# CLASSIFICATION REPORT OF FIRE RESISTANCE
## IN ACCORDANCE WITH ÖNORM EN 13501-2:2016

24.08.2021
POS/FÜI

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|---|---|
| *Customer*: | Stora Enso Wood Products GmbH<br>Brand 44<br>AT-3531 Brand |
| Prepared by: | Holzforschung Austria<br>Franz Grill-Straße 7<br>AT-1030 Wien |
| Subject: | Load-bearing floor and roof components<br>of cross laminated timber<br>„Stora Enso CLT ≥ 100 mm“ planked and unplanked<br>Fire resistance REI 60 |
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# 1. Introduction

This classification report on fire resistance defines the classification of load-bearing floor and roof components of cross laminated timber "Stora Enso CLT 100 mm" planked and unplanked, in compliance with the process according to the standard ÖNORM EN 13501-2:2016.

# 2. Details on the classified product

## 2.1. General

The load-bearing floor and roof components of cross laminated timber "Stora Enso CLT 100 mm" planked and unplanked belong to the product type of load-bearing, insulating solid timber constructions.

## 2.2. Description

Table 1: components to be classified

| planking<br>mm<br>above/external<br>non exposed to fire | cross laminated timber<br>dimensions (layers)<br>mm |
|---|---|
| ≥ 12,5 GKF*) | CLT 100 L3s 100 mm (3s - 30 40 30)<br>according ETA-14/0349<br>AbZ: Z-9.1-559 |
| --- | CLT 120 L5s 120 mm (5s - 30 20 20 20 30)<br>according ETA-14/0349<br>AbZ: Z-9.1-559 |
| --- | CLT 140 L5s 140 mm (5s - 40 20 20 20 40)<br>according ETA-14/0349<br>AbZ: Z-9.1-559 |

*) according to ÖNORM B 3410; DIN 18180; type DF according to ÖNORM EN 520; density ≥ 800 kg/m³ or gypsum fibre board according to ÖNORM EN 15283-2; density ≥ 1000 kg/m³

# 3. Test reports/reports on the extended area of application and test result for verification of the classification

## 3.1. Description of the underlying tested components

Table 2: tested cross laminated timber components

| short name | planking mm non exposed side to fire | cross laminated timber dimensions mm (layers) |
|---|---|---|
| MD 1.4 | 12,5 GKF*) | CLT 97 (27,5 42 27,5) |
| --- | --- | CLT 120 (30 20 20 20 30) |
| --- | --- | CLT 140 (40 20 20 20 40) |

*) according to ÖNORM B 3410; DIN 18180; type DF according to ÖNORM EN 520; density ≥ 800 kg/m³

## 3.2. Test reports

Table 3: underlying test reports

| test laboratory | name of the costumer | test report n° | standard and issue date | type of product/ test specimen |
|---|---|---|---|---|
| IBS [1)] | Holzforschung Austria | IBS 10021814 | ÖNORM EN 1365-2:2000-06<br>ÖNORM EN 1363-1:2000-01 | load -bearing floor component of cross laminated timber with 3 layers CLT 3s 97 mm, planked with 12,5 mm gypsum board above- |
| IBS [1)] | Stora Enso Wood Products GmbH 3531 Brand | IBS 321031505-1 | ÖNORM EN 1365-2:2014-12<br>ÖNORM EN 1363-1:2020-04 | load -bearing floor component of cross laminated timber with 5 layers CLT 120 L5s |
| CSI [2)] | Lian Ho Lee Construction (Private) Limited 367991 Singapore | No 0045/DC/RFM/ 19_2 | EN 1365-2:2014<br>EN 1363-1:2012 | Classification Report “Loadbearing floor consisting of wood panel in cross laminated timber” |

1) IBS – IBS – Institut für Brandschutztechnik und Sicherheitsforschung GesmbH, Akkreditierte Prüf-, Inspektions- und Zertifizierungsstelle, 4020 Linz

2) CSI – ANIMQ GROUP COMPANY, Italy 20021 Bollate

The test reports listed under point 3.2. according to ÖNORM EN 1365-2 and 1363-1 were partly carried out according to older standards (see table 3).
The current standards, ÖNORM EN 1365-2: 2014 and ÖNORM EN 1363-1:2020, essentially contain changes in terminology, new definitions and concretisations compared to the older versions.
According to information from the testing body, these changes have no effect on the results in the test reports listed and can therefore still be used for the classification of fire resistance.

