CALPEX PUR-KING

The revolutionary insulating foam for heating and service water systems with incomparably low loss of heat

Magic threshold exceeded
λ_{50} 0.0199 W/mK

BRUGG PIPESYSTEMS
Flexible solutions

The energy-saving world champion with the lowest lambda value

CALPEX has set a new standard for heat insulation with a previously unachieved lambda value of 0.0199 W/mK. The benefit to you: greater energy efficiency, fewer operating costs and faster amortisation. CALPEX PUR-KING represents a breakthrough.

Operating temperature	Heating flow 80 °C, heating return 60 °C
Use	3,500 operating hours per year
Service life	30 years

Sample calculation for the local heating network in an estate with single family homes and apartment buildings

Total	Length (m)	Pipe dimension (mm)	Heat loss PUR systems λ_{50}: 0.0230 W/mK	Heat loss CALPEX PUR-KING λ_{50}: 0.0199 W/mK	Difference
	112	32/76	9.16 W/m	7.92 W/m	
	106	40/91	9.59 W/m	8.27 W/m	
	178	50/111	9.84 W/m	8.51 W/m	
	436	63/126	11.20 W/m	9.71 W/m	
	86	75/142	12.06 W/m	10.48 W/m	
Total	918		9.71 kW	8.42 kW	**1.30 kW**

Calculation of the heat quantity and CO_2 equivalent

3500 h/a	34 000 kWh	29 457 kWh	4543 kWh
30 J	1020 MWh	884 MWh	136 MWh
CO_2			**30.6 t**

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-13119-02-00 D-IS-13119-01-00

IMA DRESDEN

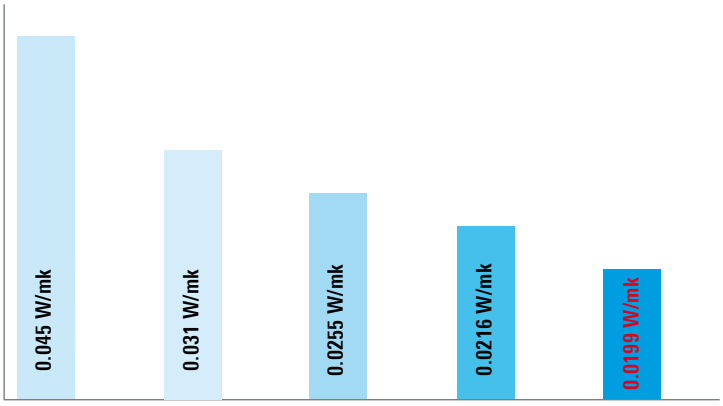
CALPEX PUR-KING was inspected by IMA Dresden in April 2017 and certified by the German Accreditation Body.

Download: www.pipesystems.com

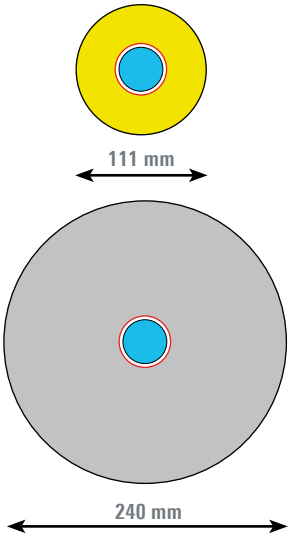
A milestone in the development of heat insulation

The all-time low heat insulation value achieved by CALPEX PUR-KING is based on the use of a newly developed technology for the manufacture of high pressure foaming. This technology was developed ready for production in 2 years and is setting new standards. It makes a significant contribution towards operating heating network and service water systems in an even more economical and environmentally-friendly manner.

Continual research and development are paying off
CALPEX lambda values falling since 2001



A size comparison with the new CALPEX PUR-KING
PE insulations vs. CALPEX PUR-KING



NEW!
CALPEX PUR-KING
Ø 50/111
λ_{50} = 0.0199 W/mK
U = 0.142 W/mK
q = 14.94 W/m

PE foam
Ø 50/240
λ_{50} = 0.040 W/mK

PE insulations of 240 mm would be required to achieve the same efficiency as CALPEX PUR-KING

The CALPEX range with PUR-KING from April 2018:

CALPEX-UNO heating	CALPEX-DUO heating
25/76 + 25/91 PLUS	25+25/91 + 25+25/111 PLUS
32/76 + 32/91 PLUS	32+32/111 + 32+32/126 PLUS
40/91 + 40/111 PLUS	40+40/126 + 40+40/142 PLUS
50/111 + 50/126 PLUS	
63/126 + 63/142 PLUS	
75/142	

NEW!

All other sizes should be available for delivery from autumn 2018.

1 Task Definition

Brugg Rohrsysteme AG commissioned IMA Materialforschung und Anwendungstechnik GmbH with conducting tests on a preinsulated flexible pipe DN50, Ø 63/126 mm, type CALPEX NBA-PUR, pipe NBA 09.B in accordance with DIN EN 15632 and DIN EN 253 to the characteristics

- closed cell content,
- foam density,
- water absorption,
- thermal conductivity (unaged condition).

2 Requirements and standards

DIN EN 15632-2:2015-03
District heating pipes - Pre-insulated flexible pipe systems - Part 2: Bonded plastic service pipes - Requirements and test methods; German version EN 15632-2:2010+A1:2014

DIN EN 253:2015-12
District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene; German version EN 253:2009+A2:2015

3 Test Specimen

- Preinsulated pipe: Type CALPEX NBA-PUR, pipe NBA 09.B
- Service pipe: PEX
- Casing pipe: LLDPE
- Foam system: PUR
- Delivery of the sample material to IMA Dresden: 2017-03-23
- Storage of the sample material before preparation and test: 72 h at 23 ± 2 °C and 50 ± 10 % R.H.

4 Testing procedure and results

Test parameter	Test value (average value)	Requirement EN 15632
Closed cell content [%]	99,5	-
Foam density [kg/m³]	53,4	-
Water absorption [%]	4,4	≤ 10
Thermal conductivity in unaged condition [W/(m*K)]	0,0199	-

5 Summary

The test results documented in this test report verify that the tested characteristics mentioned in clause 1 of the preinsulated flexible pipe Ø 63/126 mm, type CALPEX NBA-PUR, pipe NBA 09.B, meet the requirements of DIN EN 15632 and DIN EN 253.

Reviewed

Dipl.-Ing. Heiko Below
Laboratory for Pipe System Testing

Created

Dipl.-Ing. Matthias Thölert
Person in Charge

Test Report

"Test of preinsulated flexible pipe Type CALPEX NBA-PUR, pipe NBA 09.B Manufacturer: Brugg Rohrsystem AG"

Short Title: CALPEX-NBA 09.B

DAkkS Deutsche Akkreditierungsstelle D-PL-13119-02-00

Test Report No.: V109/17.4

Order No.: 402307040

Issued by Department Pipe Systems

Laboratory for Pipe System Testing

Recognised test laboratory of DVGW, DIN CERTCO and DIBt

The recognitions are valid for the test methods stated in the attachments of certificates of approval DVGW LW-BU0023, DIN CERTCO PL121 and DIBt SAC 08

12/17/500 ex./1073084/pictures by Key

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Customer-specific solutions
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