



TEST REPORT

Client: Maris Polymers S.A.

Product: Mariseal 300

Tests Undertaken: BS 6920 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

Report Number: MAT/LAB 326M

Date of Report: 18th July 2017



0626

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Client: Maris Polymers S.A.
Product: Mariseal 300
Test Criteria: BS 6920

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1. EXECUTIVE SUMMARY

Test	Result
Odour and flavour of water – 23 °C	Pass
Odour and flavour of water – 65 °C	Pass
Appearance of water	Pass
Growth of aquatic microorganisms	Pass
Extraction of substances that may be of concern to public health – 23 °C	Pass
Extraction of substances that may be of concern to public health – 65 °C	Pass
Extraction of metals	Pass

This product has satisfied the criteria set out in BS 6920: Part 1: 2014 “Specification” and thus is suitable for use with hot (up to 65 °C) and cold water.



Mr Michael Bustin, Materials Testing Manager

Date 18th July 2017

Please note the following statements
a) The samples of the product referred to in this report have been tested in accordance with the methods specified in BS 6920 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.
b) This work has been undertaken in the UKAS accredited laboratory of NSF Wales Ltd Oakdale, UKAS registration number 0626, unless otherwise stated. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
c) The results specified in this report relate only to the samples(s) of this product submitted for testing. Any changes in the nature or source of ingredients and the process of manufacturer or application could affect the suitability of this product for use in contact with potable water.
d) We draw to your attention that reports issued by the accredited test laboratories do not of themselves constitute approval by the Water Regulations Advisory Scheme or the test laboratory. Only a letter from the Scheme, citing a Directory Reference number can be regarded as indicating approval.
e) 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 specified by the Drinking Water Inspectorate. These additional requirements are necessary to ensure Water Company usage complies with Regulation 31 of the Water Supply (Water Quality) Regulations 2010.

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2. SAMPLES FOR TESTING

BS 6920: Part 2: Section 2.1 and in-house method PROC/MAT 001.

Contact name	Mr Yannis Ananiadis
Name of organisation	Maris Polymers S.A.
Address	Industrial Area of Inofyta 32011 Inofyta Greece

Product	Mariseal 300
Product manufacturer	Maris Polymers S.A.
Submitting organisation	Maris Polymers S.A.
Product manufacturing site	Greece
Method of manufacture	Mixing

Trade name and reference of product	Mariseal 300
General nature of product	Polyurethane coating
Typical use of the product	Coating in contact with potable water

Receipt conditions	In good condition
Receipt packaging	Sealed tin
Storage conditions	As in BS 6920: Part 2: Section 2.1: Clause 5.2
Description/appearance of the product for testing	Part A: White, opaque liquid Part B: Clear, colourless liquid Final product: White, opaque coating

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Test sample preparation

<p>Mariseal 300 Part A and Part B were thoroughly stirred and mixed in the ratio of 6:1 by weight and brush applied to glass plates at a wet film thickness of approximately 330 microns and allowed to cure for 18 hours at 23 °C, a second coat was then applied at a wet film thickness of approximately 330 microns and allowed to cure for 18 hours at 23 °C, a third coat was applied at a wet film thickness of approximately 330 microns and allowed to cure for 7 days at 23 °C before testing commenced.</p> <p>These details are in accordance with the manufacturer's instructions for use.</p> <p>The customer has stated that this product is normally used in interior surfaces (underground water tanks, interior water tanks, etc.) where the temperature is constant. This temperature can be maintained at 23 °C by the use of mobile heating apparatus.</p>

Surface area of one article	7,500 mm ²
Number of articles constituting a sample	2
Surface area for test	15,000 mm ²
Calibration mark of test container	1 L

Date of receipt of application form	02/03/17
Date of receipt of product for test	04/01/17
Batch number	Not provided
Date test sample manufactured	18/12/16
Ambient temperature at time of application	23 °C

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3. ODOUR AND FLAVOUR OF WATER

Methodology: BS 6920: Part 2: Section 2.2.1 and in-house method PROC/MAT 004 and 006.

