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Die Akkreditierung gilt für die in der Urkundenanlage
D-PL-11217-03-00 aufgeführten Prüfverfahren

Test report **122300309-0002**

Client: Wilo UK
Second Avenue, Burton on Trent, United Kingdom

Order date: 23/03/2023

Purpose of test: Examination of material according to BS 6920: 2014 – Suitability of non-metallic materials and products for use in contact with water intended for human consumption with regard to their effect on the quality of water. Limited testing was undertaken on the product in line with Reg31 Small Surface Area Products (regulation 31(4)(b)) - requirements for small surface area products.

Project number: S2303122

Product ^{a)}: Wilo Borehole Seals / EPDM 55985, black coloured

Sample was taken by: Sent by the client

Date of sample receipt: 12/07/2023

Period of analysis: 12/07/2023 to 05/10/2023

Laboratory order number: 122300309

Statement of conformity:

*The tested sample **has satisfied** the criteria detailed in BS 6920: Part 1: 2014 and therefore **is suitable** for use with cold water.*

05/10/2023, i.V. Kerstin Schubert
Unit manager
Environmental and Analytical Kessin/Rostock

The test results relate only on the items tested. Without the written approval of the testing laboratory, a duplication in extracts of the test report is not permitted.

^{a)} information of the client. ^{k)} amendment. ^{z)} The conformity statement is made according to the requirements of the specifications mentioned and according to the first binary Kiwa decision rule with the corresponding level of trust. This assessment is a pure statement of conformity by the testing body. This conformity statement does not replace the conformity assessment of the certification body.

1. Examined product ^{a)}:

Trade name and reference of the product:	Wilo Borehole Seals, Borehole EPDM sundries
Nature of the product:	Borehole seal
General composition of the product:	Rubber
Trade name and designation of the material:	EPDM 55985
Nature of the material:	EPDM
Method of manufacture:	Compression moulding
Shore hardness:	70
Product manufacturer:	W. Kopp GmbH & Co. KG
Product manufacturing site:	52080 Aachen, Germany
Material manufacturer:	ERIKS Nederland
Submitting organisation:	Wilo UK
Proposed use of the product:	Material in contact with potable water
Sampling:	Random, from stock
Production date:	01/2023
Lot / Batch number:	Information not provided
Project number:	S2303122
Inspector:	Sample sent by the client
Date of sample receipt:	12/07/2023
Material photographs:	



Condition of sample on receipt:	Good condition
Packaging in contact with test product:	Stretch packing wrap

2. Laboratory sample record

Description of product:	Wilo Borehole Seals / EPDM 55985, black coloured
Description of test piece:	Black coloured, opaque, flexible, rubber seal
Length [mm]:	n.a.
Width [mm]:	n.a.
Thickness [mm]:	2.58
Internal diameter [mm]:	13.7
External diameter [mm]:	145
In-radius [mm]:	1.29
Surface area of one test sample [mm ²]:	3627
Number of articles constituting a test sample:	4
Surface area for test [mm ²]:	14506
Calibration mark of test container [L]:	1
Storage conditions:	acc. BS6920: Part 2: Section 2.1: Clause 5.2

n.a. = not applicable

3. Result summary

Table 1. Final test results

Test	Result
Odour and Flavour of Water at 23°C	Pass
Appearance of Water at 23°C	Pass
Growth of Aquatic Microorganisms at 30°C	Pass
Extraction of Substances that may be of Concern to Public Health at 23°C	Pass

4. Results of testing

4.1 Odour and Flavour of Water BS 6920 - Part 1: 2014 Clause 4

Methodology: BS 6920 - Part 2: Section 2.2

Table 2: Migration process at 23°C (Odour and Flavour of Water)

	Start	Completion
1 st migration period (first extract)	25/07/2023	26/07/2023

Migration water extracts were prepared by in vessel extraction: 4 sample pieces were placed in beakers filled up to 1 litre with test water in accordance with BS 6920-2.2.1.

4.1.1 Migration temperature at 23°C

Table 3: Results of Chlorine free test water - first extract

Panellist	Odour description	Flavour description	Flavour dilution number
1	None	None	1
2	None	None	1
3	None	None	1

Table 4: Results of Chlorinated test water - first extract

Panellist	Odour description	Flavour description	Flavour dilution number
1	None	None	1
2	None	None	1
3	None	None	1

Opinions and Interpretations:

The examined sample **conforms to the requirements** detailed in BS 6920 - Part 1: 2014 Clause 4 when extracted at 23°C.

4.2 Appearance of Water BS 6920 - Part 1: 2014 Clause 5

Methodology BS 6920 - Part 2: Section 2.3

Table 5: Migration process at 23°C (Appearance of Water)

	Start	Completion
1 st migration period (first extract)	17/07/2023	18/07/2023

4.2.1 Migration temperature at 23°C

Table 6: Results of Appearance of Water at 23°C, first extract

	Turbidity (FNU)	Colour (mg/L Pt)
Blank	<0.1	<2
Test sample	<0.1	<2
Test sample effect	<0.1	<2

Opinions and Interpretations:

The examined sample **conforms to the requirements** detailed in BS 6920 - Part 1: 2014 Clause 5 when extracted at 23°C.

