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Registergericht: Amtsgericht Dresden | HRB 5995
USt.-IdNr.: DE 155293995

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

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

Test Report

CALPEX-NBA 09.B

Test Report No.: V109/17.4

Test Specimen:	Preinsulated flexible pipe DN50, Ø 63/126 mm Type CALPEX NBA-PUR (pipe NBA 09.B)
Customer:	Brugg Rohrsysteme AG Industriestrasse 39 CH-5314 Kleindöttingen SWITZERLAND
Manufacturer:	Brugg Rohrsysteme AG Industriestrasse 39 CH-5314 Kleindöttingen SWITZERLAND
Order no. of the Customer:	Email, 2017-03-22
Test Laboratory:	IMA Materialforschung und Anwendungstechnik Labor für Rohrsystemprüfungen Wilhelmine-Reichard-Ring 4 01109 Dresden
Test Specimen received on:	2017-03-23
Test Period:	March 2017 – April 2017
Person in Charge:	Dipl.-Ing. Matthias Thölert
Distribution List:	1 x Brugg Rohrsysteme AG 2 x IMA Dresden

Authorized
Dresden, 25 April 2017
IMA Materialforschung und
Anwendungstechnik GmbH

Dipl.-Ing. Heiko Below
Head of Department Pipe Systems

This report is a translation and short version of the German test report V109/17.3.

Table of Contents

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