

Resistance of mounted assemblies to temperature cycling

Kiwa Nederland B.V.

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Performed request	Determination of the resistance of mounted assemblies to temperature cycling	
Requested by	Kiwa Nederland B.V. Sir Winston Churchillaan 273 NL-2280 AB Rijswijk	
Client	Wavin TR Adana (TR)	
Tested products	Pipes 1) Wavin TR, PE-Xa-barrier pipes 2) Wavin TR, PE-RT type II barrier- pipes Fittings Wavin SmartFix push fit fittings	
Test method	EN 12293 :1999	Plastics piping systems - Thermoplastics pipes and fittings for hot and cold water - Test method for the resistance of mounted assemblies to temperature cycling
Referring documents	ISO 15875-5 / ISO 22391-5	
Reference number	190600091	
Requirements	No leakage during testing of the assembly and no delamination of the multilayer pipes	
Conclusions*	The assembly (pipe-fitting combination) did meet the requirements for no leakage of the assembly during testing * This conclusion is not part of the scope of the RvA accreditation L015.	

Authorised by



Mr. Henk Pauw, Coordinator Lab C

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 - The test results in this report are exclusively related to the samples offered and tested.
 - With regard to measurement uncertainty information please check our website.
 - In case of dispute regarding this test report please contact Kiwa Nederland B.V.
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Determination of the resistance of mounted assemblies to temperature cycling

1 Sample definition

Piping system :

Commercial name : Not specified
Temperature profile ISO 10508 : Class 5
Design pressure : 6 bar
Rigid/Flexible : Flexible (C1 in figure 1)

Pipes, type 1:

Manufacturer : Wavin TR
Production location : Adana (TR)
Commercial name : Not specified
Type of material/construction : PE-Xa pipes
Dimension : 16 mm
Colour inside/outside : Natural / natural
Marking : 39 MTS. VASCO PE-Xa-16 X 2 – 5 Layer- SKZ A 727-
CLASS 4 SURFACE HEATING-COOLING 8 bar EN ISO
15875-2 OXYGEN BARRIER EN ISO 21003-2 11/02/19
14:45 L-4
Date of production : Not specified

Pipes, type 2:

Manufacturer : Wavin TR
Production location : Adana (TR)
Commercial name : Not specified
Type of material/construction : PE-RT Type II pipes
Dimension : 16 mm
Colour inside/outside : Natural / red
Marking : Wavin Pilsa ISO 22391-2 OKSIJEN BARIYERLI PE-RT Tip2
ø16*2.0 mm Boyut Sinifi : C 53,5 Uyguiama SINIFI :1/10-
2/8-4/8-5/8 Makina No:16 20/02/2019 17:32 119MI >< Wavin
Pilsa
Date of production : Not specified

*Determination of the resistance of mounted
assemblies to temperature cycling*

Fittings :

Manufacturer : Wavin
Type of material/construction : Brass push fit fitting (transition couplers)
PPSU push fit fitting (Elbow/Straight-couplers)

Type of fittings

transition couplers

- number : 2
- dimensions : 16 mm x 1/2" male thread
- marking : wavin 16 mm

straight couplers

- number : 4
- dimensions : 16 mm
- marking : wavin 16 mm

elbows

- number : 4
- dimensions : 16 mm
- marking : wavin 16 mm

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2 Sample preparation and conditioning

The build up of the assembly is depicted in the figure below and in accordance with EN 12293.

