

Test Report**Non-Metallic Material & Products Testing**

Date of issue: 26-06-2024

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Castco LRN: 231221-2380

Details as supplied by customer

Name of Customer : Unique Engineering (HK) Ltd.

Address : Workshop 08, 20/F, Fullagar Industrial Building, 234 Aberdeen Main Road,
Aberdeen, Hong Kong

Job Title : Testing Service - BS6920 (Cold + Hold Water) for UPVC pipe and fittings

Customer's Ref. No. : --

Contract No. : --

Sample details as supplied by customer

Date of Sample Received : 21-12-2023

Test Period : 09-12-2023 to 16-02-2024

Sample Description : UPVC Sch. 80 pipe

Brand Name : SHIEYU (DFP)

Manufacturer : Kunshan Shie Yu Valve Co., Ltd.

Test Method(s):

Part 2 :

Section 2.2 : BS 6920-2.2.1:2000 + A3:2014 Odour and Flavour of Water

Section 2.3 : BS 6920-2.3:2000 + A1:2014 Appearance of Water

Section 2.4 : BS 6920-2.4:2000 + A1:2014 Growth of Aquatic Micro-Organisms Test

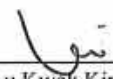
Section 2.5 : BS 6920-2.5:2000 + A2:2014 The extraction of substances that may be of concern to public health

Section 2.6 : BS 6920-2.6:2000 + A2:2014 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 - The extraction of metals

Remarks:

- I. Test results only relate to the specimen tested and showed on Appendix I.
- II. The sample/s mentioned in this report is/are submitted/supplied/manufactured by the Client. Castco therefore assumes no responsibility for the accuracy of information on the brand name, origin of manufacture, consignment or any information supplied.
- III. Page no. 1A of this test report supersedes page 1 of the previous test report of LRN 231221-2380 issued on 03 April 2024.
- IV. Refer to the previous test report of LRN 231221-2380, the sample details were revised in this issue due to the clerical error of the supplementary information of the client.

Checked by :


Au Kwok Kin
Technical Manager

Approved Signatory :


Cheng Chi Fai
Senior Manager

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Section 2.2 : Odour and Flavour of Water

Extraction Temperature : 23°C

Surface area of the sample : 15000 mm²

Cal. Mark of test container : 1000 mL

Extraction Solution		Result	
		Chlorine-Free Water	Chlorinated Water
First extract	Odour	No	No
	Flavour	No	No
Seventh extract	Odour	--	--
	Flavour	--	--

Extraction Temperature : 35°C

Surface area of the sample : 15000 mm²

Cal. Mark of test container : 1000 mL

Extraction Solution		Result	
		Chlorine-Free Water	Chlorinated Water
First extract	Odour	No	No
	Flavour	No	No
Seventh extract	Odour	--	--
	Flavour	--	--

Remarks:

1. Page no. 2A of this test report supersedes page 2 of the previous test report of LRN 231221-2380 issued on 03 April 2024.

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Section 2.3 : Appearance of WaterExtraction Temperature : 23°CSurface area of the sample : 15000 mm²Cal. Mark of test container : 1000 mL

Extraction Solution		Result	Requirement of BS6920
First extract	Turbidity (FNU)	<0.5	≤0.5
	Color (CU)	<5	≤5
Seventh extract	Turbidity (FNU)	--	/
	Color (CU)	--	

Extraction Temperature : 35°CSurface area of the sample : 15000 mm²Cal. Mark of test container : 1000 mL

Extraction Solution		Result	Requirement of BS6920
First extract	Turbidity (FNU)	<0.5	≤0.5
	Color (CU)	<5	≤5
Seventh extract	Turbidity (FNU)	--	/
	Color (CU)	--	

Remarks:

1. Page no. 3A of this test report supersedes page 3 of the previous test report of LRN 231221-2380 issued on 03 April 2024.

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Section 2.4 : Growth of Aquatic Micro-Organisms Test

Extraction Temperature : 30°C

Surface area of the sample : 15000 mm²

Cal. Mark of test container : 1000 mL

Specimens	Result	
	Dissolved oxygen (mg/L)	
	*MDOD	BS Requirement
Test Product (Single sample)	0.1	≤1.69
Glass (Negative reference)	0.1	MDOD = 0.0 ± 0.6
Paraffin wax (Positive reference)	5.2	MDOD = 7.5 ± 2.5

Remark(s):

1. The mean dissolved oxygen concentration of the control was 7.5 mg/L. (BS Requirement: 8.5 ± 2.5)

*MDOD = Mean dissolved oxygen difference

Section 2.5 : The extraction of substances that may be of concern to public health

