

Test Report



Number	19-000005-PR02 (PB-K15-09-en-01)
Owner (Client)	Dana Lim A/S Kobenhavnsvej 220 4600 Koge Denmark
Product	Wood adhesive
Designation	System: One component Shipping name: DANAFIX 448/ PVAc/604
Details	Manufacturer Dana Lim A/S, - Koge; Hardener None; Batch No. 91119706
Special features	-/-
Order	Determination of tensile shear strength of lap joints according to durability class D4 (EN 204)
Contents	The test report contains a total of 5 pages and annexes (2 pages).
Note	The test report shall only be published in its unabbreviated form. The "Guidance Sheet for the Use of ift Test Documents" applies.

No. 19-000005-PR02 (PB-K15-09-en-01) dated 24.04.2019
Owner (client) Dana Lim A/S, 4600 Koge (Denmark)

Determination of tensile shear strength of lap joints according to durability class D4 (EN 204)



1 Execution

1.1 Sampling and product description

The following details have been presented to ift:

Sampler: Dana Lim A/S, 4600 Koge (Denmark)
Sampling date: 19.03.2019
Evidence: A sampling report has been presented to ift.
Date of delivery: 20.03.2019
Description: For product identification the specimen tested is described/represented in the Annex. Material specifications, item numbers and other company-specific descriptions are details provided by the client and will be checked for plausibility by ift.

Test specimen no.: 19-000005-PK01 / WE: 47919-001

1.2 Basic documents *) of the procedures

EN 204:2016 - 08

Classification of thermoplastic wood adhesives for non-structural applications

EN 205:2016 - 08

Adhesives - Wood adhesives for non-structural applications - Determination of tensile shear strength of lap joints

*) and the relevant national versions, e.g. DIN EN

1.3 Short description of the procedures

Determination of tensile shear strength of lap joints

The test pieces for the tensile shear strength were prepared in accordance with the procedure described in EN 205. According to the adhesive manufacturer's instructions the test pieces were prepared at ift as symmetrical bonded single lap joints between two symmetrical wooden adherends - with thin glue line.

Depending on the durability class the test pieces were subjected to specified conditioning treatments and strained to rupture by a tensile force parallel to the grain.

The test sequence for the commissioned durability class D4 according to EN 204 was as follows:

Testing of thermoplastic wood adhesives - storage sequence 1 according to EN 204:2016-08

This test included the tensile shear strength of the test pieces in new condition.

Testing of thermoplastic wood adhesives - storage sequence 3 according to EN 204:2016-08

This test included the conditioning of the test pieces for 4 days in water at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$. Afterwards the tensile strength of all test pieces being in wet condition was tested.

Testing of thermoplastic wood adhesives - storage sequence 5 according to EN 204:2016-08

This test included the conditioning of the test pieces in boiling water for 6 hours and in water for 2 hours at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$. Afterwards the tensile strength of all test pieces being in wet condition was tested.

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2 Detailed results

Classification of thermoplastic wood adhesives for non-structural applications

Project-No.

19-000005-PR02

Basis of testing

EN 204:2016-08
 Classification of thermoplastic
 wood adhesives for non-
 structural applications

Test equipment used

TM/022509 - Warmwasserbad
 ZPM/022561 -
 Zugprüfmaschine Zwick 1445
 Pst/022040 - Klimakammer

Test specimen

Danafix 448

Test specimen n°

47919-001

Date of test

15.04.2019

Responsible test engineer

Stefan Hehn

Testing personnel

Andreas Seebauer

Implementation of tests

Deviations:

There have been no deviations
 from the test method as
 specified in the standard/basis.

Ambient conditions:

The ambient conditions are in
 accordance with the
 standard/basis requirements.

Measurement data/Results

Test no.	D4-1	D4-3	D4-5
Measuring data	N/mm ²	N/mm ²	N/mm ²
1	13.38	5.96	7.10
2	12.89	6.43	6.94
3	12.70	6.33	7.15
4	12.88	5.85	7.09
5	13.02	5.23	6.89
6	13.36	5.63	7.31
7	13.94	6.33	7.44
8	12.73	5.33	7.29
9	13.07	6.19	7.10
10	12.44	5.13	7.01
11	13.02	7.26	6.70
12	13.64	7.71	7.65
13	13.23	7.28	7.28
14	14.02	7.14	7.50
15	14.07	6.92	7.28
16	13.69	7.02	6.78
17	12.88	7.48	7.28
18	13.28	7.07	7.07
19	13.15	7.36	7.11
20	13.69	7.38	7.44
Number	20	20	20
Mean value [N/mm ²]	13.25	6.55	7.17
Standard deviation [N/mm ²]	0.46	0.82	0.24
Variation coefficient [%]	3.51	12.50	3.37
Maximum [N/mm ²]	14.07	7.71	7.65
Minimum [N/mm ²]	12.44	5.13	6.70
Estimated wood rupture [%]	100	0	0

3 Summary

3.1 Result

Testing of thermoplastic wood adhesives - storage sequence 1 according to EN 204:2016-08 based on EN 205:2016-08

Average adhesion strength - storage sequence 1 = 13.3 N/mm²

Testing of thermoplastic wood adhesives - storage sequences 3 according to EN 204:2016-08 based on EN 205:2016-08

Average adhesion strength - storage sequence 3 = 6.5 N/mm²

Testing of thermoplastic wood adhesives - storage sequences 5 according to EN 204:2016-08 based on EN 205:2016-08

Average adhesion strength - storage sequence 5 = 7.2 N/mm²

3.2 Instructions for use

This test does not allow any statement to be made on further characteristics of the present structure regarding performance and quality.

