



# TEST REPORT

**Client:** Jain Irrigation Systems Ltd.

**Product:** Jain UPVC Casing Pipe

**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 779B rev.1

**Date of Report:** 10<sup>th</sup> September 2018,  
original report issued 06/09/18



0626

**NSF Wales Ltd**

30 Fern Close

Pen-y-Fan Industrial Estate  
Oakdale, Gwent, NP11 3EH, UK

t: +44 (0) 1495 236 260

f: +44 (0) 1495 242 499

e: wales@nsf.org

w: nsf.org

*This report is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This report shall not be reproduced, except in its entirety, without the written approval of NSF Wales Ltd. This report does not represent NSF Certification or authorisation to use the NSF Mark. Authorisation to use the NSF Mark is limited to products appearing in the Company's Official NSF Listing ([www.nsf.org](http://www.nsf.org)). The results relate only to those items tested, in the condition received at the laboratory.*

Client: Jain Irrigation Systems Ltd.  
Product: Jain UPVC Casing Pipe  
Test Criteria: BS 6920

---

**CONTENTS**

1. Executive Summary ..... 3  
2. Samples for Testing ..... 4  
3. Odour and Flavour of Water ..... 6  
4. Appearance of Water ..... 7  
5. Growth of Microorganisms..... 8  
6. Extraction of Substances that may be of Concern to Public Health ..... 9  
7. Extraction of Metals..... 10  
Notes..... 11

Client: Jain Irrigation Systems Ltd.  
 Product: Jain UPVC Casing Pipe  
 Test Criteria: BS 6920

## 1. EXECUTIVE SUMMARY

Test	Result
Odour and flavour of water	Pass
Appearance of water	Pass
Growth of aquatic microorganisms	Pass
Extraction of substances that may be of concern to public health	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 cold water but not hot water.**



Mr Michael Bustin, Materials Testing Manager

Date 10<sup>th</sup> September 2018

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.

Client: Jain Irrigation Systems Ltd.  
 Product: Jain UPVC Casing Pipe  
 Test Criteria: BS 6920

## 2. SAMPLES FOR TESTING

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

Contact name	Mr. M. R. Kharul
Name of organisation	Jain Irrigation Systems Ltd.
Address	Jain Plastic Park, P. O. Box: 72; N. H. No. 6, Jalgaon – 425001, India

Product	Jain UPVC Casing Pipe
Product manufacturer	Jain Irrigation Systems Ltd.
Submitting organisation	Jain Irrigation Systems Ltd.
Sampling procedure	Random
Product manufacturing site	Jain Plastic Park, P. O. Box: 72; N. H. No. 6, Jalgaon – 425001, India

Trade name and reference of product	Jain Casing Pipe
Nature of product	UPVC Pipe
Nature of material	UPVC
Method of manufacture	Extrusion
Shore hardness	Not applicable
Typical use of the product	Potable water bore well

Material manufacturer	Reliance Industries Ltd.
Trade name and reference of material	PVC K-6701
Material manufacturing site	India

Client: Jain Irrigation Systems Ltd.  
 Product: Jain UPVC Casing Pipe  
 Test Criteria: BS 6920

Receipt conditions	In good condition
Receipt packaging	Plastic wrapped
Storage conditions	As in BS 6920: Part 2: Section 2.1: Clause 5.2

Description/Appearance of the product for testing	Blue, opaque, rigid pipe
Sample dimensions	39 mm x 60 mm x 52 mm
Surface area of one article	15,129.9 mm <sup>2</sup>
Number of articles constituting a sample	1
Surface area for test	15,129.9 mm <sup>2</sup>
Calibration mark of test container	1 L

Date of receipt of application form	21/06/18
Date of receipt of product for test	11/06/18
Test sample preparation	Prepared by manufacturer
Date test sample manufactured	28/05/18
Batch number	18148562

Client: Jain Irrigation Systems Ltd.  
 Product: Jain UPVC Casing Pipe  
 Test Criteria: BS 6920

### 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: 06/08/18	Date leaching tests finished: 07/08/18
Number of panellists: 3	Temperature of extraction: (23 ±2) °C

#### Odour test

Extract	Date of test	Test water	Dilution number <sup>§</sup>	Odour descriptor
First	07/08/18	Chlorine free	0(0)	None
First	07/08/18	Chlorinated	0(0)	None
Final	-	Chlorine free	-	-
Final	-	Chlorinated	-	-

#### Flavour test

Extract	Date of test	Test water	Dilution number <sup>§</sup>	Flavour descriptor
First	07/08/18	Chlorine free	1(0)	None
First	07/08/18	Chlorinated	1(0)	None
Final	-	Chlorine free	-	-
Final	-	Chlorinated	-	-

<sup>§</sup> figure in brackets is the number of panellists detecting an odour or flavour at this dilution

