

# Test Report

REPORT NO. MA3349/B

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## ELGEF Plus PE100

**CLIENT:**

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DATE: 23 NOVEMBER 2006

CLIENT'S REFERENCE:

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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 product	PE 100
Trade name and reference of material	as per information supplied by the customer
Material manufacturer	as per information supplied by the customer
Submitting organisation	Georg Fischer Piping Systems (Switzerland) Ltd
Component name/ref	ELGEF Plus PE100 Elbow 90° (753.101.011)
Component manufacturer	Georg Fischer Piping Systems
Batch number of product	0603
Date of manufacture of product	9 June 2006
Description of sample	black shiny opaque cylindrical fitting with elbow
Sampling procedure	random
Surface area of test piece	14953mm <sup>2</sup>
Number of articles constituting a test piece	0.22
Surface area of one article	67024mm <sup>2</sup>
Dimensions of test piece: external diameter:	62mm
length:	41mm
Calibration mark of test containers	1 litre

Date of receipt of test samples	5 September 2006
Condition of samples on receipt	satisfactory
Method of packaging	individually in plastic bags
Conditions of storage of the samples between receipt and testing	as instructed in BS6920-2.1: 2000: clause 5.2
Proposed use of the product	water distribution

**2. ODOUR AND FLAVOUR OF WATER**

Extraction temperature - 55°C

Date test commenced – 17 October 2006

Number of tasters in the taste panel – 3

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	nil	woody	1

Extract 2

(ii) chlorinated test water:

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

Comment - thus the samples of this product have been found to comply with the requirements of BS 6920: Part 1: clause 4 when extracted at 55°C.

3. APPEARANCE OF WATER

Extraction temperature – 60°C

Date test commenced – 2 October 2006

Extract 1

	Colour (Hazen units)	Turbidity (Formazine nephelometric units)
Test container (product)	<5	0.05
Blank	<5	0.05
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 60°C.

4. GROWTH OF AQUATIC MICROORGANISMS

Date test commenced – 5 September 2006

Mean dissolved oxygen differences -

Test container (product)	0.8mg/l
Negative reference (glass) sample	-0.1mg/l
Positive reference (wax) sample	6.6mg/l
Mean dissolved oxygen concentration of the negative control	7.9mg/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

Extraction temperature - 60°C

Date test commenced – 2 October 2006

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

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

Comment - thus the sample of this product has been found to give a non-cytotoxic response and therefore it has been found to comply with the requirements of BS 6920: Part 1: clause 7 when extracted at 60°C.

## 6. THE EXTRACTION OF METALS

Extraction temperature - 60°C

Date test commenced – 2 October 2006

Number of extracts - 1

All analyses carried out under UKAS accreditation number 1550 on duplicate samples of the product as specified below

Aluminium, Antimony, Arsenic, Barium, Cadmium, Chromium, Iron, Lead, Manganese, Nickel, Selenium: Inductively coupled plasma emission spectroscopy (ICP-MS) method code ING113 ICP-MS

Mercury: AAS cold vapor technique (after preservation in acidified potassium dichromate) method code ING75 Cold Vapour AAS

### Extract 1

Metal	Expression of the results	Max. admissible concentration	Reporting Limit	Concentration Final Extract		Determined Reagent Blanks
				I	II	
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	22.0	21.8	25.6
Lead	Pb µg/L	25	1.0	< 1.0	< 1.0	< 1.0
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 60°C.

### Further Comment

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

## CONCLUSION

The sample of the product referred to in this report has 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.

**This product has satisfied the criteria set out in BS 6920: Part 1: 2000 "Specification" and thus complies with the requirements of the Water Regulations Advisory Scheme Tests of Effect on Water Quality (BS 6920: 2000). It is suitable for use hot water (up to 55°C) and cold water.**

N.B The results specified in this report relate only to the sample of the 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 the product 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.