

Determination the oxygen permeability

Plastics piping systems with an oxygen barrier layer



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Requested by	GF Hakan Plastik Çerkezköy (TR)	
Performed request	Determination of the oxygen permeability of the barrier pipe	
Reference document(s)	ISO 17455: 2005	Plastics piping systems – Determination of the oxygen permeability of the barrier pipe
	EN ISO 21003-2: 2008	Multilayer piping systems for hot and cold water installations inside buildings; Part 2: Pipes
Tested product(s)	PE-Xb/EVOH/PE-Xb pipe, 16 x 2,0 mm, Class 4 + 5	
Conclusion(s)*	The products investigated meet the requirements for all tested and evaluated aspects as detailed in this report.	

Authorised by

Henk Pauw, Laboratory Coordinator

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- The test results in this report are exclusively related to the samples offered and tested.
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Overview test results

Characteristic	Test method	Requirement	Measured	Passed*
Pipe or piping system				
Oxygen permeability	ISO 17455	@80°C: $F_{ox, day} \leq 3,6$ mg O ₂ /m ² ·day (ISO 21003-2)	@80°C: $F_{ox, day} = 1,01$ mg O ₂ /m ² ·day	Yes

* The conclusions are not part of the accreditation scope

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Sample description

Pipe(s) :

Manufacturer : GF Hakan Plastik
 Production location : Çerkezköy (TR)
 Type of material/construction : PE-Xb/EVOH/PE-Xb
 Nominal dimensions : 16 × 2,0mm
 Marking : **+GF+ HAKAN PEX-b/EVOH/PEX-b PIPE TSE TS 10762-2 EN ISO 15875-2 DIN 16892 DIN 4726 A SINF 2/10 16x2.0 95°C PN 12.5 OXYGEN BARRIER EXT :EPP -14 07/11/18 14:07:05 xxx mt Made in TURKEY**
 Date of production : Not specified
 Other aspects : Class 4 + 5

Appearance

Colour inside/outside : Natural/Natural
 Surface : Smooth
 Defects/damage : None
 Discolorations : None
 Remarks : None

Sampling information

Sampled by : Send by Manufacturer
 Date of sampling : Not specified
 Received at Kiwa lab : 23-11-2018
 Registered by : Mr R. Boonstoppel

Assembly

Length of pipe(assembly) : (20 ± 0,5) m
 Number of fittings in assembly : none

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Oxygen permeability

Test Method

ISO 17455: 2005 Plastics piping systems – Determination of the oxygen permeability of the barrier pipe

Sample preparation, conditioning and apparatus

The sample preparation, conditioning, used measuring devices and test equipment are all in accordance with ISO 17455.

Test parameters

Used method (ISO 17455) : Dynamic test method (method I)
 Test temperature : $(80 \pm 0,5)^{\circ}\text{C}$
 Conditioning period : 1 h ($e_{\text{min}} < 3$ mm)
 Number of test assemblies : 1
 Length of pipe(assembly) : $(20 \pm 0,5)$ m
 Number of fittings in assembly : none
 Free pipe length of assembly : $(20 \pm 0,5)$ m
 Internal diameter of the pipe : 12,0 mm
 External diameter of the pipe : 16,2 mm
 Oxygen detection limit : $0,1 \mu\text{g O}_2/\text{l}$
 Test run O₂ measuring time : 1 h + 5 h
 Date of test : 26-11-2018
 Test performed by : Mr R. Boonstoppel

Test results

Test run No.	Oxygen uptake (ppb/h)	Atmospheric pressure (mbar)		(Corrected) Oxygen permeation $F_{\text{ox, day}}$ (mg O ₂ /m ² ·day)
		Initial	End	
8	17,92	1011	1009	1,03
9	17,06	1009	1009	0,97
10	17,77	1010	1009	1,02
Avg. Oxygen permeation (mg O ₂ /m ² ·day)				1,01

Remarks

None