tBU

Arbeitsbereich
Bauerhaltung

Gutenbergstr. 29
48268 Greven

# Test Report No. 2.1/20802/025.0.1-2006e

**General data**

Issued: 05.05.2006

Order by: **LUX ELEMENTS GmbH & Co. KG**
**An der Schusterinsel 7**
**51379 Leverkusen**

Material: **LUX ELEMENTS®-ELEMENT-EL 80**
Support element made of polystyrene hardfoam (blue) with a mortar coating (grey) reinforced on both sides with glassfibre and blunted edges
(as designated by the customer)

Order date: 21 March 2005 and 9 December 2005

Samples delivered: 3 May 2005 and 21 December 2005 (from the customer)

| Tests: | Standard | Issue |
|---|---|---|
| 1. Determination of length and width | DIN EN 822 | 11.1994 |
| 2. Determination of thickness | DIN EN 823 | 11.1994 |
| 3. Determination of squareness | DIN EN 824 | 11.1994 |
| 4. Determination of flatness | DIN EN 825 | 11.1994 |
| 5. Determination of dimensional stability under normal climatic conditions | DIN EN 1603 | 01.1997 |
| 6. Determination of dimensional stability under specified temperature and humidity conditions | DIN EN 1604 | 01.1997 |
| 7. Determination of bending behaviour | DIN EN 12089 | 08.1997 |
| 8. Determination of deformation under specified compressive load and temperature conditions | DIN EN 1605 | 01.1997 |
| 9. Determination of compression behaviour | DIN EN 826 | 05.1996 |
| 10. Determination of tensile strength perpendicular to faces | DIN EN 1607 | 01.1997 |
| 11. Determination of compressive creep | DIN EN 1606 | 01.1997 |
| 12. Determination of long term water absorption by immersion | DIN EN 12087 | 08.1997 |
| 13. Determination of thickness for floating floor insulating products | DIN EN 12431 | 08.1998 |
| 14. Determination of the apparent density | DIN EN 1602 | 01.1997 |
| 15. Determination of freeze-thaw resistance | DIN EN 12091 | 08.1997 |
| 16. Determination of water vapour transmission properties | DIN EN 12086 | 08.1997 |

The values measured hold only for the specimens used.
Results are reported to the accuracy given in the standards. In statistical evaluation, the measured accuracy is taken.

This test report comprises 13 pages and 1 appendix.
No part of this test report may be published.



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## 1. Determination of length and width in accordance with DIN EN 822 (11.1994)

### 1.1 Test parameters

Table 1: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 600 mm x 2500 mm x 80 mm (supplied dimensions) |
| Test method | The specimen is placed on a flat support and the measurement points given by DIN EN 822 are measured. |
| Evaluation | Calculation of the mean value |

### 1.2 Results

Table 2: Results of the length and width

| Test | | Single values in mm | Mean value in mm |
|---|---|---|---|
| Determination of length | $l_1$ | 2499 | 2499 |
| Determination of width | $b_1$ | 599 | 600 |
| | $b_2$ | 600 | |

## 2. Determination of thickness in accordance with DIN EN 823 (11.1994)

### 2.1 Test parameters

Table 3: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 600 mm x 2500 mm x 80 mm (supplied dimensions) |
| Test method | The specimen is placed on a flat support and the measurement points given by DIN EN 823 are measured with a proof pressure of (250 ± 5) Pa. |
| Evaluation | Calculation of the mean value |

### 2.2 Results

Table 4: Results of the thickness

| Test | | Single values in mm | Mean value in mm |
|---|---|---|---|
| Determination of thickness | $d_1$ | 79.0 | 79.0 |
| | $d_2$ | 79.0 | |
| | $d_3$ | 79.0 | |
| | $d_4$ | 79.5 | |
| | $d_5$ | 79.0 | |
| | $d_6$ | 79.5 | |