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 4

Client: Jain Irrigation Systems Ltd.  
 Product: Jain UPVC Casing Pipe  
 Test Criteria: BS 6920

## 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: 31/07/18	Date leaching tests finished: 01/08/18
Temperature of extraction: (23 ±2) °C	

### Colour

Extract	Date of test	Hazen units		Test sample effect
		Blank	Extract	
First	01/08/18	<2	<2	<2
Final	-	-	-	-

### Turbidity

Extract	Date of test	Formazine Nephelometric units		Test sample effect
		Blank	Extract	
First	01/08/18	0.149	0.155	0.006
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
--

Client: Jain Irrigation Systems Ltd.  
 Product: Jain UPVC Casing Pipe  
 Test Criteria: BS 6920

## 5. GROWTH OF MICROORGANISMS

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

Date testing started: 03/07/18	Date testing finished: 21/08/18
Incubation temperature: (30 ±1) °C	

Mean dissolved oxygen difference MDOD (mg L <sup>-1</sup> O <sub>2</sub> )	
Test sample	0.6
Positive reference (paraffin wax)	6.1
Negative reference (glass)	0.3

Test water control dissolved oxygen (mg L <sup>-1</sup> O <sub>2</sub> )	7.8
--	-----

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.
---	--

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



Client: Jain Irrigation Systems Ltd.  
 Product: Jain UPVC Casing Pipe  
 Test Criteria: BS 6920

## 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: 31/07/18	Date leaching tests finished: 01/08/18
Temperature of extraction: (23 ±2) °C	

### Test Set-up

Date: 01/08/18

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

### Test Results

Date: 02/08/18

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: Jain Irrigation Systems Ltd.  
 Product: Jain UPVC Casing Pipe  
 Test Criteria: BS 6920

## 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: 18/07/18	Date leaching tests finished: 19/07/18
Temperature of extraction: (23 ±2) °C	

### First Extract

Date of analysis: 20/07/18	Report No. 138
----------------------------	----------------

Metal (µg L <sup>-1</sup> )	MAC (µg L <sup>-1</sup> )	LOD (µg L <sup>-1</sup> )	Blank (µg L <sup>-1</sup> )	Sample 1 (µg L <sup>-1</sup> )	Sample 2 (µg L <sup>-1</sup> )
Aluminium	200	20	<20	<20	<20
Antimony	5	0.5	<0.5	<0.5	<0.5
Arsenic	10	1	<1	<1	<1
Boron	1000	100	<100	<100	<100
Cadmium	5	0.5	<0.5	<0.5	<0.5
Chromium	50	5	<5	<5	<5
Iron	200	20	<20	<20	<20
Lead	10	1	<1	<1	<1
Manganese	50	5	<5	<5	<5
Mercury	1	0.1	<0.1	<0.1	<0.1
Nickel	20	2	<2	<2	<2
Selenium	10	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

Client: Jain Irrigation Systems Ltd.  
Product: Jain UPVC Casing Pipe  
Test Criteria: BS 6920

---

## NOTES

1. This report is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service (UKAS). NSF Wales Ltd is UKAS accredited against ISO/IEC 17025:2005 for calibration and testing, laboratory numbers 0248 and 0626 respectively. For details of the laboratory Schedule of Accreditation please see the UKAS website ([www.ukas.org](http://www.ukas.org)).
2. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes.
3. The contents of this report are the copyright of NSF Wales Ltd and all rights are reserved. No part of this publication may be reproduced, stored in a retrieval system in any form or by any means electronic, mechanical, photocopying, recording or otherwise, without prior written consent of NSF Wales Ltd.
4. This test report does not constitute approval or endorsement of the product by either NSF Wales Ltd or its parent companies.
5. Any queries regarding this report should be addressed to the authorised signatory at NSF Wales Ltd. Copies of reports are retained by NSF Wales Ltd for ten years after issue.
6. The results specified in this report relate only to the sample(s) of the product submitted for testing. Any change in the source or nature of the product or materials used in the product, method of manufacture or application could affect the performance of the product.
7. Where a measurement reported is outside the specification limit by a margin less than the measurement uncertainty, the result of the test will be reported as indeterminate and the measurement uncertainty for the test will be quoted alongside the result. Measurement uncertainties for test are held on file by the laboratory and available on request.
8. Opinions and interpretations in this report are outside the scope of UKAS Accreditation.
9. Non UKAS accredited tests or tests which have been subcontracted will be identified in the following manner: -
  - Tests marked † are not included in the laboratory's ISO 17025 accreditation schedule.
  - Tests marked ‡ have not been performed by NSF Wales Ltd and have been performed at an approved subcontract laboratory.

### Revisions:

1. Nature of material corrected. (10/09/18)
-