

# BS6920 Test Report



REPORT NO. MA7264/O

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## Section 1

**Tamkeen Modern Pipe White**

**Suspension Polyvinyl Chloride PVC-67S**

<b>CLIENT:</b>		Tamkeen Modern Pipes Company Industrial Area 2 P.O. Box 15442 Jeddah 21543 Kingdom of Saudi Arabia
<b>CLIENT'S REFERENCE:</b>		L. Sathisha Mane
<b>PHOENIX NUMBER:</b>		UK760-0030274
<b>DATE</b>		<b>16 August 2021</b> Re-issued with amendments 16 May 2022 Re-issued with further amendments 26 May 2022
<b>REPORTED BY:</b>		<b>REVIEWED BY:</b>
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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: 2014)  
HIGH TEMPERATURE TESTS (BS6920: PART 3: 2014)**

**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.

<b>1. SAMPLES FOR TESTING</b>	
<b>General composition of product</b>	UPVC
<b>Trade name and reference of material</b>	Suspension Polyvinyl Chloride PVC-67S
<b>Material manufacturer</b>	Saudi Basic Industries Corporation (SABIC), Kingdom of Saudi Arabia
<b>Submitting organisation</b>	Tamkeen Modern Pipes Company, Kingdom of Saudi Arabia
<b>Component name/ref</b>	Tamkeen Modern Pipe White
<b>Component manufacturer</b>	Tamkeen Modern Pipes Company, Kingdom of Saudi Arabia
<b>Batch number of product</b>	information not provided
<b>Date of manufacture of product</b>	information not provided
<b>Method of manufacture of sample</b>	extrusion
<b>Sampling procedure</b>	taken from production
<b>Description of sample</b>	white opaque smooth shiny pipe
<b>Surface area of test piece</b>	14978mm <sup>2</sup>
<b>Number of articles constituting a test piece</b>	1
<b>Dimensions of test piece:</b>	<b>ext./int. diameter/length:</b> 33.35mm/25.60mm/77.0mm
<b>Calibration mark of test containers</b>	1 litre
<b>Date of application</b>	19 October 2020
<b>Date of receipt of test samples</b>	21 December 2020
<b>Condition of samples on receipt</b>	satisfactory
<b>Method of packaging</b>	plastic tube
<b>Conditions of storage of the samples between receipt and testing</b>	as instructed in BS6920-2.1: 2014: clause 5.2
<b>Proposed use of the product</b>	water supply, waste drainage, ventilation, irrigation, sewage network, electrical housing, telecom, construction industries

## 2. ODOUR AND FLAVOUR OF WATER

Number of tasters in the taste panel – 3

Date tests commenced – 6 April 2021

Extraction temperature – 23°C

Extract 1

(i) chlorine free test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	sour	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	sweet	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 23°C.

Extraction temperature – 60°C

Extract 1

(i) chlorine free test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	N/A	N/A
2	faint musty	N/A	N/A
3	nil	N/A	N/A

(ii) chlorinated test water:

TASTER	ODOUR DESCRIPTION	FLAVOUR DESCRIPTION	FLAVOUR DILUTION NUMBER
1	solvent	N/A	N/A
2	phenolic	N/A	N/A
3	nil	N/A	N/A

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

(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 sample of this product has been found to comply with the requirements of BS 6920: Part 1: clause 4 when extracted at 60°C.

### 3. APPEARANCE OF WATER

Extraction temperature – 60°C

Date test commenced – 23 March 2021

Extract 1

	COLOUR (HAZEN UNITS)	TURBIDITY (FORMAZINE NEPHELOMETRIC UNITS)
Test container (product)	<2.5	0.06
Blank	<2.5	0.02
Net increase	nil	0.04

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 – 19 January 2021

Mean dissolved oxygen differences –

Test container (product)	0.4mg/l
Negative reference (glass) sample	-0.3mg/l
Positive reference (wax) sample	6.2mg/l
Mean dissolved oxygen concentration of the test control	9.0mg/l

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

Comment - 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

Extracts were tested using Monkey African Green Kidney CITES (Lot 10F019)

Date tests commenced – 23 March 2021

Extraction temperature – **23°C**

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 **23°C**.

Extraction temperature – **60°C**

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 **60°C**.

## 6. THE EXTRACTION OF METALS

Extraction temperature – 60°C

Date test commenced – 23 March 2021

Number of extracts – 7

All analyses carried out on duplicate samples of the product as specified below

Aluminium, Antimony, Arsenic, Boron, Cadmium, Chromium, Iron, Lead, Manganese, Mercury, Nickel, Selenium:  
Inductively coupled plasma – mass spectrometry (ICP-MS)

### 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
Boron	B 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	10	1.0	47.8	53.4	< 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

### Extract 7

METAL	EXPRESSION OF THE RESULTS	MAX. ADMISSIBLE CONCENTRATION	REPORTING LIMIT	CONCENTRATION FINAL EXTRACT		DETERMINED REAGENT BLANKS
				I	II	
Lead	Pb µg/L	10	1.0	8.32	21.9	< 1.0

Comment - thus the samples of this product have been found NOT to comply with the requirements of BS 6920: Part 1: clause 8 when extracted at 60°C.

## 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: 2014 "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: 2014) and the requirements of the Water Regulations Advisory Scheme 'WRAS Materials Guidance, Version 4.4 dated 21 November 2016'.

**On the basis of these test results the sample of product has been found NOT to comply with the requirements of BS 6920: 2014: Part 1: Clause 8; Extraction of Metals / High Temperature Tests (60°C).**

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.

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