## 3. Determination of squareness in accordance with DIN EN 824 (11.1994)

### 3.1 Test parameters

Table 5: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 600 mm x 2500 mm x 80 mm (supplied dimensions) |
| Test method | The specimen is placed on a flat support, and the squareness error in is measured in length, width and thickness directions |
| Evaluation in length and width directions | The squareness error $S_b$ is calculated through the equation<br>$S_b = a_b / c$<br>$a_b$ = measured value in mm, c = length of the inner edge of the metal angle bracket |
| Evaluation in thickness direction | The squareness error $S_d$ is given by the equation<br>$S_d = a_d$<br>$a_d$ = measured value in mm |

### 3.2 Results

Table 6: Results of the squareness

| Test | | Result |
|---|---|---|
| Squareness in length and width directions | $a_b$ in mm | 2.0 |
| | c in m | 0.265 |
| | **$S_b$ in mm/m** | **7.5 mm/m** |
| Squareness in thickness direction | $a_d$ in mm | 0 |
| | **$S_d$ in mm** | **no deviation** |

## 4. Determination of flatness in accordance with DIN EN 825 (11.1994)

### 4.1 Test parameters

Table 7: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 600 mm x 2500 mm x 80 mm (supplied dimensions) |
| Test method | The specimen is placed on a flat support and the greatest difference $S_{max}$ in the width and length directions is measured. |
| Evaluation | Indication of the maximum values $S_{max}$ |

### 4.2 Results

Table 8: Results of the flatness

| Test | | Maximum value |
|---|---|---|
| Flatness in length direction | $S_{L, max}$ | 4.0 mm |
| Flatness in width direction | $S_{B, max}$ | 7.0 mm |

## 5. Determination of dimensional stability under normal climatic conditions in accordance with DIN EN 1603 (01.1997)

### 5.1 Test parameters

Table 9: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 600 mm x 2500 mm x 80 mm (supplied dimensions) |
| Test method (method A) | The length and width of the specimens are measured in accordance with DIN EN 822. The measurements are repeated after 28 days. |
| Evaluation | Calculation of the changes in dimension $\Delta\varepsilon_l$ and $\Delta\varepsilon_b$, expressed in % |

### 5.2 Results

Table 10: Results of the dimensional stability under normal climatic conditions

| Test | Start value in mm | | Value after 28 d in mm | | Change in dimension expressed in % | | Mean value in % | |
|---|---|---|---|---|---|---|---|---|
| Determination of length | $l_{01}$ | 2499 | $l_{28,1}$ | 2499 | $\Delta\varepsilon_{l,1}$ | - | $\Delta\varepsilon_l$ | - |
| Determination of width | $b_{01}$ | 599 | $b_{28,1}$ | 600 | $\Delta\varepsilon_{b,1}$ | 0.2 | $\Delta\varepsilon_b$ | 0.1 |
| | $b_{02}$ | 600 | $b_{28,2}$ | 600 | $\Delta\varepsilon_{b,2}$ | - | | |

## 6. Determination of dimensional stability under specified temperature and humidity conditions in accordance with DIN EN 1604 (01.1997)

### 6.1 Test parameters

Table 11: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 200 mm x 200 mm x 80 mm |
| Test method | The length, width and thickness of the specimens are determined before and after they are exposed to 23 °C and 70 % relative humidity for 24 hours. |
| Evaluation | Calculation of the changes in dimension $\Delta\varepsilon_l$, $\Delta\varepsilon_b$ and $\Delta\varepsilon_d$, expressed in % |