4.3 Growth of Aquatic Microorganisms BS 6920 - Part 1: 2014 Clause 6

Methodology BS 6920: Part 2: Section 2.4

Table 7: Incubation temperature: $30 \pm 1^{\circ}\text{C}$ (Growth of Aquatic Microorganisms)

	Start	Completion
Incubation period	21/07/2023	08/09/2023

Incubation temperature: $(30 \pm 1)^{\circ}\text{C}$

A surface area of 14506 mm^2 for the MDOD test corresponds to 4 pieces of test sample. The 4 test pieces were placed in the test container, 100 ml inoculum water was added and filled up with test water to the 1 litre mark.

Table 8: Results of Growth of Aquatic Microorganisms after 49 days incubation period

	Mean dissolved oxygen (mg/L O_2)
Test water control*	7.9
	Mean dissolved oxygen difference (mg/L O_2)
Negative control (glass)	<0.1
Positive control (paraffin wax)	5.8
Test sample	0.3

*Test water control represents test water mixed with inoculum water

Note: At the end of this test the test piece showed no changes in colour and appearance.

Opinions and Interpretations:

The examined sample **conforms to the requirements** detailed in BS 6920 - Part 1: 2014 Clause 6.

4.4 Extraction of Substances that may be of Concern to Public Health BS 6920 - Part 1: 2014 Clause 7

Methodology BS 6920: Part 2: Section 2.5

Table 9: Migration process at 23°C (Extraction of Substances that may be of Concern to Public Health)

	Start	Completion
1 st migration period	17/07/2023	18/07/2023

4.4.1 Migration temperature at 23°C

Test start date:	18/07/2023
Microscopy examination:	19/07/2023
Cell line used:	Monkey African Green Kidney ATCC-Number CCL 81 (LOT: 605372-818)
Cell concentration used:	5 x 10 ⁵
Cell morphology:	Elongated cells form confluent monolayer
Media:	Pink in colour

Table 10: Results of Extraction of Substances that may be of Concern to Public Health at 23°C

Sample/Control	Cell morphology	Response
Blank	Healthy elongated cells, confluent monolayer, media pink in colour	Non-cytotoxic
Positive control (including zinc sulfate solution)	Rounded cells, mainly in suspension, media pink in colour	Cytotoxic
Test sample	Healthy elongated cells, confluent monolayer, media pink in colour	Non-cytotoxic
Negative control	Healthy elongated cells, confluent monolayer, media pink in colour	Non-cytotoxic

Opinions and Interpretations:

The examined sample **conforms to the requirements** detailed in BS 6920 - Part 1: 2014 Clause 7 when extracted at 23°C.

5. Analytical Information

Table 11: Overview investigation methods

Parameter	Standard method	Location	Detection limit	Reproducibility in %
Migration for Odour, Flavour <i>Reference water was Rostock tap water</i>	BS 6920-2.2.1: 2000+A3: 2014 *	12	-	-
Migration for Turbidity, Colour <i>Reference water was ultra pure water that originated from a reverse osmosis system</i>	BS 6920-2.3: 2000+A1: 2014	12	-	-
Migration for Aquatic Microorganisms <i>Reference water was Rostock tap water</i>	BS 6920-2-4: 2000+A1: 2014	12	-	-
Migration of Substances that may be of Concern to Public Health	BS 6920-2.5: 2000+A2: 2014*	12	-	-
Cell morphology	BS 6920-2.5: 2000+A2: 2014*	12	-	-
Turbidity	DIN EN ISO 7027-1 (C21):2016-11	12	0.1 FNU	3.4 (concentration level: 0.5 FNU)
Colour	DIN EN ISO 7887 Method C: 2012-04	12	2 mg/L Pt	3.2 (concentration level: 11 mg/l Pt)
Dissolved oxygen	DIN EN ISO 5814 (G 22): 2013-02	12	0.1 mg/l	13 (concentration level: 6.7 mg/l)

By an asterisk (*) marked methods are not accredited test methods. These methods were audited by an DAkkS-assessor with positive decision, inclusion in accreditation certificate is in preparation.

Locations:

12 Rostock

NOTES

The results specified in this report relate only to the sample(s) of this product submitted for testing. Any changes in the nature or source of ingredients and the process of manufacture or application could affect the suitability of this product for use in contact with wholesome water.

We would draw to your attention that reports issued by the accredited test laboratories do not of themselves constitute approval by either Kiwa Watertec or the Water Regulations Approvals Scheme. Applicants will be formally notified of their KIWA KUKmat4 or WRAS approval number if their application has been successful.

Materials and products intended for use by a public water supply organisation in the preparation or conveyance of water may need to satisfy more comprehensive toxicological requirements as specified by the Drinking Water Inspectorate. These additional requirements are necessary to ensure Water Company usage conforms with Regulation 31 of the Water Supply (Water Quality) Regulations 2000/2014.