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Hidronix s.r.l.
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80031 Brusciano - Naples
Italy

Correction test report PB2025001023-1

Client:	Hidronix s.r.l.
Order date:	15 Jan 2025
Purpose of test [a)]:	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.
Project number:	S2502010
Product [a), k)]:	HIDRONIX; PE-RT TYPE II/AL/PE-RT TYPE II multilayer pipe, white coloured
Sample was taken by:	Sent by the client
Date of sample receipt:	12 Feb 2025
Period of analysis:	12 Feb 2025 to 8 May 2025
Laboratory order number:	122500209-0001
This test report was created by:	Elena Samolov

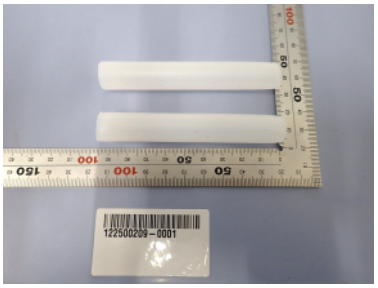
Statement of conformity:

*The tested sample **has satisfied** the criteria detailed in BS 6920: Part 1: 2014 and therefore **is suitable** for use with hot (up to 85°C) and cold water.*

This test report PB2025001023-1 replaces the test report PB2025001023 from 17 Apr 2025. Nature of material for outer and inner layer was amended from “PE-RT” to “PE-RT TYPE II” in sections Product, Nature of material, and Description of product. Description of inner layer was amended from “silver coloured, opaque” to “white coloured, translucent”.

[a)] information of the client. [k)] amendment.

1 Examined product [a)]:

Trade name and reference of the product:	HIDRONIX
Nature of the product:	Multilayer pipe
General composition of the product:	Plastic
Trade name and designation of the material:	Inner layer: PE-RT MLLDPE XP9000 Adhesive: Admer AT2397E Middle layer: Alucoil EN8006 / New Pipeöite 806HP Adhesive: Admer AT2397E Outer layer: PE-RT MLLDPE XP9000
Nature of the material [k)]:	PE-RT TYPE II/AL/PE-RT TYPE II: Inner layer: PE-RT TYPE II Adhesive Middle layer: Aluminium layer Adhesive Outer layer: PE-RT TYPE II
Method of manufacture:	Extrusion
Product manufacturer:	Hidronix s.r.l.
Product manufacturing site:	Italy
Material manufacturer:	Inner layer: DL Chemical Adhesive: MITSUI CHEMICAL GERMANY Middle layer: Aluminium Duffel Adhesive: MITSUI CHEMICAL GERMANY Outer layer: DL Chemical
Submitting organisation:	Hidronix s.r.l.
Proposed use of the product:	Conveyance of potable water
Sampling:	Random, from stock
Production date:	6 Feb 2025
Lot / Batch number:	Information not provided
Project number:	S2502010
Inspector:	Sent by the client
Date of sample receipt:	12 Feb 2025
Material photographs:	 
Condition of sample on receipt:	Good condition
Packaging in contact with test product:	Cardboard box
Storage conditions:	acc. BS 6920: Part 2: Section 2.1: Clause 5.2

2 Laboratory sample record

Description of product [k]:	HIDRONIX; PE-RT TYPE II/AL/PE-RT TYPE II multilayer pipe, white coloured
Description of test piece [k]:	Rigid, plastic multilayer pipe Outer layer: white coloured, opaque Middle layer: grey coloured, opaque Inner layer: white coloured, translucent
Length [mm]:	1000
Width [mm]:	n.a.
Thickness [mm]:	2.53
Internal diameter [mm]:	11.6
External diameter [mm]:	16.6
In-radius [mm]:	n.a.
Surface area of one test sample [mm²]:	88691
Number of articles constituting a test sample:	1
Surface area for test [mm²]:	36285
Number of articles constituting a test sample for MDOD test:	Two segments cut from product
Calibration mark of test container [l]:	1
Length of test sample for MDOD test [mm]:	93
Thickness of test sample for MDOD test [mm]:	2.22
Internal diameter of test sample for MDOD test [mm]:	10.4
External diameter of test sample for MDOD test [mm]:	14.8
Surface area for MDOD test [mm²]:	15089
Migration process:	Migration water extracts were prepared by in product extraction of 2 x 1000 mm lengths of pipe with test water per investigated temperature. Resulting leachate was subsequently diluted with fresh test water in accordance with BS 6920-2.2.2. Volume of water contained within the sample during extraction: 105 ml Volume of water extract diluted to 1 L: 43 ml

3 Result summary

Table 1: Final test results

Test	Result
Odour and Flavour of Water Result at 23°C	Pass
Odour and Flavour of Water Result at 85°C	Pass
Appearance of Water Result at 85°C	Pass
Growth of Aquatic Microorganisms Result at 30°C	Pass
Extraction of Substances that may be of Concern to Public Health Result at 23°C	Pass
Extraction of Substances that may be of Concern to Public Health Result at 85°C	Pass
Extraction of Metals Result at 85°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 and 85°C (Odour and Flavour of Water)

	Start	Completion
1st migration period (first extract)	15/04/2025	16/04/2025

4.1.1 Migration temperature at 23°C

Table 3: 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

Table 4: 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

Opinions and Interpretations:

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

4.1.2 Migration temperature at 85°C

Table 5: 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

Table 6: 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

Opinions and Interpretations:

The examined sample **conforms to the requirements** detailed in BS 6920 - Part 1: 2014 Clause 4 when extracted at 85°C.

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

Methodology BS 6920 – Part 2: Section 2.3

Table 7: Migration process at 85°C (Appearance of Water)

	Start	Completion
1st migration period (first extract)	17/02/2025	18/02/2025
7th migration period (final extract)	25/02/2025	26/02/2025

4.2.1 Migration temperature at 85°C

Table 8: Results of Appearance of Water at 85°C, first extract

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

Table 9: Results of Appearance of Water at 85°C, final extract

	Turbidity (FNU)	Colour (mg/L Pt)
Blank	0.2	<2
Test sample	0.3	<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 85°C.

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

Methodology BS 6920: Part 2: Section 2.4

Table 10: Incubation temperature: 30 ± 1°C (Growth of Aquatic Microorganisms)

	Start	Completion
Incubation period	21/02/2025	11/04/2025

Incubation temperature: (30 ± 1)°C

A surface area of 15089 mm^2 for the MDOD test corresponds to 2 segments cut from product. The 2 segments cut from product were placed in the test container, 100 ml inoculum water was added and filled up with test water to the 1 litre mark.

Table 11: Results of Growth of Aquatic Microorganisms after 49 days incubation period

	Mean dissolved oxygen (mg/L O_2)
Test water control*	8.6
	Mean dissolved oxygen difference (mg/L O_2)
Negative control (glass)	0.3
Positive control (paraffin wax)	7.3
Test sample	**0.5**

*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 12: Migration process at 23°C and 85°C (Extraction of Substances that may be of Concern to Public Health)

	Start	Completion
1st migration period	08/04/2025	09/04/2025

4.4.1 Migration temperature at 23°C

Test start date:	09/04/2025
Microscopy examination:	10/04/2025
Cell line used:	African Green Monkey Kidney VERO CCL 81
Cell concentration used:	5 x 10^5
Cell morphology:	Elongated cells form confluent monolayer
Media:	Pink in colour

Table 13: 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.

4.4.2 Migration temperature at 85°C

Test start date:	09/04/2025
Microscopy examination:	10/04/2025
Cell line used:	African Green Monkey Kidney VERO CCL 81
Cell concentration used:	5 x 10^5
Cell morphology:	Elongated cells form confluent monolayer
Media:	Pink in colour

Table 14: Results of Extraction of Substances that may be of Concern to Public Health at 85°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 85°C.

4.5 Extraction of Metals BS 6920 - Part 1: 2014 Clause 8

Methodology BS 6920: Part 2: Section 2.6

Table 15: Migration process at 85°C (Extraction of Metals)

	Start	Completion
1st migration period (first extract)	17/02/2025	18/02/2025

4.5.1 Migration temperature at 85°C

Table 16: Results of Extraction of Metals at 85°C, first and final extract

Parameter	First extract			Final extract			Detection limit (µg/L)	MAC (µg/L)	Technique
	Blank extract (µg/L)	Sample extract 1 (µg/L)	Sample extract 2 (µg/L)	Blank extract (µg/L)	Sample extract 1 (µg/L)	Sample extract 2 (µg/L)			
Aluminium	<20	<20	<20	n.a.	n.a.	n.a.	20	200	ICP-MS
Antimony	<0.5	<0.5	<0.5	n.a.	n.a.	n.a.	0.5	5	ICP-MS
Arsenic	<1	<1	<1	n.a.	n.a.	n.a.	1	10	ICP-MS
Boron	<100	<100	<100	n.a.	n.a.	n.a.	100	1000	ICP-MS
Cadmium	<0.5	<0.5	<0.5	n.a.	n.a.	n.a.	0.5	5	ICP-MS
Chromium	<5	<5	<5	n.a.	n.a.	n.a.	5	50	ICP-MS
Iron	<20	<20	<20	n.a.	n.a.	n.a.	20	200	ICP-MS
Lead	<1	<1	<1	n.a.	n.a.	n.a.	1	10	ICP-MS
Manganese	<5	<5	<5	n.a.	n.a.	n.a.	5	50	ICP-MS
Mercury	<0.1	<0.1	<0.1	n.a.	n.a.	n.a.	0.1	1	ICP-MS
Nickel	<2	<2	<2	n.a.	n.a.	n.a.	2	20	ICP-MS
Selenium	<1	<1	<1	n.a.	n.a.	n.a.	1	10	ICP-MS

MAC Maximum admissible concentration
ICP-MS Inductively coupled plasma – mass spectrometry
n.a. Not applicable

Note: If the measured value from the First extract conforms to the stated Maximum allowable concentrations of specific metal, then the First extract shall be defined as the Final extract.

Opinions and Interpretations: The examined sample **conforms to the requirements** detailed in BS 6920 - Part 1: 2014 Clause 8 when extracted at 85°C.

5 Analytical Information

Table 17: Overview investigation methods

Parameter	Standard method	Location	Detection limit	Reproducibility in %
Migration for Odour, Flavour *Reference water was Rostock tap water*	BS 6920-2.2.1: 2000+A3: 2014 *	12	-	-
Migration for Turbidity, Colour *Reference water was ultra pure water that originated from a reverse osmosis system*	BS 6920-2.3: 2000+A1: 2014	12	-	-
Migration for Aquatic Microorganisms *Reference water was Rostock tap water*	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 method is not accredited test method. This method was audited by an DAkkS-assessor with positive decision, inclusion in accreditation certificate is in preparation.

Continued Table 17: Overview investigation methods

Parameter	Standard Method	Location	Detection limit	Reproducibility in %
Extraction of Metals Reference water was ultra pure water that originated from a reverse osmosis system	BS 6920-2.6: 2000+A2: 2014	12	-	-
Aluminium	DIN EN ISO 17294-2: 2017-01	03	20 µg/L	9.5 (concentration level: 20 µg/l)
Antimony	DIN EN ISO 17294-2: 2017-01	03	0.5 µg/L	3.1 (concentration level: 0.5 µg/l)
Arsenic	DIN EN ISO 17294-2: 2017-01	03	1 µg/L	5.8 (concentration level: 2 µg/l)
Boron	DIN EN ISO 17294-2: 2017-01	03	100 µg/L	1.5 (concentration level: 100 µg/l)
Cadmium	DIN EN ISO 17294-2: 2017-01	03	0.5 µg/L	4.9 (concentration level: 0.5 µg/l)
Chromium	DIN EN ISO 17294-2: 2017-01	03	5 µg/L	6.5 (concentration level: 5 µg/l)
Iron	DIN EN ISO 17294-2: 2017-01	03	20 µg/L	4.2 (concentration level: 20 µg/l)
Lead	DIN EN ISO 17294-2: 2017-01	03	1 µg/L	1.2 (concentration level: 2 µg/l)
Manganese	DIN EN ISO 17294-2: 2017-01	03	5 µg/L	3.4 (concentration level: 50 µg/l)
Mercury	DIN EN ISO 17294-2: 2017-01	03	0.1 µg/L	4.7 (concentration level: 2 µg/l)
Nickel	DIN EN ISO 17294-2: 2017-01	03	2 µg/L	2.1 (concentration level: 2 µg/l)
Selenium	DIN EN ISO 17294-2: 2017-01	03	1 µg/L	5.6 (concentration level: 2 µg/l)

Locations:
03 Kessin
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.

- End of test report -