## 6.2 Results

Table 12: Results of the dimensional stability

| | Specimen 1 | | | Specimen 2 | | | Specimen 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | start dim. in mm | dim. after 24 h in mm | changes in dim. in % | start dim. in mm | dim. after 24 h in mm | changes in dim. in % | start dim. in mm | dim. after 24 h in mm | changes in dim. in % |
| length | 200.1 | 201.1 | 0 | 201.7 | 201.8 | 0 | 201.4 | 201.2 | - 0.1 |
| | 200.7 | 200.8 | 0 | 201.7 | 201.7 | 0 | 201.1 | 201.1 | 0 |
| | 200.3 | 200.3 | 0 | 201.1 | 201.1 | 0 | 200.1 | 200.1 | 0 |
| **mean** | **200.4** | **200.7** | **0** | **201.5** | **201.5** | **0** | **200.9** | **200.8** | **0** |
| width | 200.9 | 200.9 | 0 | 201.5 | 201.6 | 0 | 201.6 | 201.7 | 0 |
| | 201.0 | 200.9 | 0 | 201.6 | 201.7 | 0 | 201.1 | 201.1 | 0 |
| | 200.7 | 200.7 | 0 | 201.1 | 201.1 | 0 | 200.2 | 200.3 | 0 |
| **mean** | **200.9** | **200.8** | **0** | **201.4** | **201.5** | **0** | **201.0** | **201.0** | **0** |
| thick. | 78.6 | 78.4 | - 0.3 | 78.5 | 78.5 | 0 | 78.7 | 78.7 | 0 |
| | 78.8 | 78.8 | 0 | 78.6 | 78.7 | 0.1 | 78.8 | 78.8 | 0 |
| | 78.8 | 78.6 | - 0.3 | 78.6 | 78.7 | 0.1 | 78.5 | 78.7 | 0.3 |
| | 78.8 | 78.7 | - 0.1 | 78.6 | 78.5 | - 0.1 | 78.6 | 78.7 | 0.1 |
| | 78.9 | 78.5 | - 0.5 | 78.6 | 78.7 | 0.1 | 78.6 | 78.8 | 0.3 |
| **mean** | **78.8** | **78.6** | **- 0.2** | **78.6** | **78.6** | **0** | **78.6** | **78.7** | **0.1** |

## 7. Determination of bending behaviour in accordance with DIN EN 12089 (08.1997)

### 7.1 Test parameters

Table 13: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 450 mm x 150 mm x 80 mm |
| Test method (method B) | The specimen is subject to 3-point bending strength (separation of the support points 400 mm) and a feed speed of 10 mm/min. |
| Evaluation | Calculation of the ultimate bending strength $\sigma_b$ in kPa |

### 7.2 Results

Table 14: Results of the bending strength

| Specimen no. | Support points separation L in mm | Specimen width in mm | Specimen thickness in mm | Maximum force $F_m$ in N | Ultimate bending strength $\sigma_b$ in kPa |
|---|---|---|---|---|---|
| 1 | 400 | 150.8 | 78.6 | 3649 | 2350 |
| 2 | 400 | 150.1 | 78.7 | 3848 | 2483 |
| 3 | 400 | 149.9 | 78.6 | 3753 | 2432 |
| | | | | **Mean value** | **2422** |

## 8. Determination of deformation under specified compressive load and temperature conditions in accordance with DIN EN 1605 (01.1997)

### 8.1 Test parameters

Table 15: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 50 mm x 50 mm x 50 mm (no surface coating on both sides) |
| Test method | A pressure of 40 kPa is exerted on the specimen at a temperature of (23 ± 5) °C during a period of (48 ± 1) hours |
| Evaluation | The compressive load of the specimen (expressed in %) is determined from the thickness values measured before and after it is subjected to compressive load. |

### 8.2 Results

Table 16: Results of the deformation

| Specimen No. | Thickness prior to compressive load $d_S$ in mm | Thickness after exerting the pressure $d_1$ in mm | Compressive strain $\varepsilon_1$ in % |
|---|---|---|---|
| 1 | 48.4 | 48.1 | 0.6 |
| 2 | 51.2 | 50.5 | 1.4 |
| 3 | 51.1 | 50.5 | 1.2 |
| **Mean value** | **50.2** | **49.7** | **1.1** |

## 9. Determination of compression behaviour in accordance with DIN EN 826 (05.1996)

### 9.1 Test parameters

Table 17: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 50 mm x 50 mm x 50 mm (no surface coating on both sides) |
| Test method | The specimens are subjected to a concentric pre-load of 250 Pa between two rigid parallel plates. At a feed speed of 5 mm/min., the specimens are compressed up to a compressive strain of 10 %. |
| Evaluation | Calculation of the compressive stress in kPa if the compressive strain is 10 % |

