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DAP-PL-1491.00

Test Report

0429-09-4

(English Version of Test Report 0429-09-3)

on

Determination of 4-Point Bending Strength according to DIN EN ISO 6872

for

**White Peaks Dental Systems GmbH & Co. KG
Langeheide 9
45239 Essen
Germany**

presented by

**Forschungsinstitut für Anorganische Werkstoffe
- Glas/Keramik - GmbH
Heinrich-Meister-Straße 2
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Germany**

June 17th, 2009

1. Test Specimen

30 beams identified by "Copran Zr", 2 mm x 4 mm x ≥ 22 mm.

2. Date of arrival

22/04/2009

3. Test realization

28/05/ - 03/06/2009

4. Testing methods

Determination of 4-point bending strength (test geometry: L = 20 mm; 4-point- $\frac{1}{4}$ -configuration, diameter of support rollers 2.5 mm, crosshead speed: 1 mm / min.) according to chapter 7.3 of DIN EN ISO 6872.

5. Sampling/sample preparation

Sampling and delivery to the FGK was under responsibility of the customer.

The specimens delivered by the customer were prepared by a cooperating institute according to chapter 7.3.2.2.2 of DIN EN ISO 6872 to the dimensions 2 mm x 4 mm x ≥ 22 mm.

6. Results

Table 1: 4-Point Bending Strength

Beam	"Copran Zr"
1	1141.875 MPa
2	1542.591 MPa
3	1490.363 MPa
4	1487.766 MPa
5	1473.291 MPa
6	1075.903 MPa
7	1135.906 MPa
8	1423.613 MPa
9	1506.872 MPa
10	1456.359 MPa
11	1457.241 MPa
12	1464.741 MPa
13	864.234 MPa
14	1298.175 MPa
15	992.541 MPa
16	1316.803 MPa
17	1412.878 MPa
18	1226.691 MPa
19	1163.878 MPa
20	1230.375 MPa
21	1303.510 MPa
22	1511.822 MPa
23	1412.663 MPa
24	1475.644 MPa
25	1164.422 MPa
26	1275.666 MPa
27	1428.356 MPa
28	1333.988 MPa
29	1272.566 MPa
30	1472.841 MPa
Median	1327.119 MPa
Standard deviation	168.9876 MPa

Figure 1: Weibull-Diagram sample "Copran Zr"

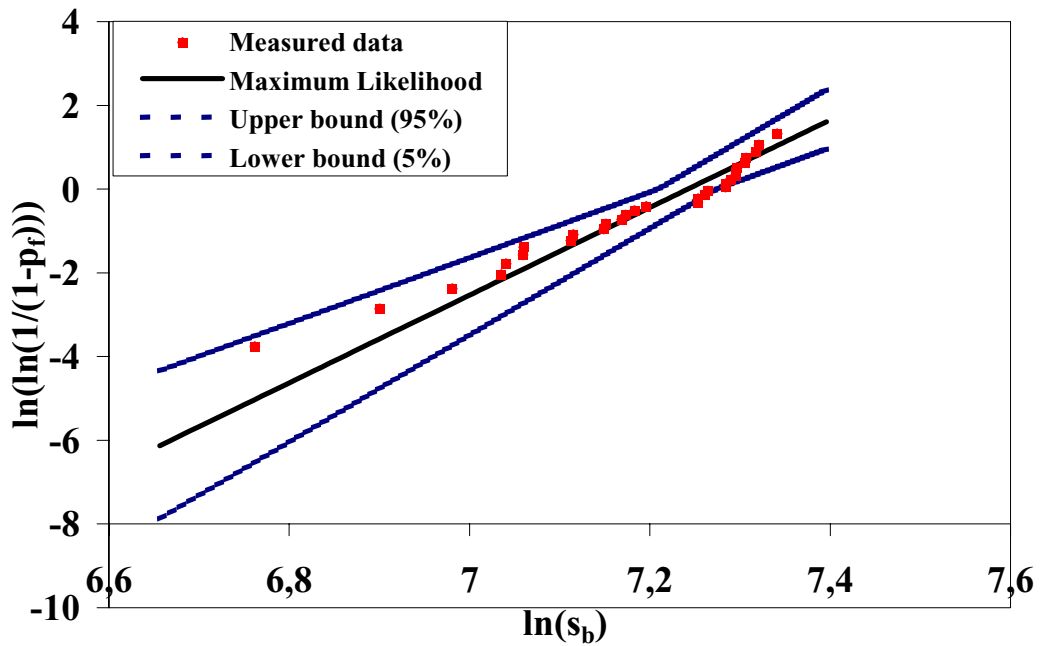


Table 2: Weibull-Analysis

Sample	"Copran Zr"
Number of tests	30
Confidence interval [%]	90
σ_0 [MPa]	1397
σ_0 , lower bound [MPa]	1352
σ_0 , upper bound [MPa]	1442
M_{unbiased}	10.0
m_{unbiased} , lower bound	7.8
m_{unbiased} , upper bound	12.8

7. Testing uncertainties

Measurement uncertainty of load cell:	1 %
Measurement uncertainty of micrometer gauge:	0.5 %

8. Epilogue

All investigations were done in view of the latest scientific-technical trends and to the best of one's knowledge and belief.

The testing results exclusively refer to the test specimen

The report consists of 5 pages.

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(Laboratory manager)

Höhr-Grenzhausen, 17/06/2009 /pf

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