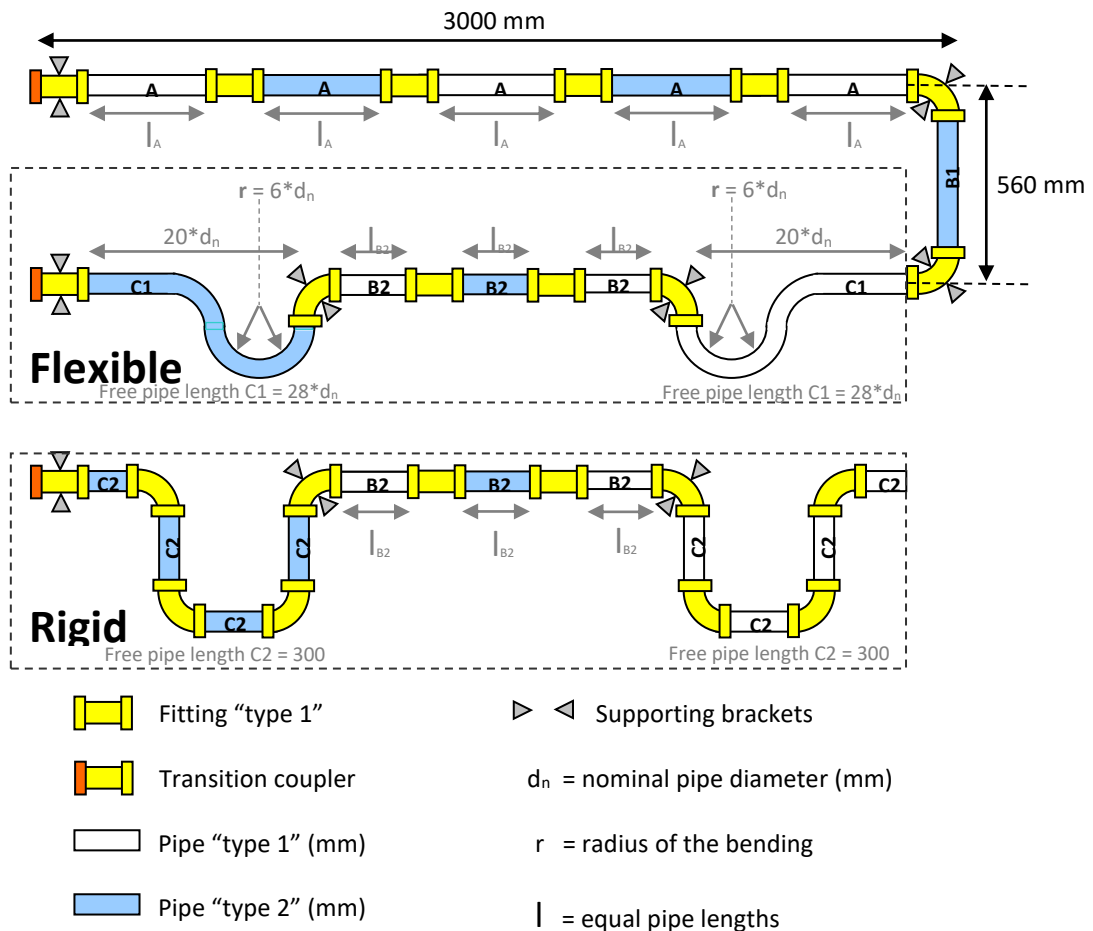


Figure 1, schematic representation of the typical assembly for two types of pipes and one type of fitting

3 Apparatus

The equipment is in accordance with EN 12293:1999. The equipment is a thermal cycling testing apparatus manufactured by IPT Germany.

4 Test method

The test method used is in accordance with EN 12293:1999.

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5 Test parameters

Test pressure	: (6±0,2) bar
Test temperature cold	: (20±2) °C
Test temperature hot	: (93±2) °C
Temperature difference in/out	: < 5°C
cycle time cold	: (15 ^{+1/-0})min
cycle time hot	: (15 ^{+1/-0})min
total cycle time	: (30 ^{+2/-0})min
alteration time cold → hot	: ≤ 60 sec
alteration time hot → cold	: ≤ 60 sec
Water velocity	: >0,5 m/s
Number of cycles	: > 5000 (see test results)
Environment	: water in air
Environmental temperature	: (23±5)°C
Applied pre tensile stress	: (229±1)N
Bending radius branch C1	: 0,96m
Conditioning period	: 1 h
Accuracy pressure equipment	: +2%/-1%
Number of tested assemblies	: 1
Number of joints tested	: 18
Construction assembled by	: Kiwa
Date received at Kiwa Lab C	: 05-06-2019
Test started at	: 05-06-2019
Test performed by	: Mr B. Bonekamp

6 Test results

Number of cycles executed	: > 5000
Signs of leakage	
- pipe	: No
- fitting	: No
- jointing	: No
Observation of delamination	: No
remarks	: None

7 Remarks

None

8 Conclusions*

The tested joints as described above did not show any failure and no leakage was observed during testing time.

* This conclusion is not part of the scope of the RvA accreditation L015.

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9 Photographs of tested assembly

Photo 1: Transition coupler



Photo 2: Straight coupler



Photo 3: Elbow, connecting type 1 and type 2 pipes