Extraction Temperature : 23°C

Surface area of the sample : 15000 mm²

Cal. Mark of test container : 1000 mL

Specimens	Result	Remark
Test Product (All cells form a confluent health monolayer)	Yes	Non-cytotoxic
Test reagent Blank (All cells form a confluent health monolayer)	Yes	Non-cytotoxic

Extraction Temperature : 35°C

Surface area of the sample : 15000 mm²

Cal. Mark of test container : 1000 mL

Specimens	Result	Remark
Test Product (All cells form a confluent health monolayer)	Yes	Non-cytotoxic
Test reagent Blank (All cells form a confluent health monolayer)	Yes	Non-cytotoxic

Remarks:

I. Page no. 4A of this test report supersedes page 4 of the previous test report of LRN 231221-2380 issued on 03 April 2024.

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Section 2.6 : 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 - The extraction of metalsExtraction Temperature : 23°CSurface area of the sample : 15000 mm²Cal. Mark of test container : 1000 mL

Metal	Test results (µg/L)		Maximum allowable concentrations (µg/L)	Method
	First extraction / Seventh extraction			
	Sample 1	Sample 2		
Boron	<5.0	<5.0	1000	ICP-MS
Aluminium	<5.0	<5.0	200	
Chromium	<1.0	<1.0	50	
Manganese	<5.0	<5.0	50	
Iron	<5.0	<5.0	200	
Nickel	<1.0	<1.0	20	
Arsenic	<1.0	<1.0	10	
Selenium	<1.0	<1.0	10	
Cadmium	<0.50	<0.50	5	
Antimony	<0.50	<0.50	5	
Mercury	0.12	<0.10	1	
Lead	<1.0	<1.0	10	

Remark(s):

- 1) The maximum allowable concentrations are according to BS 6920:2014 (Part 1: Specification) Table 1
- 2) Page no. 5A of this test report supersedes page 5 of the previous test report of LRN 231221-2380 issued on 03 April 2024.

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Section 2.6 : 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 - The extraction of metals

Extraction Temperature : 35°C

 Surface area of the sample : 15000 mm²

Cal. Mark of test container : 1000 mL

Metal	Test results (µg/L)		Maximum allowable concentrations (µg/L)	Method
	First extraction / Seventh extraction			
	Sample 1	Sample 2		
Boron	<5.0	<5.0	1000	ICP-MS
Aluminium	<5.0	<5.0	200	
Chromium	<1.0	<1.0	50	
Manganese	<5.0	<5.0	50	
Iron	6.6	6.4	200	
Nickel	<1.0	<1.0	20	
Arsenic	<1.0	<1.0	10	
Selenium	<1.0	<1.0	10	
Cadmium	<0.50	<0.50	5	
Antimony	<0.50	<0.50	5	
Mercury	<0.10	<0.10	1	
Lead	<1.0	<1.0	10	

Remark(s):

- 1) The maximum allowable concentrations are according to BS 6920:2014 (Part 1: Specification) Table 1
- 2) Page no. 6A of this test report supersedes page 6 of the previous test report of LRN 231221-2380 issued on 03 April 2024.

Summary of Results

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Sample Description : UPVC Sch. 80 pipe

Standard	Test	Compliance with BS 6920, Part 1:2014 (cold water)
BS 6920, Section 2.2.1 : 2014	Odour and Flavour	Pass
BS 6920, Section 2.3 : 2014	Appearance	Pass
BS 6920, Section 2.4 : 2014	Growth of aquatic micro-organisms	Pass
BS 6920, Section 2.5 : 2014	Extraction of substances that may be of concern to public health	Pass
BS 6920, Section 2.6 : 2014	Extraction of metal	Pass

Standard	Test	Compliance with BS 6920, Part 1:2014 (hot water 35°C)
BS 6920, Section 2.2.1 : 2014	Odour and Flavour	Pass
BS 6920, Section 2.3 : 2014	Appearance	Pass
BS 6920, Section 2.5 : 2014	Extraction of substances that may be of concern to public health	Pass
BS 6920, Section 2.6 : 2014	Extraction of metal	Pass

Remark(s):

1) Page no. 7A of this test report supersedes page 7 of the previous test report of LRN 231221-2380 issued on 07 April 2024.

