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Test Report

REPORT NO. **MA5131/K**

Section 1

PP-R Multilayer pipes

a) GallaPlast Beta FAZER – D20-D110

b) GallaPlast Beta PPR – D16-D110

Beta-PPR™ RA7050

CLIENT:
Gallaplast OÜ
Mustamäe tee 16-530
10617
Tallinn
Estonia

reported by:

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DATE: 6 OCTOBER 2014

reviewed by:

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CLIENT'S REFERENCE: Sergei Beluhhin

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

SUITABILITY OF NON-METALLIC PRODUCTS FOR USE IN CONTACT WITH WATER INTENDED FOR HUMAN CONSUMPTION WITH REGARD TO THEIR EFFECT ON THE QUALITY OF THE WATER
WRAS TESTS OF EFFECT ON WATER QUALITY (BS 6920: 2000)
HIGH TEMPERATURE TESTS (BS6920: PART 3: 2000)

INFORMATION AND GUIDANCE NOTE

WATER REGULATIONS ADVISORY SCHEME

The Scheme wishes to draw to the attention of product manufacturers and users that reports issued by accredited test laboratories do not of themselves constitute approval by the Scheme or the test laboratory. Only a letter from the Scheme, citing a Directory Reference Number, can be regarded as indicating approval.

1. SAMPLES FOR TESTING

General composition of products	a) & b) inner & outer layers: PP-R a) only: middle layers: glass fibre & PP-R
Trade names and references of materials	a) & b) inner layer: Beta-PPR™ RA7050 outer layer: RA130 a) only, middle layers: glass fibre layer: BF20 polymer layer: RA7050
Materials manufacturers	a) & b) inner layer: Borealis AG, Austria outer layer: Borealis AG, Austria a) only, middle layers: glass fibre layer: Gallaplast OÜ, Estonia polymer layer: Borealis AG, Austria
Submitting organisation	Gallaplast OÜ, Estonia
Components names/refs	a) GallaPlast Beta FAZER – D20-D110 b) GallaPlast Beta PPR – D16-D110
Components manufacturer	Gallaplast OÜ, Estonia
Batch numbers of products	information not provided
Dates of manufacture of products	a) 29 April 2014 b) 5 May 2014 inner layer only: 14 October 2013
Description of samples	a) pale green opaque, shiny pipe with a grey, shiny inner layer and 2 middle layers, one green and one grey. b) shiny, opaque pale green pipe with black stripes and a grey shiny, opaque inner layer
Method of manufacture of samples	extrusion

Sampling procedure	information not provided
Surface area of test pieces in contact with water	odour & flavour test: a) &b): 72665mm² all other tests: inner layer only: 15010mm²
Number of articles constituting a test piece	1
Dimensions of test pieces: ext./int. diameter/length:	odour & flavour test: a) 32.29mm/23.13mm/1000mm b) 32.29mm/23.09mm/1000mm all other tests: inner layer: 16.36mm/11.87mm/167mm
Calibration mark of test containers	1 litre
Date of application	9 April 2014
Date of receipt of test samples	a) & inner layer: 2 June 2014 b) 12 June 2014
Condition of samples on receipt	satisfactory
Method of packaging	plastic
Conditions of storage of the samples between receipt and testing	as instructed in BS6920-2.1: 2000: clause 5.2
Proposed use of the products	for hot and cold water supply

2. ODOUR AND FLAVOUR OF WATER

This test was carried out according to BS 6920-2.2.2. Extracts were prepared by filling a 1 metre length of pipe with test water and diluting this with fresh test water at the end of the extraction period to obtain the initial dilution.

Extraction temperature - 85°C

Date test commenced – 12 August 2014

Number of tasters in the taste panel – 3

Product a)

Volume of water contained within the sample during extraction – 420ml

Total volume of initial dilution – 4.84 litres

Extract 1

(i) chlorine free test water:

Taster	Odour description	Flavour description	Flavour dilution number
1	nil	nil	<1
2	nil	nil	<1
3	nil	nil	<1

(ii) chlorinated test water:

Taster	Odour description	Flavour description	Flavour dilution number
1	nil	nil	<1
2	nil	nil	<1
3	musty	nil	<1

Product b)

Volume of water contained within the sample during extraction – 420ml

Total volume of initial dilution – 4.84 litres

Extract 1

(i) chlorine free test water:

Taster	Odour description	Flavour description	Flavour dilution number
1	nil	nil	<1
2	nil	nil	<1
3	nil	nil	<1

(ii) chlorinated test water:

Taster	Odour description	Flavour description	Flavour dilution number
1	nil	nil	<1
2	nil	nil	<1
3	musty	nil	<1

Comment - thus the samples of these products have been found to comply with the requirements of BS 6920: Part 1: clause 4 when extracted at 85°C.

3. APPEARANCE OF WATER

Inner layer only

Extraction temperature – 85°C

Date test commenced – 5 August 2014

Extract 1

	Colour (Hazen units)	Turbidity (Formazine nephelometric units)
Test container (products)	<5	0.02
Blank	<5	0.02
Net Increase	nil	nil

Comment - thus the sample of this product has been found to comply with the requirements of BS 6920: Part 1: clause 5 when extracted at 85°C.

4. GROWTH OF AQUATIC MICROORGANISMS

Inner layer only

Date test commenced – 10 June 2014

Mean dissolved oxygen differences –

Test containers (products)	-0.6mg/l
Negative reference (glass) sample	-0.5mg/l
Positive reference (wax) sample	6.3mg/l
Mean dissolved oxygen concentration of the negative control	7.7mg/l

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

Comments - thus the sample of this product has been found to comply with the requirements of BS 6920: Part 1: clause 6.

5. THE EXTRACTION OF SUBSTANCES THAT MAY BE OF CONCERN TO PUBLIC HEALTH

Inner layer only

Extraction temperature - 85°C

Date tests commenced – 22 July 2014

Extracts were tested using African Green Monkey Cell Line (VERO ATCC CCL 81)

Extract	Growth of cell tissue (monolayer)
Reagent blank	healthy, confluent
Zinc Sulphate validation solution (cytotoxic)	cell death
samples	healthy, confluent

Comment - thus the sample of this product has been found to give a non-cytotoxic response and therefore has been found to comply with the requirements of BS 6920: Part 1: clause 7 when extracted at 85°C.

6. THE EXTRACTION OF METALS

Inner layer only

Extraction temperature - 85°C

Date test commenced – 5 August 2014

Number of extracts - 1

All analyses carried out at location A, Sunbury Technology Centre, on duplicate samples of the product as specified below

Aluminium, Antimony, Arsenic, Barium, Cadmium, Chromium, Iron, Lead, Manganese, Mercury, Nickel, Selenium: Inductively coupled plasma emission spectroscopy (ICP-MS)

Extract 1

Metal	Expression of the results	Max. admissible concentration	Reporting Limit	Concentration Final Extract I	Concentration Final Extract II	Determined Reagent Blanks
Aluminium	Al μg/L	200	20.0	< 20.0	< 20.0	< 20.0
Antimony	Sb μg/L	5	0.5	< 0.5	< 0.5	< 0.5
Arsenic	As μg/L	10	1.0	< 1.0	< 1.0	< 1.0
Barium	Ba μg/L	1000	100.0	< 100.0	< 100.0	<100.0
Cadmium	Cd μg/L	5	0.5	< 0.5	< 0.5	< 0.5
Chromium	Cr μg/L	50	5.0	< 5.0	< 5.0	< 5.0
Iron	Fe μg/L	200	20.0	< 20.0	< 20.0	< 20.0
Lead	Pb μg/L	25	1.0	1.86	1.98	1.81
Manganese	Mn μg/L	50	5.0	< 5.0	< 5.0	< 5.0
Mercury	Hg μg/L	1	0.1	< 0.1	< 0.1	< 0.1
Nickel	Ni μg/L	20	2.0	< 2.0	< 2.0	< 2.0
Selenium	Se μg/L	10	1.0	< 1.0	< 1.0	< 1.0

Comment - thus the samples of this product have been found to comply with the requirements of BS 6920: Part 1: clause 8 when extracted at 85°C.

Further Comment - In the Extraction of Metals Test the concentration of lead found in the reagent blank exceeded the reporting limit of detection for this element. After investigation it was concluded, that the test was valid and that the results obtained for the product conform with the requirements for this test.

CONCLUSION

The samples of the products referred to in this report have been tested in accordance with the methods specified in BS 6920: Part 2: 2000 “Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water: “Methods of test” (including High Temperature Tests in accordance with BS 6920: Part 3: 2000) and the requirements of the Water Regulations Advisory Scheme ‘WRAS Materials Guidance, Version 2 dated 8 March 2013’.

Products a) & b) have satisfied the criteria set out in BS 6920: Part 1: 2000 “Specification” and thus comply with the requirements of the Water Regulations Advisory Scheme Tests of Effect on Water Quality (BS 6920: 2000). They are suitable for use with hot water (up to 85°C) and cold water.

NO OTHER TESTS WERE UNDERTAKEN ON THESE PRODUCTS

N.B The results specified in this report relate only to the samples of the products submitted for testing. Any changes in the nature or source of ingredients and the process of manufacture or application could affect the suitability of the products for use in contact with potable water.

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