### 3.3. Results

Table 4: results

| **testing process:**<br>**ÖNORM EN 1365-2: 2000-06**<br>**ÖNORM EN 1363-1: 2000-01** | **parameters** | **results** |
|---|---|---|
| test report n°<br>IBS 10021814 | *load applied*<br>*supporting structure* | 7,38 kN total load<br>0,6 kN/m² |
| | *load-bearing capacity* | 63 min |
| | *integrity* | 63 min |
| | *thermal insulation* | 63 min |
| **testing process:**<br>**EN 1365-2: 2014**<br>**EN 1363-1: 2012** | **parameters** | **results** |
| classification report n°<br>CSI 0045/DC/RFM/19_2 | *load applied*<br>*supporting structure* | 40,7 kN total load<br>11,68 kN/m² |
| | *load-bearing capacity* | 85 min |
| | *integrity* | 86 min |
| | *thermal insulation* | 86 min |
| **testing process:**<br>**ÖNORM EN 1365-2: 2014-12**<br>**ÖNORM EN 1363-1: 2020-04** | **parameters** | **results** |
| test report n°.<br>IBS 321031505-1 | *load applied*<br>*supporting structure* | 58,17 kN total load<br>5,82 kN/m² |
| | *load-bearing capacity* | 63 min |
| | *integrity* | 63 min |
| | *thermal insulation* | 63 min |

## 4. Classification and area of application

### 4.1. Classification reference

This classification was carried out in compliance with ÖNORM EN 13501-2:2016-11, clause 7.3.3..

### 4.2. Classification

The load-bearing floor and roof components of cross laminated timber are classified according to the following combinations of performance parameters and classes.

Table 5: classification

| planking mm above/ external<br><br>non exposed to fire | cross laminated timber (CLT) | applied load | | | | | test labera-tory | report n° | classification |
|---|---|---|---|---|---|---|---|---|---|
| | | span<br><br>[m] | CLT width<br><br>[m] | $E_{d,fi}$<br><br>[kN/m²] | max. moment<br><br>[kNm/m] | shear force<br><br>[kN/m] | | | b → a (down → above, internal → ex-ternal) |
| ≥ 12,5 GKF*) | CLT 100 L3s 100 mm (3s - 30 40 30) according ETA-14/0349 AbZ: Z-9.1-559 | 5,00 | 3,00 | 0,6 | 1,9 | 2,8 | IBS | IBS 10021814 | REI 60 |
| --- | CLT 120 L5s 120 mm (5s - 30 20 20 20 30) according ETA-14/0349 AbZ: Z-9.1-559 | 4,70 | 2,85 | 5,82 | 16,1 | 10,3 | IBS | IBS 321031505-1 | REI 60 |
| --- | CLT 140 L5s 140 mm (5s - 40 20 20 20 40) according ETA-14/0349 AbZ: Z-9.1-559 | 4,13 | 2,25 | 11,68 | 25 | 18 | CSI | No 0045/DC/RFM/ 19_2 | REI 60 |

*) according to ÖNORM B 3410; DIN 18180; type DF according to ÖNORM EN 520; density ≥ 800 kg/m³ or gypsum fibre board according to ÖNORM EN 15283-2; density ≥ 1000 kg/m³

### 4.3. Area of application

This classification is valid for the following practical applications:

The results of the fire tests can be applied directly to similar structures on which one or several of the changes described below are carried out and on which the design continues to fulfil the requirements of the respective design standard with a view to their stiffness and strength:

- The maximum moments and shear forces, which when calculated on the same basis as the test load, shall not exceed the ones tested.
- Regarding to sub-ceiling systems: additional direct plankings or additional plankings with installation levels on the inner surface of the room are possible
- Regarding to the inclination of roof structures:
  - For roofs with one or more purlins, the results apply to a practical application for pitches from 0° to 80°.
  - For gable roofs or monopitch roofs, the results apply to a practical application for pitches from 0° to 25°.

## 5. Limitations

### 5.1. General

If one of the fundamental test and evaluation criteria changes or the customer makes prohibited technical changes to the product, this classification report shall cease to be valid.

### 5.2. Warning notice

This classification document does not constitute a type approval or certification of the product.

HOLZFORSCHUNG AUSTRIA

DI Sylvia Polleres
*Authorised signatory and technical consultant*

DI Simon Winter

*This report was approved electronically in accordance with an internal HFA process by the designated authorized signatory, traceable and documented.*

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|---|---|---|
| Akkreditierung Austria A 0055 ISO/IEC 17020 | inspection | • ÖNORM EN 13501-2 |

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