End of Report

**Appendix I
(Photo of sample)**

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Sample Description : UPVC Sch. 80 pipe



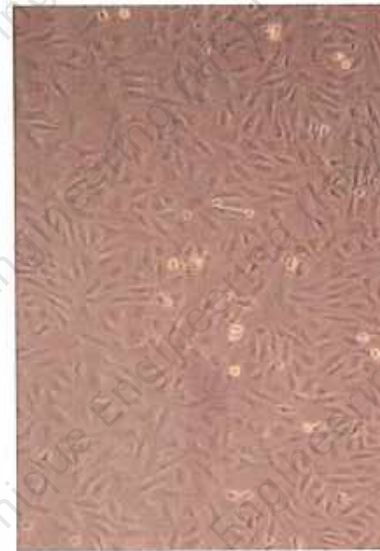
Appendix II**(BS 6920-2.5:2000 + A2:2014 The extraction of substances that may be of concern to public health)**

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Sample Description : UPVC Sch. 80 pipe (Cold Water)

SampleBlankZinc SulphateCells only

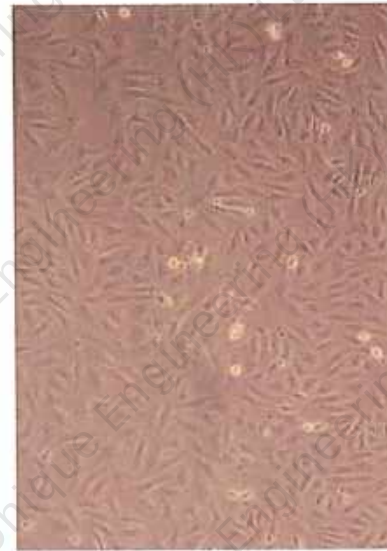
Appendix II**(BS 6920-2.5:2000 + A2:2014 The extraction of substances that may be of concern to public health)**

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Sample Description : UPVC Sch. 80 pipe (Hot Water)

SampleBlankZinc SulphateCells only

Appendix III

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Castco LRN: 231221-2380

Same material as the product of SHIEYU (DFP) UPVC Sch.80 pipe in the following table.

Brand	Manufacturer	Commodities	Size
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Pipe	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.40 Pipe	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Elbow 90	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Elbow 45	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Tee	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Coupling	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Van Stone Flange	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Cap	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Blind Flange	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 One-Piece Flange	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Union	1/2" to 4"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Reducer Bushing	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Reducer Coupling	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Reducing Tee	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Y-Reducing Tee	1/2" to 16"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Y-Tee	1/2" to 8"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Cross	1/2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Female Adaptor	1/2" to 4"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Male Adaptor	1/2" to 4"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Ball valve	1/2" to 4"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Ball check valve	1/2" to 4"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Diaphragm valve	1/2" to 10"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Butterfly valve	2" to 24"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Ball foot valve	1/2" to 4"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Wafer check valve	1/2" to 20"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sediment strainer	1/2" to 8"
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Pipe	20 to 400
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Elbow 90	20 to 315
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Elbow 45	20 to 315
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Tee	20 to 315
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Coupling	20 to 315
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC One-piece flange	20 to 315
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Reducer bushing	20 to 315
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Reducer coupling	20 to 315
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Reducer tee	20 to 315
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Union	20 to 110
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Cap	20 to 110
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Male adaptor	20 to 110
DFP	Kunshan Shie Yu Valve Co., Ltd.	UPVC Female adaptor	20 to 110

Remarks:

1. Page no. 1A of this appendix III supersedes page 1 of the previous appendix III of LRN 231221-2380 issued on 03 April 2024.

Appendix III

Date of issue: 26-06-2024

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Castco LRN: 231221-2380

Same material as the product of SHIEYU (DFP) UPVC Sch.80 pipe in the following table.

SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Pipe	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.40 Pipe	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Elbow 90	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Elbow 45	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Tee	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Coupling	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Van Stone Flange	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Cap	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Blind Flange	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 One-Piece Flange	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Union	1/2" to 4"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Reducer Bushing	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Reducer Coupling	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Reducing Tee	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Y-Reducing Tee	1/2" to 16"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Y-Tee	1/2" to 8"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Cross	1/2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Female Adaptor	1/2" to 4"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sch.80 Male Adaptor	1/2" to 4"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Ball valve	1/2" to 4"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Ball check valve	1/2" to 4"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Diaphragm valve	1/2" to 10"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Butterfly valve	2" to 24"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Ball foot valve	1/2" to 4"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Wafer check valve	1/2" to 20"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Sediment strainer	1/2" to 8"
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Pipe	20 to 400
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Elbow 90	20 to 315
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Elbow 45	20 to 315
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Tee	20 to 315
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Coupling	20 to 315
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC One-piece flange	20 to 315
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Reducer bushing	20 to 315
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Reducer coupling	20 to 315
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Reducer tee	20 to 315
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Union	20 to 110
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Cap	20 to 110
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Male adaptor	20 to 110
SHIEYU	Kunshan Shie Yu Valve Co., Ltd.	UPVC Female adaptor	20 to 110

Remarks:

I. Page no. 2A of this appendix III supersedes page 2 of the previous appendix III of LRN 231221-2380 issued on 03 April 2024.