### 9.2 Results

Table 18: Results of the response to compressive stress

| Specimen no. | Specimen dimensions L x b in mm | Thickness $d_0$ at 250 Pa in mm | Compressive stress $\sigma_{10}$ if compressive strain = 10 % in kPa |
|---|---|---|---|
| 1 | 50.91 x 49.37 | 49.42 | 180 |
| 2 | 50.43 x 49.18 | 50.17 | 210 |
| 3 | 50.21 x 49.73 | 50.11 | 200 |
| | | **Mean value** | **197** |

## 10. Determination of tensile strength perpendicular to faces in accordance with DIN EN 1607 (01.1997)

### 10.1 Test parameters

Table 19: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 50 mm x 50 mm x 80 mm |
| Test method | The specimen are fixed between to 2 stiff blocks and torn apart at a speed of 10 mm/min. |
| Evaluation | The greatest tensile force is recorded, the ultimate tensile strength perpendicular to the plane of the plate can be determined from this force. |

## 10.2 Results

Table 20: Results of the ultimate tensile strength

| Specimen no. | Specimen length in m | Specimen width in m | Maximum tensile force $F_m$ in kN | Ultimate tensile strength $\sigma_{mt}$ in kPa |
|---|---|---|---|---|
| 1 | 0.0493 | 0.0510 | 1.056 | 420 |
| 2 | 0.0507 | 0.0511 | 0.905 | 349 |
| 3 | 0.0505 | 0.0506 | 0.792 | 310 |
| | | | **Mean value** | **360** |

## 11. Determination of compressive creep in accordance with DIN EN 1606 (01.1997)

## 11.1 Test parameters

Table 21: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 50 mm x 50 mm x 80 mm |
| Test method | The specimens are subjected to a concentric pre-load of 250 Pa between 2 stiff parallel plates. After incorporation of the specimen, the start thickness is determined, and the specimen is subjected to compressive stress with 15 s. |
| Evaluation | The yield characteristics under compressive load are measured during a period of 90 days, long-term deformation is calculated for 10 years. |

## 11.2 Results

Table 22: Results

| Load period in h | Compressive strain expressed in % | | |
|---|---|---|---|
| | Specimen 1 | Specimen 2 | Mean value |
| 0.1 | 0.97 | 0.98 | 0.98 |
| 1 | 1.02 | 1.01 | 1.01 |
| 5 | 1.15 | 1.17 | 1.16 |
| 24 | 1.35 | 1.33 | 1.34 |
| 48 | 1.44 | 1.44 | 1.44 |
| 96 | 1.51 | 1.51 | 1.51 |
| 168 | 1.63 | 1.61 | 1.62 |
| 216 | 1.65 | 1.64 | 1.65 |
| 264 | 1.69 | 1.69 | 1.69 |
| 336 | 1.75 | 1.71 | 1.73 |
| 432 | 1.77 | 1.76 | 1.77 |
| 576 | 1.82 | 1.80 | 1.81 |
| 768 | 1.86 | 1.88 | 1.87 |
| 1008 | 1.94 | 1.95 | 1.95 |
| 1272 | 2.01 | 2.01 | 2.01 |
| 1560 | 2.04 | 2.05 | 2.05 |
| 1920 | 2.10 | 2.09 | 2.09 |
| 2160 | 2.15 | 2.12 | 2.13 |
| 87600 | | | 2.64* |

* extrapolated value

For graphical representation of the deformation values in a semi-logarithmic graph, see appendix A1.

