



**Ranhill
SAJ**

**SPECIFICATION FOR UNPLASTICIZED
POLYVINYL CHLORIDE (UPVC) PIPES (PLAIN
ENDED) FOR COLD WATER SUPPLY SYSTEM
(FOR MAINTENANCE PURPOSES)**

**SPECIFICATION SAJ PS / PV / 002
(Rev.2.0 / 12.2018)**

QUALITY ASSURANCE DEPARTMENT
RANHILL SAJ SDN. BHD.

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1.0 Referenced Documents

This following referenced document contain provisions, which through reference in the text constitute provisions of this specification.

MS 628 Part 1: 99 Specification for uPVC Pipes for Water Supply;
Part 1: Pipes
Part 2, Section 2.1: uPVC Joints and Fittings
Part 3: Guide for Installation

2.0 Pipes

- a. The uPVC pipes and fittings to be supplied shall be of PN12 (Class D) for sizes 80 mm and above, and PN 15 (Class E) for sizes 10 mm – 65 mm.
- b. The colour of pipes shall be blue.
- c. The uPVC pipe shall be Plain Ended.

3.0 Materials used in manufacture

- a. The material used in the manufacture of pipes, joints and fittings shall consist substantially of polyvinyl chloride, to which may be added only those additives that are needed to facilitate the manufacture of the polymer and the production of sound and durable pipes of good surface, finish, mechanical strength and opacity.
- b. None of these additives shall be used separately or together in quantities sufficient to constitute a toxic hazard, to impair the fabrication or welding properties of the pipes, or to impair the chemical and physical properties of the pipes (in particular long term mechanical and impact strength).
- c. PVC content of the pipe shall not be less than 85% and the content shall be achieved by the use of process control method.
- d. No rework material shall be used and the dispersion of all ingredients in the material composition shall be uniform.
- e. When tested by method 120B of BS 2782 (Methods of Testing Plastics), the deformation temperature of the material under load shall not be lower than 75°C.

4.0 Classification

- a. The pipes, joints and fittings shall be classified in accordance with the Maximum Permissible Working Pressure in table below: -

UPVC Classification of Pipes, Joints and Fittings

Class of Pipe	Maximum Permissible Working Pressure	
	At 20°C	At 30°C
PN 12 (Class D)	12 bar	9.6 bar
PN 15 (Class E)	15 bar	12.0 bar

5.0 Thickness and Diameter

- a. The pipes shall be designated by the nominal size and shall conform to the dimensions specified in table E2.

6.0 Lengths

- a. The standard length of pipes shall be **4 meters Plain Ended**.
- b. The Contractor shall supply free of charge the extra joints required due to the supply of non-standard pipe length.

7.0 Tolerance of Dimensions

- a. Mean tolerances on the outside diameters and ovality (out of roundness) shall conform to the requirements of Table A attached.
- b. A tolerance of +15 mm / -0 mm shall be allowed on the length of an individual pipe but the total length of pipe supplied shall not be less than the total of length ordered.

8.0 Joints and Fittings

- a. uPVC pipe joints and fittings shall be manufactured according to Clause 6 and 7 of MS 628:Part 2 Section 2.1 and shall meet the requirements of Clause 8 of MS 628: Part 2 Section 2.1.

9.0 Cutting and Chamfering

- a. Smooth a chamfer at 15° is required at the outer edge of the plain ended side for rubber ring joint.
- b. Pencil in a witness mark on the plain ended to make the pipe goes far enough into the socket and to act as a guide for putting on the lubricant.

10.0 Routine Tests

a. uPVC Pipes

The routine tests on uPVC pipes shall be performed according to Table 3 and Clauses 7.1, 7.2, 7.3 and 7.4 of MS 628: Part 1.

b. UPVC Joints and Fittings

The routine test on uPVC joints and fittings shall be performed according to Table 5 and Clauses 8.1, 8.4 and 8.6 of MS 628:Part 2: Section 2.1.

11.0 Test Certificate

The supplier shall submit the Test Certificate to the S.O., copies of all test results (Routine and Type), which have been performed on pipes to be supplied.