The test was performed according to standard and the details for identification of the test specimen are complete; on the basis of this Test Report an "ift-Nachweis" (Evidence) can be issued.

ift Rosenheim
24.04.2019



Stefan Hehn, Dipl.-Ing. (FH)
Deputy Head of Testing Department
Laboratory for Material Testing



Andreas Seebauer
Operating Testing Officer
Material Testing

Nr./no 19-000005-PR023 PB-K15-09-en-01

Die Beschreibung des geprüften Probekörpers dient der normkonformen Identifizierung des Produkttyps, für den die festgestellten Werte gelten. Alternativ zur vorgegebenen tabellarischen Datenerfassung kann die Beschreibung auch in Form von technischen Zeichnungen, Verarbeitungsrichtlinien, Stücklisten etc. erfolgen. Zusätzliche Produktdetails bitte ergänzen.

Die Angaben sind Voraussetzung für die Erstellung eines ift-Nachweises. Nur bei Angabe aller in diesem Dokument angeforderten Daten ist ggf. eine nachträgliche Gutachtliche Stellungnahme möglich. Alle Angaben des Auftraggebers werden vom ift auf Plausibilität geprüft; ggf. festgestellte Abweichungen und/oder ergänzende Feststellungen werden dokumentiert.

The description of the specimen to be tested serves to identify, in conformity with the standards, the product type, for which the values determined will apply. Alternatively to the specified tabulated data collection, the description may also be made by technical drawings, processing instructions, parts lists, etc. Please supplement additional product details.

The details are the precondition for issuing the "ift-Nachweis". Only upon provision of all requested data subsequently requested Expert Statements may be issued. All details provided by the client will be checked for plausibility by ift, any deviations observed and/or additional findings will be documented.

Wareneingang-Nr.: 47919

ID of goods received :

ift Mitarbeiter: Stefan Hehn

ift staff member :

Alle Maßangaben in mm
All dimensions in mmNicht Zutreffendes bitte löschen.
Please delete non-appropriate.

Eigenschaft Characteristic	Angaben des Auftraggebers (unverändert) Information provided by client (unchanged)	Festgestellte Abweichungen bei ift-Kontrolle Deviations observed at ift-check
Produkt / Bauart / Komponente Product / design / component	Holzklebstoff Wood adhesive	-
Hersteller Manufacturer	DANA Lim A/S	Specification by client
Bezeichnung / Typ / Art.-Nr. Designation / type / item no.	DANAFIX 448/ PVAc/604	Specification by client
System System	One component	Specification by client
Material Material	Durability, compatibility	Specification by client
Charge Nr. Batch no.	91119706	Specification by client
Anzahl der Komponenten Number of components	1	1
Härter Hardener	NA	no
Härterzugabe Portion of hardener	NA	-
Herstelldatum Date of manufacturing	March 2019	Specification by client
Auftragsart Type of application	Zweiseitig Two-sided According to EN 204/205:2016	OK
Auftragsmenge (in g/m ²) Applied quantity (in g/m ²)	150 -180 g/m ² According to EN 204/205:2016, and EN 14257	approx. 150 g/m ²
Offene Wartezeit (in sec.) Open assembly time (in sec.)	120±10 s According to EN 204/205:2016, and EN 14257	2 min.
Geschlossene Wartezeit (in sec.) Closed assembly time (in sec.)	180±10 s According to EN 204/205:2016, and EN 14257	3 min.
Presszeit (in h) bei (20 ± 2)°C Duration of pressure (in h) at (20 ± 2)°C	2 h According to EN 204/205:2016, and EN 14257	2 h

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Eigenschaft Characteristic	Angaben des Auftraggebers (unverändert) Information provided by client (unchanged)	Festgestellte Abweichungen bei ift-Kontrolle Deviations observed at ift-check
Pressdruck (in N/mm ²) Magnitude of pressure (in N/mm ²)	0,7±0,1 N/mm ² According to EN 204/205:2016, and EN 14257	0.7 N/mm ²
Substrat Substrate	According to EN 204/205:2016, and EN 14257	-
Holzart Type of wood	Buche, ungedämpft Beech, non-damped	OK
Dichte (in kg/m ³) Density (in kg/m ³)	700 ± 100	OK
Holzfeuchte (in %) Moisture content (in %)	12 ± 1	OK
Holzdicke Thickness of wood	5	OK