## 12. Determination of long term water absorption by immersion in accordance with DIN EN 12087 (08.1997)

### 12.1 Test parameters

Table 23: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 200 mm x 200 mm x 80 mm |
| Test method 1A | The specimens are partially immersed in water for 28 days. The bottom side of the specimen is (10 ± 2) mm below water level. |
| Evaluation 1A | Determination of area-specific water content $W_{lp}$ in kg/m² |
| Test method 2A | The specimens are completely immersed in water for 28 days. |
| Evaluation 2A | Determination of volume-specific water content $W_{lt}$, expressed in % |

### 12.2 Results

Table 24: Results of partial immersion (test method 1A)

| Specimen no. | Length in m | Width in m | Start mass $m_0$ in kg | Mass after 28 d $m_{28}$ in kg | Area-specific water content $W_{lp}$ in kg/m² |
|---|---|---|---|---|---|
| 1 | 0.2010 | 0.2010 | 0.2136 | 0.2442 | 0.76 |
| 2 | 0.2005 | 0.2010 | 0.1888 | 0.2204 | 0.78 |
| 3 | 0.2015 | 0.2015 | 0.1955 | 0.2268 | 0.74 |
| | | | | **Mean value** | **0.76** |

Table 25: Results of complete immersion (test method 2A)

| Specimen no. | Length in m | Width in m | Thickness in m | Start mass $m_0$ in kg | Mass after 28 d $m_{28}$ in kg | Volume-specific water content $W_{lt}$ in % |
|---|---|---|---|---|---|---|
| 1 | 0.2015 | 0.2015 | 0.0785 | 0.1913 | 0.4188 | 7.1 |
| 2 | 0.2010 | 0.2010 | 0.0785 | 0.1925 | 0.4165 | 7.0 |
| 3 | 0.2010 | 0.2010 | 0.0785 | 0.2151 | 0.4581 | 7.7 |
| | | | | | **Mean value** | **7.3** |

## 13. Determination of thickness for floating floor insulating products in accordance with DIN EN 12431 (08.1998)

### 13.1 Test parameters

Table 26: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 200 mm x 200 mm x 80 mm |
| Test method | The thickness is determined at various compressive stresses to which the top side of the specimen is subjected successively.<br>Thickness $d_L$: pressure 250 Pa, duration 120 s<br>Thickness $d_F$: pressure 2 kPa, duration 120 s<br>Thickness $d_B$: pressure 48 kPa, duration 120 s, pressure 2kPa, duration 120s |
| Evaluation | Calculation of the mean value |

### 13.2 Results

Table 27: Results of the thickness

| Specimen no. | Thickness $d_L$ in mm | Thickness $d_F$ in mm | Thickness $d_B$ in mm |
|---|---|---|---|
| 1 | 79.2 | 79.0 | 78.9 |
| 2 | 79.1 | 79.0 | 78.9 |
| 3 | 79.3 | 79.1 | 79.0 |
| 4 | 79.5 | 79.3 | 79.2 |
| 5 | 79.1 | 79.0 | 78.9 |
| 6 | 79.4 | 79.2 | 79.2 |
| **Mean value** | **79.3** | **79.1** | **79.0** |

## 14. Determination of the apparent density in accordance with DIN EN 1602 (01.1997)

### 14.1 Test parameters

Table 28: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity until all masses are constant. |
| Specimen size | 200 mm x 200 mm x 76.5 mm (no surface coating on both sides) |
| Test method | Determining the weight and dimensions of the individual specimens |
| Evaluation | Calculation of the apparent density after $\rho_c$ = m / V in kg/m³ |

### 14.2 Results

Table 29: Results of the apparent density

| Specimen no. | length in m | width in m | thickness in m | Masse in kg | apparent density $\rho_c$ in kg/m³ |
|---|---|---|---|---|---|
| 1 | 0.2015 | 0.2005 | 0.0760 | 0.0992 | 32,3 |
| 2 | 0.2005 | 0.2010 | 0.0765 | 0.0981 | 31,8 |
| 3 | 0.2010 | 0.2015 | 0.0765 | 0.1013 | 32,7 |
| 4 | 0.2010 | 0.2010 | 0.0765 | 0.1023 | 33,1 |
| 5 | 0.2015 | 0.2015 | 0.0765 | 0.0991 | 31,9 |
| | | | | **Mean value** | **32,4** |