Date leaching tests started: 02/05/17	Date leaching tests finished: 11/05/17
Number of panellists: 3	Temperature of extraction: (23 ±2) °C

Odour test

Extract	Date of test	Test water	Dilution number [§]	Odour descriptor
First	03/05/17	Chlorine free	0(0)	None
First	03/05/17	Chlorinated	0(2)	Wax, Lead
Final	-	Chlorine free	-	-
Final	11/05/17	Chlorinated	0(1)	Chemical

Flavour test

Extract	Date of test	Test water	Dilution number [§]	Flavour descriptor
First	03/05/17	Chlorine free	1(0)	None
First	03/05/17	Chlorinated	Not suitable for flavour; failed odour	
Final	-	Chlorine free	-	-
Final	11/05/17	Chlorinated	1(0)	None

[§] figure in brackets is the number of panellists detecting an odour or flavour at this dilution

On the basis of these results the samples of this product referred to in this report have been found to conform to the requirements of BS 6920: Part 1: 2014, Clause 4

Client: Maris Polymers S.A.
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Date leaching tests started: 02/05/17	Date leaching tests finished: 11/05/17
Number of panellists: 3	Temperature of extraction: (65 ±2) °C

Odour test

Extract	Date of test	Test water	Dilution number [§]	Odour descriptor
First	03/05/17	Chlorine free	0(3)	Wax, Paint, Stale
First	03/05/17	Chlorinated	0(2)	Wax, Paint
Final	11/05/17	Chlorine free	0(1)	Chemical
Final	11/05/17	Chlorinated	0(1)	Chemical

Flavour test

Extract	Date of test	Test water	Dilution number [§]	Flavour descriptor
First	03/05/17	Chlorine free	Not suitable for flavour; failed odour	
First	03/05/17	Chlorinated	Not suitable for flavour; failed odour	
Final	11/05/17	Chlorine free	1(0)	None
Final	11/05/17	Chlorinated	1(0)	None

[§] figure in brackets is the number of panellists detecting an odour or flavour at this dilution

On the basis of these results the samples of this product referred to in this report have been found to conform to the requirements of BS 6920: Part 1: 2014, Clause 4

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4. APPEARANCE OF WATER

Methodology: BS 6920: Part 2: Section 2.3 and in-house methods PROC/MAT 004, PROC/MAT 027 (colour) and PROC/MAT 030 (turbidity).

Date leaching tests started: 02/05/17	Date leaching tests finished: 03/05/17
Temperature of extraction: (65 ±2) °C	

Colour

Extract	Date of test	Hazen units		Test sample effect
		Blank	Extract	
First	04/05/17	<2	<2	<2
Final	-	-	-	-

Turbidity

Extract	Date of test	Formazine Nephelometric units		Test sample effect
		Blank	Extract	
First	04/05/17	0.182	0.274	0.092
Final	-	-	-	-

First extract becomes final extract

On the basis of these results the samples of this product referred to in this report have been found to conform to the requirements of BS 6920: Part 1: 2014, Clause 5
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5. GROWTH OF MICROORGANISMS

Methodology: BS 6920: Part 2: Section 2.4 and in-house method PROC/MIC 001.

Date testing started: 02/05/17	Date testing finished: 20/06/17
Incubation temperature: (30 ±1) °C	

Mean dissolved oxygen difference MDOD (mg L ⁻¹ O ₂)	
Test sample	1.4
Positive reference (paraffin wax)	6.4
Negative reference (glass)	0.3

Test water control dissolved oxygen (mg L ⁻¹ O ₂)	8.1
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Comments on changes in appearance of test material and any visible microbial growth	At the end of this test, the test sample showed no change in colour or appearance.
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On the basis of these results the samples of this product referred to in this report have been found to conform to the requirements of BS 6920: Part 1: 2014, Clause 6

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6. EXTRACTION OF SUBSTANCES THAT MAY BE OF CONCERN TO PUBLIC HEALTH

Methodology: BS 6920: Part 2: Section 2.5 and in-house methods PROC/MAT 004 and PROC/MIC 004.

Date leaching tests started: 02/05/17	Date leaching tests finished: 03/05/17
Temperature of extraction: (23 ±2) °C	

Test Set-up

Date: 03/05/17

Cell concentration used	5 x 10 ⁵
Cell morphology	Confluent growth of elongated cells, some round cells and cell debris. Media orange/pink in colour.

Test Results

Date: 04/05/17

Sample/Control	Cell morphology	Response
Test sample	Confluent growth of elongated cells, some round cells and cell debris. Media pink in colour.	Non-cytotoxic
Blank	Confluent growth of elongated cells, some round cells and cell debris. Media pink in colour.	Non-cytotoxic
Negative control	Confluent growth of elongated cells, some round cells and cell debris. Media pink in colour.	Non-cytotoxic
Positive control	All cells rounded and mainly still in suspension. Media pink in colour.	Cytotoxic

On the basis of these results the samples of this product referred to in this report have been found to conform to the requirements of BS 6920: Part 1: 2014, Clause 7

Client: Maris Polymers S.A.
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Date leaching tests started: 02/05/17	Date leaching tests finished: 03/05/17
Temperature of extraction: (65 ±2) °C	

Test Set-up

Date: 04/05/17

Cell concentration used	5 x 10 ⁵
Cell morphology	Confluent growth of elongated cells, some round cells and cell debris. Media orange/pink in colour.

Test Results

Date: 05/05/17

Sample/Control	Cell morphology	Response
Test sample	Confluent growth of elongated cells, some round cells and cell debris. Media pink in colour.	Non-cytotoxic
Blank	Confluent growth of elongated cells, some round cells and cell debris. Media pink in colour.	Non-cytotoxic
Negative control	Confluent growth of elongated cells, some round cells and cell debris. Media pink in colour.	Non-cytotoxic
Positive control	All cells rounded and mainly still in suspension. Media pink in colour.	Cytotoxic

On the basis of these results the samples of this product referred to in this report have been found to conform to the requirements of BS 6920: Part 1: 2014, Clause 7

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7. EXTRACTION OF METALS

Methodology: BS 6920: Part 2: Section 2.6 and in-house methods PROC/MAT 006 (leachate preparation) and PROC/ING 003 (ICPMS analysis).

Date leaching tests started: 30/05/17	Date leaching tests finished: 31/05/17
Temperature of extraction: (65 ±2) °C	

First Extract

Date of analysis: 01/06/17	Report No. 081
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Metal (µg L ⁻¹)	MAC (µg L ⁻¹)	LOD (µg L ⁻¹)	Blank 1 (µg L ⁻¹)	Blank 2 (µg L ⁻¹)	Sample 1 (µg L ⁻¹)	Sample 2 (µg L ⁻¹)
Aluminium	200	20	<20	<20	75.0	66.0
Antimony	5	0.5	<0.5	<0.5	<0.5	<0.5
Arsenic	10	1	<1	<1	<1	<1
Boron	1000	100	<100	<100	<100	<100
Cadmium	5	0.5	<0.5	<0.5	<0.5	<0.5
Chromium	50	5	<5	<5	<5	<5
Iron	200	20	<20	<20	<20	<20
Lead	10	1	<1	<1	<1	<1
Manganese	50	5	<5	<5	<5	<5
Mercury	1	0.1	<0.1	<0.1	<0.1	<0.1
Nickel	20	2	<2	<2	<2	<2
Selenium	10	1	<1	<1	<1	<1

Analytical Method - ICPMS Inductively Coupled Plasma Mass Spectrometry

MAC - Maximum admissible concentration

LOD - Required limit of detection

First extract becomes final extract

On the basis of these results the samples of this product referred to in this report have been found to conform to the requirements of BS 6920: Part 1: 2014, Clause 8

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