12.0 Marking

- a. All pipe supplied shall have the following marking on the outside of pipe:
 - i. Manufacturer's identification
 - ii. Nominal size and Class
 - iii. Serial number of pipe
 - iv. Letters SAJH (50 mm High)
 - v. Year of manufacture
 - vi. Standards reference
 - vii. Batch number
- b. The colour of the markings shall be black.
- c. Adhesive labels will not be accepted.

13.0 Pre- delivery Inspection

- a. It is the responsibility of the tenderer to inform SAJ for inspection purposes during manufacturing and before delivery.
- b. SAJ reserve the right to inspect and witness the testing of product offered.
- c. At any time, when requested, the supplier is to provide SAJ a sample of the product offered for evaluation purposes. All costs shall be borne by the supplier.
- d. If at any time the supplier fails to deliver the required sample, the products is deemed fail to meet the specifications.

14.0 Certification

- a. Manufacturer of supplier are required to provide a copy of the certificate and testing report from SIRIM, IKRAM or other recognised certification body.
- b. Tests report required should be those tests conducted within a year period.
- c. SAJ have the right to refuse offer or reject supply if the documents required are not enclosed.

The logo for Ranhill SAJ is displayed in a large, light grey font. The word 'Ranhill' is on the top line and 'SAJ' is on the bottom line, both in a bold, sans-serif typeface. The logo is partially obscured by a large, semi-transparent red watermark that resembles a stylized arrow or a large letter 'A' pointing downwards and to the right.

Attachment

Table A

Nom. Size (mm)	Mean Outside Diameter (mm)		Out of Roundness (Ovality) (mm)		Wall Thickness (mm)					
					PN 12			PN 15		
	Min	Max	Min	Max	Ave.	Individual Value		Ave.	Individual Value	
					Max	Min	Max	Max	Min	Max
10	17.0	17.3	17.0	17.3	-	-	-	1.9	1.5	1.9
15	21.2	21.5	21.2	21.5	-	-	-	2.1	1.7	2.1
20	26.6	26.9	26.6	26.9	-	-	-	2.5	1.9	2.5
25	33.4	33.7	33.3	33.8	-	-	-	2.7	2.2	2.7
32	42.1	42.4	42.0	42.5	-	-	-	3.2	2.7	3.2
40	48.1	48.4	48.0	48.5	-	-	-	3.7	3.1	3.7
50	60.2	60.5	60.0	60.7	-	-	-	4.5	3.9	4.5
65	75.0	75.3	74.8	75.5	-	-	-	5.5	4.8	5.5
80	88.7	89.1	88.4	89.4	5.3	4.6	5.3	-	-	-
100	114.1	114.5	113.7	114.9	6.8	6.0	6.9	-	-	-
125	140.0	140.4	139.4	141.0	8.3	7.3	8.4	-	-	-
155	168.0	168.5	167.4	169.1	9.9	8.8	10.2	-	-	-
175	193.5	194.0	192.8	194.7	11.4	10.1	11.7	-	-	-
200	218.8	219.4	218.0	220.2	11.6	10.3	11.9	-	-	-
225	244.1	244.8	243.2	245.7	12.9	11.5	13.3	-	-	-
250	272.6	273.4	271.6	247.4	14.3	12.8	14.8	-	-	-
300	323.4	324.3	322.2	325.5	17.0	15.2	17.5	-	-	-
350	355.0	356.0	353.7	357.3	18.6	16.7	19.2	-	-	-
375	405.9	406.9	404.3	408.5	21.1	19.0	21.9	-	-	-
400	456.7	457.7	45.9	459.5	23.8	21.4	24.6	-	-	-



SCHEDULE OF STORES

Ranhill SAJ

Ranhill SAJ Sdn Bhd

**Schedule of Stores
For Supply and Delivery of uPVC Pipes 4 Metres Plain Ended
For the Period of Year(s)**

No	Description	Unit	Prov. QTY	Rate (RM)	Amount (RM)
A	UPVC Pipes PN 12: Plain Ended				
1	80 mm Diameter				
2	100 mm				
3	155 mm				
4	200 mm				
5	250 mm				
6	300 mm				
	TOTAL TENDER SUM				

(Ringgit:.....)

Signature of Tenderer: Signature of witness:

Name: Name:

In the capacity of: Address:

Tenderer's Seal or chop:

Date: Date:

