



OFI Technologie & Innovation GmbH
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Test Report No. 1702107 / 2181 / 2He

Vienna, 2017-11-22
Sign: Wirrer – Ext. 930

Client: Willbrandt KG
Reinhold-Schleese Straße 22
DE – 30179 Hannover

Test item: test plates
Material: AQUALIT® blue

Producer: TOVO GOMMA S.p.A, IT – 25081 Bedizzole
Order: 2017-05-18 by Mr. Struve

Date of sampling: no samples were taken by OFI employees, samples were sent by client
Receipt of samples: 2017-06-16

Type of Test: Test according to Elastomer Guideline
(„Guideline for Hygienic Assessment of Elastomer Materials in Contact with Drinking Water“, Issue 2016)

Test period: 2017-09-18 to 2017-11-20

As ordered the received samples – with consideration of existing test a/o inspection results from accredited laboratories – were tested for fulfilment of the requirements given by the Elastomer Guideline.

Submitted external test / inspection results:

- No external reports submitted

Performed tests:

In the individual technical departments within the scope of competence of the authorised signatories according to the OFI QM manual the tests for the **Elastomer Guideline** were carried out. The specified test conditions, the used methods and the used devices are given in the following tables.

Table 1: test conditions

Test		S/V (dm ⁻¹)	Test temperature	Migration periods	Test water
Cold water	Migration	5	23°C	3 x 72h	Ultra pure water MilliQ
	Sensorial test	0,2	23°C	3 x 72h	de-chlorinated tapwater
Warm water	Migration	5	60°C	1 x 24h, 2x 24h, 1x 72h, 1x 24h, 2x 24h	Ultra pure water MilliQ
	Sensorial test	0,2	60°C		de-chlorinated tapwater

Table 2: used methods

Test parameter	Method	Apparatus/OFI device
Migration	ÖNORM EN 12873-1	-----
TOC-value	ÖNORM EN 1484	TOC-Analyser Phoenix 8000/ # 2.221
Sensorial test	ÖNORM EN 1420 ÖNORM EN 1622	Paired comparison test
Additional requirements	OFI MBT method, non-accredited External testing	UV-VIS Perkin Elmer Lamda 35 / # 2.804 TZW Technologiezentrum Wasser, Karlsruhe Seibersdorf Labor GmbH, A - 2444 Seibersdorf
Single Substances with an SML	OFI Methods, non-accredited External testing	Agilent 7890A / Agilent 5975C # 2.665 Sqts – swiss quality testing services
TGA	ISO 11358 SOP AA 310.018	TGA/DSC1, Mettler Toledo, STARe System

Results of all tests in table form (table 3):



Parameter		1. period	2. period	3. period	6. ¹ pe-riod	7. period	Requirement ²
Cold water	Sensorial tests: Turbidity, Colour, Foaming, TON, TFN	n.n.i. ³	n.n.i.	n.n.i.	---	---	n.n.i.
	TOC (C _{tap} mg/L)	0,27	0,17	0,10	---	---	≤ 0,50
	Zinc (C _{tap} µg/L)	8,0	---	5,3	---	---	≤ 3000
	Primary aromatic amines (C _{tap} µg/L)	0,40	---	0,40	---	---	≤ 2
	Secondary aromatic amines (C _{tap} µg/L)	0,10	---	0,25	---	---	≤ 250
	Formaldehyde (C _{tap} µg/L)	2,84	2,84	2,84	---	---	≤ 150
Warm water	Turbidity, Colour, Foaming	n.o. ⁴	---	---	n.o.	n.o.	n.o.
	Threshold odour number (TON)	1,0	---	---	1,0	1,0	≤ 4,0
	Threshold flavour number (TFN)	1,0	---	---	1,0	1,0	≤ 4,0
	TOC (C _{tap} mg/L)	0,18	0,23	0,12	0,11	0,06	≤ 0,50
	Zinc (C _{tap} µg/L)	16,0	---	---	---	16,0	≤ 3000
	Primary aromatic amines (C _{tap} µg/L)	0,40	---	---	---	0,40	≤ 2
	Secondary aromatic amines (C _{tap} µg/L)	1,55	---	---	---	0,74	≤ 250
Formaldehyde (C _{tap} µg/L)	8,86	---	---	8,53	8,53	≤ 150	
Formulation		Requirements according to chapter 3 fulfilled					
substances subject to confidentiality		Migration limit kept					
Microbial behaviour		Requirements according to DVGW W 270 fulfilled					

¹ 6th and 7th period only in hot water test

² Requirements given by the Elastomer Guideline for the 3rd and 7th migration period

³ Not noteworthy influenced

⁴ Not observed

<p>The results given in this Test Report have been obtained under the specific conditions of the individual tests. As a rule they are not the only criteria for assessing the product in question and its suitability for a specific purpose of application.</p>		
<p>This Test Report consists of 2 pages 3 tables and 0 appendices.</p>   <p>Non-accredited procedures applied have been named as such.</p> <p>1702107_2181_2He UBA</p>	<p>Testing engineer:</p>	<p>24. 11. 2017</p> <p><i>i.v. Andrea Rubini</i></p> <p>Nadine Haas (Material in contact with drinking water)</p>
	<p>Director in charge:</p>	<p>24. 11. 2017</p> <p><i>Maximilian C</i></p> <p>Christoph Wirrer, BSc. (Material in contact with drinking water)</p>

Any test results relate only to the samples tested. Test Reports may be made available to third parties, either free of charge or against payment, if the full wording of the Test Report is given and if OFI is expressly named as the author.

All tests applied are subject to a quality assurance programme according to EN ISO/IEC 17025:2005.

The General Terms and Conditions of OFI Technologie & Innovation GmbH shall apply as amended;

they are available for download on the Internet (<http://www.ofi.at>).



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Willbrandt KG
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Test Certificate

based on **Elastomer Guideline**

„Guideline for Hygienic Assessment of Elastomer Materials in Contact with Drinking Water“ (Issue 2016)

Manufacturer: TOVO GOMMA S.p.A, IT – 25081 Bedizzole
Product(s): test plates
Material: AQUALIT® blue
Test: initial test according to Elastomer Guideline

According to OFI test report 1702107 / 2181 / 2He dated 2017-11-22 the above mentioned products underwent all tests required by the Elastomer Guideline. They fulfilled the requirements for the following temperature and application areas.

Application - category	Cold water (23 ± 2) °C	Warm water (60 ± 2) °C	Hot water (85 ± 2) °C
Pipes with DN < 80 mm (domestic installation)	---	---	---
Pipes with 80mm ≤ DN ≤ 300mm (supply pipes)	---	---	---
Pipes with DN ≥ 300mm (main pipes)	---	---	---
Fittings (domestic installation)	---	---	---
Fittings (supply pipes)	---	---	---
Fittings (main pipes)	---	---	---
Seals (domestic installation)	fulfilled	fulfilled	---
Seals (supply pipes)	fulfilled	fulfilled	---
Seals (main pipes)	fulfilled	fulfilled	---
Tanks in domestic installations including repair systems	---	---	---
Tanks outside domestic installations including repair systems	---	---	---

The **validity of this test certificate** ends with **2022-11-22** – this under the presumption that no changes in the production or manufacturing process or the basic material are made, with the exception of routine adjustments; in case of changes in the relevant legislations and/or normative regulations, which require a new test on the product, this test certificate loses its validity.

Vienna, 2017-11-22


Christoph Wirrer
Director in charge
Material in contact with drinking water
