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# Test Report

**REPORT NO.** **MA4464/1/R** 
supplementary report to: MA4464/R

## EPDM – D0012

**CLIENT:**
Rong Sheng Long Rubber Sealing Article Factory of Foshan
City, Shunde District, Longjiang Town
Beside of Beihua Road
Tandong Industrial Zone
Longjiang Town
Shunde District, Foshan City
Guangdong Province
PR China

**MICHAEL DAY**
**MATERIALS CHEMIST**

**DATE: 11 DECEMBER 2012**
**re-issued with amendments 2 JANUARY 2013**
**re-issued with further amendments 3 JANUARY 2013**

**CLIENT'S REFERENCE: Zhang Sao Zai**

**HANNAH SNELL**
**TEAM LEADER, MATERIALS**

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 product | | EPDM rubber compound, shore hardness 70 |
| Trade name and reference of material | | EPDM-D0012 |
| Material manufacturer | | Rong Sheng Long Rubber Sealing Article Factory of Foshan Ciry, PR China |
| Submitting organisation | | Rong Sheng Long Rubber Sealing Article Factory of Foshan Ciry, PR China |
| Batch number of product | | 1208 |
| Date of manufacture of product | | 11 August 2012 |
| Description of sample | | black, shiny, opaque sheet |
| Method of manufacture of sample | | vulcanised moulding |
| Sampling procedure | | information not provided |
| Surface area of test piece | | 14887mm² |
| Number of articles constituting a test piece | | 1 |
| Dimensions of test piece: | length/width/ thickness: in-radius | 119.18mm/59.28mm/2.12mm 1.06mm |
| Calibration mark of test containers | | 1 litre |
| Date of receipt of test samples | | 6 September 2012 |
| Condition of samples on receipt | | satisfactory |
| Method of packaging | | re-sealable plastic bag |

| | |
|---|---|
| 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 | seal and gasket for cold and hot water use |

## 2. ODOUR AND FLAVOUR OF WATER

Extraction temperature - 85°C

Date test commenced – 16 October 2012

Number of tasters in the taste panel – 3

Extract 1

(i) chlorine free test water:

| Taster | Odour description | Flavour description | Flavour dilution number |
|---|---|---|---|
| 1 | foliage | N/A | N/A |
| 2 | nil | N/A | N/A |
| 3 | rubber | N/A | N/A |

(ii) chlorinated test water:

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

Extract 7 (final extract)

(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 |

Comment - thus the sample of this product has been found to comply with the requirements of BS 6920: Part 1: clause 4 when extracted at 85°C.

## 3. APPEARANCE OF WATER

Extraction temperature – 85°C

Date test commenced – 9 October 2012

Extract 1

| | Colour (Hazen units) | Turbidity (Formazine nephelometric units) |
|---|---|---|
| Test container (product) | <5 | 0.2 |
| Blank | <5 | 0.2 |
| 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. THE EXTRACTION OF SUBSTANCES THAT MAY BE OF CONCERN TO PUBLIC HEALTH

Extraction temperature - 85°C

Date test commenced – 9 October 2012

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 |
| 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 85°C.

## 5. THE EXTRACTION OF METALS

Extraction temperature - 85°C

Date test commenced – 9 October 2012

Number of extracts - 1

All analyses carried out 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 | < 1.0 | < 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 85°C.

## 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 'Guidance on the Requirements for Approval of Non-Metallic Materials in Fittings: Appendix A: version 2.8 April 2007'

**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). Odour & Flavour of Water / Appearance of Water / Cytotoxicity / Extraction of Metals & High Temperature Tests.**

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.

## NOTES FOR WRAS

This product has been tested in the form of a moulded sheet, not final component, form, and thus it can only be listed under the "Materials Only" section of the Directory.

The tests carried out on the sample of this product are based upon 'WRAS Materials Guidance, version 1, Table 1'; 'Increasing the permitted water temperature of an existing approval.' Previous testing was carried out under our report ref MA4464/R dated 10 May 2012.