## 15. Determination of freeze-thaw resistance in accordance with DIN EN 12091 (08.1997)

### 15.1 Test parameters

Table 30: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | 200 mm x 200 mm x 80 mm |
| Test method | After determination of the water content with long-time complete immersion in accordance with DIN EN 12087, the specimens are exposed to 300 periodic frost-dew alternations (i.e. 1 h of - 20 °C and 1h at + 20 °C alternating 300 times). Then, wet specimens (B1) and specimen dried until all masses are constant (B2) are used to determined their behaviour when subjected to compressive stress in accordance with DIN EN 826.<br>The specimens are subjected to a concentric pre-load of 250 Pa between two rigid parallel plates. At a feed speed of 8 mm/min., the specimens are compressed up to a compressive strain of 10 % or until they fail.<br>For comparison purposes, also the behaviour of non pre-treated specimen when subjected to compressive stress is determined in accordance with DIN EN 826. |
| Evaluation | Determination of the water content and of the changes in the behaviour of the specimens when subjected to compressive stress. |

## 15.2 Results

Table 31: Results of the water content

| Specimen no. | Set B1 water content in % | | Set B2 water content in % | |
|---|---|---|---|---|
| | $W_m$ | $W_V$ | $W_m$ | $W_V$ |
| 1 | 50.3 | 6.6 | 58.6 | 8.5 |
| 2 | 70.8 | 9.3 | 62.4 | 8.3 |
| 3 | 63.5 | 9.2 | 61.8 | 8.4 |
| **Mean value** | **61.5** | **8.3** | **60.9** | **8.4** |

Table 32: Results of the ultimate compressive strength after alternating frost-dew conditions

| Specimen no. | Ultimate compressive strength in kPa | | |
|---|---|---|---|
| | $\sigma_{10}$ | $\sigma_{10.f}$ | $\sigma_{10.tr}$ |
| 1 | 216.8 | 205.2 | 190.9 |
| 2 | 201.5 | 201.0 | 210.2 |
| 3 | 195.8 | 196.8 | 197.4 |
| **Mean value** | **204.7** | **201.0** | **199.5** |

Table 33: Results of the change in behaviour when subjected to compressive stress

| **Change in behaviour when subjected to compressive stress, expressed in %** | $\Delta\sigma_f$ | $\Delta\sigma_{tr}$ |
|---|---|---|
| | 98.2 | 97.5 |

## 16. Determination of water vapour transmission properties in accordance with DIN EN 12086 (08.1997)

### 16.1 Test parameters

Table 34: Test parameters

| | |
|---|---|
| Specimen pre-treatment | Storage at (23 ± 5) °C and (50 ± 5) % relative humidity |
| Specimen size | Ø 11,3 mm, height 80 mm |
| Test method | A specimen is incorporated into a test vessel, which is open at the top and which contains a drying agent, and sealed laterally. This apparatus is brought into a test-climate system of 23 °C and 85 % relative humidity. Due to the difference in the water steam partial pressure of the test-vessel and the test-climate system, water steam is drawn through the specimen. The weights of the test-apparatuses are measured at regular intervals. |
| Evaluation | Determining the permeability properties of the water steam as the stationary state is reached |

## 16.2 Results

Table 35: Results of the water steam permeability

| Specimen no. | Water steam diffusion current density g in mg/(m² x h) | Water steam diffusion coefficient W in mg/(m² x h x Pa) | Water steam diffusion conductance coefficient δ in mg/(m x h Pa) | Water steam Diffusion resistance coefficient μ - | Water steam diffusion equivalent air layer $s_d$ in m |
|---|---|---|---|---|---|
| 1 | 4.66E+02 | 1.95E-01 | 1.96E-01 | 46 | 3.60 |
| 2 | 4.57E+02 | 1.91E-01 | 1.92E-01 | 46 | 3.66 |
| 3 | 5.65E+02 | 2.36E-01 | 2.38E-01 | 38 | 2.96 |
| 4 | 5.03E+02 | 2.10E-01 | 2.11E-01 | 42 | 3.33 |
| 5 | 4.54E+02 | 1.90E-01 | 1.91E-01 | 47 | 3.69 |
| **Mean value** | **4.89E+02** | **2.05E-01** | **2.06E-01** | **44** | **3.45** |

