to create confidence at consumers and users that

- certified products are manufactured under regularly conditions and
- certified products fulfil defined requirements.

This is confirmed by EPH as an independent and competent third party. The certification body of EPH is accredited by the Deutsche Akkreditierungsstelle GmbH (DAkKS) according to EN ISO/IEC 17065; the test laboratory of EPH is accredited by DAkKS according to EN ISO/IEC 17025. The certification programme "Quality Mark TMT" is oriented towards the principles of EN ISO/IEC 17067.

The certification programme "Quality Mark TMT" is a specific certification system for thermally modified timber (TMT) according to definition given in chapter 2. Owner of the programme is the Entwicklungs- und Prüflabor Holztechnologie GmbH, Zellescher Weg 24, 01217 Dresden, Germany (hereinafter EPH). This certification programme refers to applicants within the certification procedure, for certified enterprises (producers) as well as for all persons which perform tasks within this certification programme.

For the procedures of inspection, testing, certification and surveillance, the General Terms and Conditions of EPH as well as the Regulations on using marks of EPH in their valid versions apply.

## 2 Object

Object of the certification is thermally modified timber, which is manufactured by exposing the timber to elevated temperatures between 160 °C und 230 °C and a reduced oxygen availability. Objective of modification is to improve specific wood properties permanently and throughout (see definition of CEN/TS 15679). These are e.g. increased biological durability (resistance against wood-decay fungi), increased dimensional stability, reduced swelling and shrinkage, and darker colour shades. The technical abbreviation TMT, derived from thermally modified timber, is internationally accepted and used. TMT is no protected trademark.

The "Quality Mark TMT" refers to a specific TMT, determined by process type, production facility, wood species, grading (if applicable), and treatment intensity or treatment level.

The applicant is usually a manufacturer of thermally modified timber. In a single case, this can be an enterprise without an own production plant, which appears on the market as a producer and works with a sub-contracting producer. The certification body will decide, whether a certification is possible. Between applicant and sub-contractor, provisions on treatment and quality must be agreed.

The certification is carried out for products which are manufactured within a regular production.

## 3 Scope

The "Quality Mark TMT" is issued for products, which are intended for application in exterior use (for definitions of use classes, see EN 335).

## 4 Procedure

The certification includes 3 general elements:

1. Inspection of production facilities and of factory production control
2. Initial type testing on important product/material properties
3. Surveillance testing within the 3rd year after issue of certificate

The certification procedure is performed by the certification body of EPH and includes following steps:

- Compiling of quotation, basing on application of producer and currently valid certification programme
- Placing of order (confirmed quotation as contractual basis for certification and surveillance)
- Initial inspection of production site and sampling for initial type test (ITT)
- Initial type tests (ITT) according to valid standards by accredited test laboratory of EPH
- Compiling of report on inspection and; recommendation for certification decision
- Decision by the certification body on certification granting of, based on results of inspection and ITT
- Provision of surveillance report, test certificate and – with positive results – of certification deed.

The certification is valid for a period of 5 years. Within the 3rd year after issuing, a mid-term surveillance must be carried, out including a reduced scope of tests. Considering the surveillance report, the certification body will decide on perpetuation of certification. To continue with a further certification period, the initial type testing must be done again. If all requirements are fulfilled, the certificate will be issued for another 5 years.

## 5 Initial inspection

By initial inspection of the production facilities is to be verified, whether the producer fulfils the basic requirements on a factory production control (FPC), which are specified in a checklist (provided in advance). FPC shall include rules to all important process steps, preferably in kind of a quality manual. The inspection is performed either by a staff member or a representative of EPH.

## 6 Initial type testing (ITT)

### 6.1 General

ITT is performed with samples from 3 production (kiln) batches. Accordingly, the results are documented separately. If requirements were not fulfilled, a repeat test (to be charged) can be made. Information about test methods and results is provided in the surveillance report and the test certificate (deed). This contains summarised information about test methods and results on one page.

### 6.2 Sampling and material need

Sampling is performed usually in frame of the initial inspection. The material (usually board sections) must be provided by the producer free of charge in a sufficient amount. Following requirements apply:

- random sampling of boards from 3 production (kiln) batches from original stack,
- marking of each single board to allocate it to the kiln batch
- specification of the batches (batch control number, production date, treatment parameters etc.),
- documentation of sampling (blank form to be used optionally is provided by EPH),

From each production (kiln) batch, **20 boards** are required (total 60 boards) with

- minimum thickness of 25 mm for planed and 30 mm for rough-sawn boards,
- minimum length of 1200 mm. Additionally, 4 boards from untreated material of the same wood species must be provided as reference material for ASE test

### 6.3 Wood quality

Procedure: Wood quality is assessed at the boards before cutting of specimens.

