Fraunhofer WKI | Riedenkamp 3 | 38108 Braunschweig | Germany

Dynea AS - Austrain Branch
Hafenstraße 77
3500 Krems
Austria

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| Your reference | Your message dated | Our reference | |
|---|---|---|---|
| | | Hus | Braunschweig, January 10, 2024 |

# Test report No. QA-2024-0009-1

replaces test report QA-2024-0009 dated January 9, 2023

**Customer:** Dynea AS - Austrain Branch
Hafenstraße 77
3500 Krems (Austria)

**Product name:** CLT-5ply

**WKI-ID-No.:** 0288_2023

**Receipt of item:** November 20, 2023

**Start of measurement:** November 23, 2023

**Objective of the measurement:** Determination of the formaldehyde release according to EN 717-1

**Content of the test report:**



This test report comprises 4 pages and 3 enclosures (2 table, 1 figure).

This test report is not permitted to be published incompletely. A publication in extracts is in any case subject to the previous consent of Fraunhofer Institute for Wood Research, Wilhelm-Klauditz-Institut WKI, Riedenkamp 3 in 38108 Braunschweig (Germany). The results exclusively refer to the item of the test. The test item was used up.

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## 1. Task

The Fraunhofer Institute for Wood Research, Wilhelm-Klauditz-Institut WKI, was entrusted by Dynea AS - Austrain Branch in 3500 Krems (Austria) to determine the formaldehyde emission of a wood-based panel according to chamber method EN 717-1:2005 "Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method".

### 1.2 Task | Evaluation of measured value

As ordered the measured value shall be evaluated as follows:

**No evaluation of the measured value formaldehyde**

1.2.1 [X] Determination of material characteristics,
statements on conformity with a requirement are not part of the test report.

**Evaluation of the measured value formaldehyde under consideration of the limit value**

1.2.2 [ ] Chemicals Prohibition Ordinance - ChemVerbotsV - Annex §1, Section 3

1.2.3 [ ] DIN EN 13986 „Wood-based panels for use in building - Properties, evaluation of conformity and marking of conformity and marking"; German version DIN EN 13986:2015-06

### 1.3 Task | Evaluation of measured value – Consideration of measurement uncertainty

According to the order, the measurement results are to be evaluated taking into account the decision rule applicable to the measurement procedure.Fraunhofer WKI decision rule are to be evaluated as follows:

1.3.1 [ ] Evaluation of the results shall be carried out according to the above requirement / standard.
No measurement uncertainties shall be considered. The requirements shall be considered fulfilled if the measured value complies with the requirements for the limit value.

1.3.2 [ ] Evaluation shall be made considering the measurement uncertainty
The requirements are considered fulfilled if the measurement result (measured value incl. measurement uncertainty) complies with the limit value minus the measurement uncertainty at the most.

## 2. Test item and data of receipt

| | |
|---|---|
| Product: | cross laminated timber, uncoated |
| Product name: | CLT-5ply |
| Thickness [mm]: | 100 |
| Manufacturer: | Noritec Holzindustrie GmbH |
| Production date ref. customer: | October 25, 2023 |
| WKI-ID-No.: | 0288_2023 |

The test item was sent to the Fraunhofer WKI for measurement.
Selection and marking was done

| | |
|---|---|
| X | selection and marking by the customer |
| | selection corresponding to Fraunhofer WKI guidelines and marking by the customer |
| | other: |

The test item arrived at Fraunhofer WKI packed in polyethylene foil on November 20, 2023, was marked with WKI-ID-No. "0288_2023" and stored under room conditions until the measurement starts on November 23, 2023.

## 3. Execution of the measurement

For the determination of formaldehyde release the test pieces were placed vertical and approximately in the centre of the closed chamber, with their surfaces parallel to the direction of the air flow, and separated by not less than 200 mm. The summary of chamber parameter, number of test pieces and size of the test pieces are mentioned in table 1.

According to DIN EN 16351: 2021-06 "Timber structures - Cross laminated timber - Requirements", the ratio of unsealed surfaces of the cross-sections to the total area of the cross-sections was set to 1/9 by partially sealing the edges using self-adhesive aluminium tape before measurement.

The concentration of formaldehyde in the chamber was measured twice a day by drawing app. 0.12 $m^3$ air from the chamber through gas washing bottles filled with absorption solution. The formaldehyde content of the aqueous solution was determined photometrically or fluorometrically by the acetyl acetone method. Sampling has been periodically continued until the formaldehyde concentration in the chamber has reached a steady-state.

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## 4. Measured quantity value

For the item sample named "CLT-5ply – Thickness: 100 mm" of Dynea AS - Austrain Branch in 3500 Krems (Austria) tested according to EN 717-1 following formaldehyde release was determined in the test chamber:

| Measurement period | Measured quantity value formaldehyde release in the chamber EN 717-1 | |
|---|---|---|
| [h] | [mg/m³] | [ppm] |
| 363 | 0.019 | 0.015 |

The relative uncertainty of measurement calculated by Fraunhofer WKI for the applied test method is ± 3.6%.

The course of formaldehyde release is shown in figure 1 enclosed to the test report. The blank value of the chamber before starting the measurement was determined with ≤ 0.006 mg/m³ resp. 0.005 ppm (1 ppm ≙ 1.24 mg HCHO/m³ air at 23°C and 1013 hPa).

K. Huslage

Kathrin Huslage
Official in charge

Accredited Testing Laboratory Wilhelm-Klauditz-Institut WKI Braunschweig in accordance with ISO/IEC 17025

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