

**Building Research Institute****COMPLEX OF TEST LABORATORIES**accredited by the Polish Centre for Accreditation  
Accreditation Certificate No. AB 023

AB 023

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**DEPARTMENT OF BUILDING ELEMENTS ENGINEERING****BUILDING ELEMENTS LABORATORY**

# TEST REPORT No. LZE01-03505/18/Z00NZE

This report has been issued in three copies: two for the Client and one retained with the BRI.

The Test Report contains test results covered by the scope of accreditation as well as results of non-accredited tests. The latter are identified as being 'outside accreditation'.

**Client:** **CONECTO Sp. z o.o.****Address:** Florentyna 25  
62-817 Żelazków

## PRODUCT INFORMATION

<b>Manufacturer (name and address):</b>	<b>CONECTO Sp. z o.o.</b> Florentyna 25 62-817 Żelazków
<b>Manufacturing Site – name and address:</b>	<b>CONECTO Sp. z o.o.</b> Florentyna 25 62-817 Żelazków
<b>Product name</b>	<b>CONECTO expansion joint profiles</b>
<b>Product reference document</b>	<b>Test for the purpose of a National Technical Assessment (KOT).</b>
<b>Details of the product, its declared use and the applicable system of assessment and verification of the constancy of its performance</b>	<b>CONECTO PARK waterproof expansion joint profiles for construction joints used to cover expansion gaps indoors and outdoors.</b> <b>AVCP System 4.</b>
<b>Construction product type:</b>	<b>SL.230.70.N</b> <b>GA.88.45.25S</b>

## TEST OBJECT INFORMATION

<b>Test object:</b> designation, description, condition, identification	<b>Expansion element (insert) made of EPDM</b>
<b>Test object receipt date:</b>	<b>07.01.2019</b>
<b>Test object receipt procedure:</b>	<b>PZ ZLB 18 - Test object receipt procedure of the LZE Laboratory</b>
<b>Test Object Receipt Record No.:</b>	<b>LZE01-03505/18/Z00NZE – Test object receipt record of the LZE Laboratory</b>

### BUILDING ELEMENTS LABORATORY

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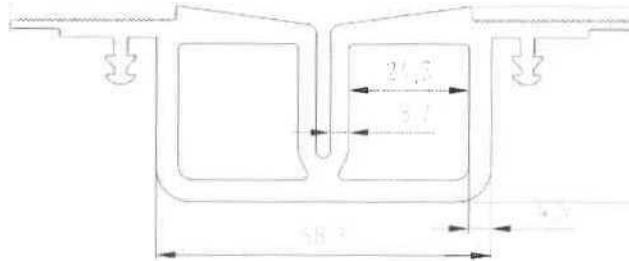
## TEST INFORMATION

Commencement date: 09.01.2019  
Completion date: 22.01.2019

### 1. Product and test data

#### 1.1. Test object:

The test object was CONECTO expansion joint profiles with EPDM sealing inserts.



The EPDM expansion element of the GA.88.45.25S profile

The manufacturer, Conecto Sp. z o.o., supplied samples of the rubber inserts for verification of the performance properties of the material (EPDM) used in Conecto expansion joint profiles. The samples were marked as follows: LZE-03505-18÷1+8-X

#### 1.2 Applicable test documents:

##### 1.2.1. Test procedures and methods:

- PB LOW-T01/3/09-2007 Shore hardness test
- PN-ISO 34-1:2007 Rubber, vulcanised or thermoplastic – Determination of tear strength – Part 1: Trouser, angle and crescent test pieces
- PN-ISO 37:2007 Rubber, vulcanised or thermoplastic – Determination of tensile stress-strain properties
- PN-ISO 815:1998 Rubber, vulcanised or thermoplastic. Determination of compression set at ambient, elevated or low temperatures
- PN-ISO 1817:2001 Rubber, vulcanised – Determination of the effect of liquids

##### 1.2.2. Reference documents:

- PN-EN ISO 868:2005 Plastics. Determination of indentation hardness by means of a durometer (Shore hardness)

### 2. Test results

*The test results and their uncertainties apply to the tested samples only. The uncertainty value cannot be assigned directly to the properties of a given product because the laboratory has no knowledge about the variation of the product range, only about the sample tested. The uncertainty of the quantitative results was determined on the basis of available data, which includes the accuracy of the measurement system used.*

#### 2.1. Verification of the Shore hardness

##### 2.1.1 Test method – PB LOW-T01/3/09-2007

Reference documents: PN-EN ISO 868:2005

- 2.1.2. Measurement equipment, instruments and means used:  
LOW-007 slide caliper, LOW-063 Shore A hardness tester with a mounting stand, LOW-030 temperature and humidity meter.

Sample conditioning: temperature 20.0-20.8°C, relative humidity 36-38%

- 2.1.3. Verification results:

Table 1 contains an overview of the verification results

Table 1. Shore A hardness

Sample	Shore A hardness test results [° Sh]					Test result [° Sh]
	LZE-03505-18-1-1÷10	77	76	76	77	
77		76	77	76	76	

The expanded uncertainty of measurement due to the accuracy limits of the equipment used, determined with 95% confidence level, is 1°Sh for k=2.