- Requirements:
- at least 90 % of samples (boards) are free from pith
  - at least 80 % of samples are free from inner cracks

### 6.4 Physical properties

- Procedure:
- Raw density in climate 20 °C / 65 % rH (DIN 52182)
  - Equilibrium moisture content in climate 20 °C / 65 % rH ( EN 13183-1)
  - Modulus of elasticity (MOE) and modulus of rupture (MOR) by 4-point bending test (EN 408); testing preferably flatwise, with the original profile
  - Maximum swelling ratio  $\alpha_{\max}$  radial and tangential (DIN 52184)
  - Anti-swelling efficiency, ASE<sup>1</sup> (IHD working instruction AA-20-38)

Results: Results are given by arithmetic mean  $\bar{x}$ , coefficient of variation, and 5 % quantile

Notes: Physical properties are determined from at least 5 specimens per batch, whereby each specimen originates from a separate board.  
The results of the bending tests refer to the gross section, i.e. including grooves or chamfers; thus, the values reflect product and not material properties.

### 6.5 Biological durability

The durability against wood-decay fungi is an important property in outdoor application. TMT products are usually used up to use class 3.2 (EN 335), i.e. out of ground, but exposed to prolonged wetting. According to EN 350, the biological durability is to be tested against wood-decaying basidiomycete fungi.

Procedure: EN 113-2 with three test fungi; leaching exposure prior to biological test acc. to EN 84.

Requirements: For exterior application, the biological durability must generally be at least of durability class DC 3 "moderately durable". Required DC for the use classes are:

use class (UC) acc. to EN 335	minimum biological durability class (DC)
UC 3.1	DC 3 "moderately durable"
UC 3.2	DC 2 "durable"

### 6.6 Further properties to be tested optionally

Depending on possible requirements and conditions of use, several properties could be of interest and could be determined additionally (see table below).

The additional tests are included in the report and the test certificate (deed).

<sup>1</sup> ASE or anti-swelling efficiency expresses the relative reduction of swelling due to modification. The ASE value expresses the percentage ratio of the maximum swelling ratio  $\alpha_{\max}$  of the modified wood compared to the untreated wood after 14 d water storage.

Additional property, test method	Possible reason for testing
biological durability against soft rot fungi CEN/TS 15083-2 (in future EN 807-2)	estimate performance under longer exposure to wetness, dust accumulation
impact bending strength DIN 52189-1	dynamic loads, use in public areas
surface (Brinell) hardness EN 1534	use in public areas
reaction to fire EN 13501-1, EN ISO 11925-2, EN ISO 9239-1	as comparison to untreated wood; use in public areas, balcony decking, façades
anti-slip properties CEN/TS 15676, DIN 51130, DIN 51131	use in public areas or due to requirements on slipperiness (slippery fastness)
screw withdrawal resistance EN 320	use as substructure, in window scantlings

## 7 Surveillance testing

### 7.1 General

Surveillance tests are performed within the 3rd year after issue of certification. The producer receives a report with the results and the decision about confirmation of certification. If requirements were not fulfilled, a repeat test (to be charged) can be made. If requirements are not fulfilled again, the certification will be cancelled and the external surveillance stopped, until new test results are available.

### 7.2 Sampling and material need

Sampling and shipping of samples to EPH is to be done by the client. The sampling of a representative selection of pieces is performed analogously to the ITT sampling, but from 2 production (kiln) batches. From each production (kiln) batch, **10 boards** are required (total 20 boards) with

- minimum thickness of 25 mm for planed and 30 mm for rough-sawn boards,
- minimum length of 1200 mm.

### 7.3 Wood quality

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Procedure: Wood quality is assessed at the boards before cutting of specimens.

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Requirements: analogue to initial type test

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### 7.4 Physical tests

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Procedure:

- Raw density in climate 20 °C / 65 % rH (DIN 52182)
- Equilibrium moisture content in climate 20 °C / 65 % rH ( EN 13183-1)
- Maximum swelling ratio  $\alpha_{\max}$  radial and tangential (DIN 52184); ASE can be calculated using the value for untreated wood determined within ITT

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Requirements: The mean values (based on single values from all batches) of density and maximum swelling shall not be lower than 20 % of the corresponding ITT values.

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## **8 Trademarks and use of trademarks**

The trademarks are to be used according to the provisions of EPH (related document). The trademarks include a word/figurative mark and a seal.

The word-figurative mark "TMT" (annex 1 fig. 1) is registered as EU community trade mark per 30.01.2006 under no. 004879433; owned by EPH. The seal (annex 1 fig. 2) contains a word/figurative mark and the web address of the certification body.

## **9 Obligations of the producer**

On demand of third parties (customers, legal authorities), the producer has to provide basic information (wood species incl. code acc. to EN 13556, treatment level) and test results (e.g. surveillance report, test certificate, data sheet, technical leaflet).

The certification body shall be informed immediately by the certificate user, if

- process or plant of production are changed substantially,
- complaints are associated with certification,
- the producer has information about violations of third parties against use of trademarks or misuse of trademarks, seals, certificates, or other certification documents.