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## Determination of compressive creep DIN EN 1606 (01.1997)

**Test Report No.** : **2.1/20802/025.0.1-2006e**
**Company** : **LUX ELEMENTS GmbH & Co. KG**
**Material** : **ELEMENT-EL 80**
**Operator** : **rb**

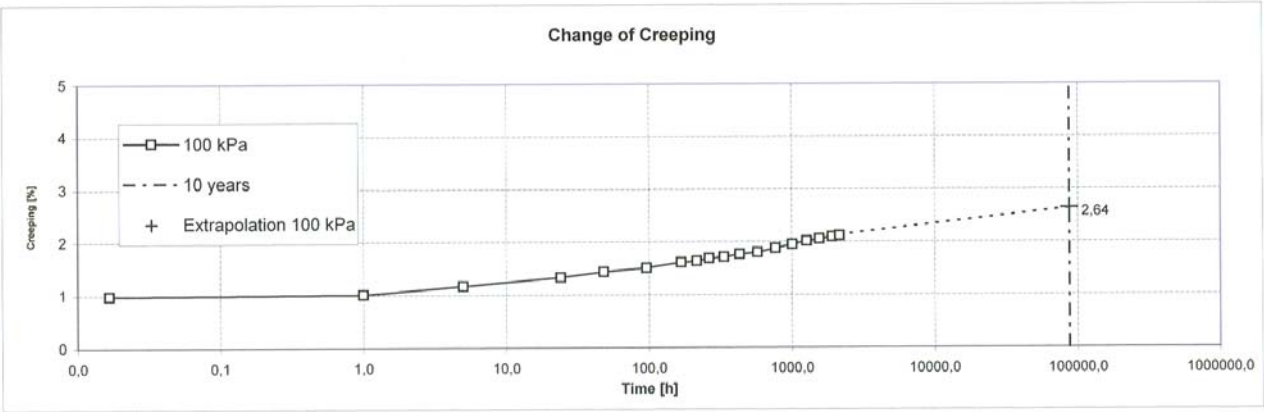
### Test parameters

| | | | |
|---|---|---|---|
| Normal stress | : | 100 kPa | 100 kPa |
| Shear stress | : | - | |
| Shear direction | : | - | |

| | | Specimen 1 | Specimen 2 |
|---|---|---|---|
| Specimen No. | : | | |
| Normal stress [kPa] | : | 100 kPa | 100 kPa |
| Specimen size [mm x mm] | : | 50 x 50 = 0,0025 m² | |
| Creeping after 1 h [%] | : | 1,02 | 1,01 |
| Test temperature | : | 20°C ± 2°C | |

**Results:** Creeping [%]

| Specimen No. | | Time [h] 0,017 | 1,000 | 5,000 | 24,00 | 48,0 | 96,0 | 168 | 216 | 264 | 336 | 432 | 576 | 768 | 1008 | 1272 | 1560 | 1920 | 2160 | 87600 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Creeping | % | 0,97 | 1,02 | 1,15 | 1,35 | 1,44 | 1,51 | 1,63 | 1,65 | 1,69 | 1,75 | 1,77 | 1,82 | 1,86 | 1,94 | 2,01 | 2,04 | 2,10 | 2,15 | | | |
| 2 Creeping | % | 0,98 | 1,01 | 1,17 | 1,33 | 1,44 | 1,51 | 1,61 | 1,64 | 1,69 | 1,71 | 1,76 | 1,80 | 1,88 | 1,95 | 2,01 | 2,05 | 2,09 | 2,12 | | | |
| **mean value** | % | **0,98** | **1,01** | **1,16** | **1,34** | **1,44** | **1,51** | **1,62** | **1,65** | **1,69** | **1,73** | **1,77** | **1,81** | **1,87** | **1,95** | **2,01** | **2,05** | **2,09** | **2,13** | **2,64** | | |




Note: -