## 2.2. Verification of the tear strength properties

- 2.2.1. Method: according to PN-ISO 34-1:2007

- 2.2.2. Measurement equipment, instruments and means used:  
LOW-007 slide caliper, LOW-030 temperature and humidity meter, LOW-281 testing machine, LOW-170 thickness gauge.

Sample conditioning: temperature 20.0-20.8°C, relative humidity 36-38%  
B-type samples according to PN-ISO 34-1:2000 (cut sample used),

According to the approach specified in PN-ISO 34-1:2000, samples were prepared as per Method B (angle test piece), using a die as shown in Fig. 2 of the abovementioned standard. The angle test pieces were cut to a depth of 1 mm. The test was carried out using a testing machine. The maximum tear strength was recorded.

- 2.2.3 Obtained results:

Table 2 shows the results.

Table 2. Tear strength

Sample	Tear force applied [N]		Tear strength, [N/mm]	
	LZE-03505-18-2-1÷5	65.22	73.61	<b>48,31</b>
65.19		76.19	48,28	56,44
70.80		52.44		
Avg. value		<b>52.0 N/mm</b>		

The expanded uncertainty of measurement due to the accuracy limits of the equipment used, determined with 95% confidence level, is 1% for k=2.

### 2.3. Verification of the resistance to the effects of liquids

2.3.1. Method: according to PN-ISO 1817:2001

2.3.2. Measurement equipment, instruments and means used:  
LOW-156 slide calliper, LOW-228 electronic scale, LOW-170 thickness gauge,  
LOW-030 temperature and humidity meter.

Sample conditioning: temperature 20.0-20.8°C, relative humidity 36-38%

2.3.3 Obtained results:

Table 3 shows the results.

Testing time: 48 hours (immersion in test liquid)

Test liquids:

- Water,
- Brine (NaCl saturated water solution),
- Ethyl acetate (solvent),
- Methanol (methyl alcohol) (solvent),
- Engine oil (Shell Helix Ultra 5W-40),
- 98 petrol

Table 3. Resistance to the effects of liquids – sealing insert  
Sample Ref. LZE-03505-18-3-1÷7

Test liquid	Change in mass [%]	Change in thickness [%]
Water	0.09	0.65
Brine	0.05	0.77
Methanol	0.46	0.88
Engine oil	0.06	0.55
Benzene	0.11	0.55

*The expanded uncertainty of measurement due to the accuracy limits of the equipment used, determined with 95% confidence level, is 0.03% (mass) and 0.2% (thickness) for k=2.*

### 2.4. Verification of the tensile strength and elongation at break

2.4.1. Method: according to PN-ISO 37:2007

2.4.2 Measurement equipment, instruments and means used:  
LOW 007 slide calliper, LOW-281 testing machine,

Type 2 profiles

Test rate: 500 mm/min

Sample conditioning: temperature 20.0-20.8°C, relative humidity 36-38%

2.4.3. Verification results:

Table 2 shows the results.

Table 2. Tensile strength and elongation at break

Sample	Tensile strength, [MPa]	Elongation at break [%]
Sealing insert LZE-03505-18-4-1÷5	10.28	520
	10.50	550
	10.43	540
Type 2 profiles, 2.0 mm thick	10.32	555
	10.28	520
	<b>10.36 MPa</b>	<b>533 %</b>

The expanded uncertainty of measurement due to the accuracy limits of the equipment used, determined with 95% confidence level, is 1% for  $k=2$ .

## 2.5. Verification of the permanent deformation after 24 h compression at +70°C

2.5.1. Method: according to PN-ISO 815:1998.

2.5.2 Measurement equipment, instruments and means used:

LOW 007 slide caliper, LOW 170 thickness gauge with a contact diameter of 6.2 mm, LOW-053 stopwatch, LOW-076 circulation dryer, compression device, LOW-030 temperature and humidity meter.

B-type test samples, test temperature:  $+70 \pm 1^\circ\text{C}$ , a set of 3 pieces tested, lubricant: silicone oil, sample conditioning: temperature  $21.0^\circ\text{C}$ , relative humidity 52%

2.4.4 Obtained results:

Table 4 shows the results.

Table 4 Permanent deformation after 24 h compression at +70°C

Samples	Initial sample thickness [mm]	Compressed sample thickness after 30 min [mm]	Test result [%]
Sealing insert LZE-03505-18-4-1÷5	6.35	5.79	35
	6.37	5.84	33
4.75 mm stop	6.36	5.81	34
			<b>34%</b>

The expanded uncertainty of measurement due to the accuracy limits of the equipment used, determined with 95% confidence level, is 1% for  $k=2$ .

**Person responsible for the test**  
Wojciech Woźniak, MSc Eng

signature

**Report authorised by:**  
Marzena Jakimowicz, MSc Eng.

signature

**Poznań, date: 29.01.2019**

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**Laboratory Manager**  
Marzena Jakimowicz, MSc Eng.

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