## **10 Validation of certification**

The certification and the permission to use of trademarks are valid over a period of 5 years, under the condition of a successful surveillance tests within the 3rd year after issue of certificate. If the requirements were not fulfilled, the certification is cancelled. The producer is no further permitted to use trademarks or certificates or to advertise with it.

After 5 years or in case of substantial modifications of process or plant, the initial type testing must be performed again.

## **11 Impartiality, confidentiality, access to information**

The certification body is working neutral and impartial. Dealing with confidential information is regulated in the General Terms and Conditions of EPH. According to EN ISO/IEC 17065, the certification body has to provide information on request, which concern the certification programme, including procedures of evaluation, rules and procedures of granting and maintenance of certification, extension or limitation of the scope of certification, suspension, withdrawal or refusal of certification.

## **12 Supplementary provisions**

The certification body decides in the individual case, whether test reports from third laboratories are accepted. The laboratories have to be accredited for the relevant test method, and have to provide documents, which contain information about competence of test laboratory and about test procedure. The additional costs are at the expense of the applicant.

Complaints and objections against certification procedure or certification decision have to be submitted in written form to the certification body or headquarter of EPH. Complaints and objections are dealt according to the procedures of the quality management system of EPH.

It is not possible for the applicant to take legal action to get the certification.

## 13 Implementation


Dresden, 09.12.2021

Compiled:   
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Dr. Wolfram Scheiding  
Surveillance Body

Dresden, 09.12.2021

Reviewed:   
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Dipl.-Ing. Heiko Hofmann  
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Dresden, 09.12.2021

Approved:   
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### Annexes

- Annex 1 Word/figurative mark and seal
- Annex 2 Technical regulations and standards

### Related documents

- Check list for factory inspection
- Sampling form
- Regulations on using marks of EPH, version of November 2020

**Annex 1** Word/figurative mark and seal

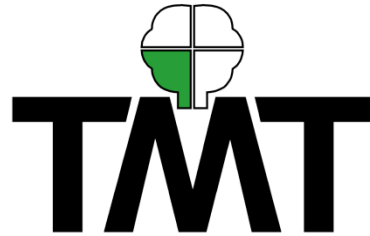


Abb. 1: Word/figurative mark "TMT"



Abb. 2: Seal "Quality Mark TMT" category "exterior"



## Annex 2: Relevant standards

AA-20-38 Determination of linear swelling ratio and anti-swelling efficiency (ASE). Working instruction, Institute of Wood Technology Dresden 2012

EN 84:2020-10, Wood preservatives. Accelerated ageing of treated wood prior to biological testing. Leaching procedure

EN 113-2:2021-02, Durability of wood and wood-based products - Test method against wood destroying basidiomycetes - Part 2: Assessment of inherent or enhanced durability

EN 320:2011-07, Particleboards and fibreboards - Determination of resistance to axial withdrawal of screws

EN 335:2013-06, Durability of wood and wood-based products – Use classes: definitions, application to solid wood and wood-based products

EN 350:2016-12, Durability of wood and wood-based products – Testing and classification of the durability to biological agents of wood and wood-based materials

EN 408:2012-10 Timber structures - Structural timber and glued laminated timber – Determination of some physical and mechanical properties

EN 1534:2020-03, Wood flooring and parquet - Determination of resistance to indentation - Test method

EN ISO 9239-1:2021-11, Reaction to fire tests for floorings - Part 1: Determination of the burning behaviour using a radiant heat source (ISO 9239-1:2010)

EN ISO 11925-2:2020-07, Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test (ISO 11925-2:2020)

EN 13183-1:2002 Moisture content of a piece of sawn timber – Part 1: Determination by oven dry method

EN 13501-1:2019-05, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests; German version EN 13501-1:2018

EN 13556:2003-10, Round and sawn timber – Nomenclature of timbers used in Europe

CEN/TS 15083-2:2005-10, Determination of the natural durability of solid wood against wood-destroying fungi, test methods. Part 2: Soft rotting micro-fungi (in future EN 807-2)

CEN/TS 15676:2008-02, Wood flooring - Slip resistance - Pendulum test

CEN/TS 15679:2008-03, Thermal Modified Timber - Definitions and characteristics

EN ISO/IEC 17025:2018-03, Conformity assessment. General requirements for the competence of testing and calibration laboratories

EN ISO/IEC 17065:2013-01, Conformity assessment - Requirements for bodies certifying products, processes and services

EN ISO/IEC 17067:2013-12, Conformity assessment - Fundamentals of product certification and guidelines for product certification schemes (ISO/IEC 17067:2013); German and English version

DIN 51130:2014-02, Testing of floor coverings – Determination of the anti-slip property – Workrooms and fields of activities with slip danger – Walking method - Ramp test

DIN 51131:2014-02, Testing of floor coverings – Determination of the anti-slip property – Method for measurement of the sliding friction coefficient

DIN 52184:1979-05, Testing of wood. Determination of swelling and shrinkage

DIN 52189-1:1981-12, Testing of wood. Determination of impact bending strength