

Australian Standard 2340—1980

LIGHTWEIGHT UNPLASTICIZED PVC (LUPVC) PIPE FOR SOIL, WASTE AND VENT (SWV) APPLICATIONS

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Engineering and Water Supply Department, S.A.
Hunter District Water Board
Joint Committee Queensland
Local Government Department of Victoria
Melbourne and Metropolitan Board of Works
Metropolitan Water Sewerage and Drainage Board
Plastics Institute of Australia Inc.

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AUSTRALIAN STANDARD

**LIGHTWEIGHT
UNPLASTICIZED PVC
(LUPVC) PIPE FOR SOIL,
WASTE AND VENT (SWV)
APPLICATIONS**

AS 2340—1980

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PREFACE

This standard was prepared by the Association's Committee on Lightweight UPVC Pipe for SWV Applications, under the direction of the Plastics Standards Board. It sets out specifications for the physical properties and dimensions of lightweight unplasticized PVC (LUPVC) pipe.

LUPVC, because of its cellular structure, uses less raw material for given pipe dimensions than conventional or solid UPVC. The cellular structure of LUPVC reduces its thermal conductivity below that of UPVC so that during transient hot water discharges the outer surface of the pipe remains cooler, thus enabling rigidity to be retained longer. LUPVC also has improved sound-insulating properties.

In the preparation of this standard, consideration was given to AS 1415, Unplasticized PVC (UPVC) Pipes and Fittings for Soil, Waste and Vent (SWV) Applications, and the dimensions of the lightweight pipe specified herein are identical in all respects. Test requirements are included for flattening, impact characteristics, reversion, softening point, density and immersion tests in anhydrous acetone and sulphuric acid.

The impact characteristics test of Appendix E uses an established test method in conjunction with a large diameter striker (tup B of ASTM D 2444). This has been found to give reproducible results for the laboratory quality control of the extrusion process. This test is not a simulated service test (see Paragraph E2 of Appendix E).

This standard may require reference to the following standards:

AS 1199	Sampling Procedures and Tables for Inspection by Attributes
AS 1399	Guide to AS 1199, Sampling Procedures and Tables for Inspection by Attributes
AS 1433	Paint Colours for Building Purposes
AS 1462	Methods of Test for Unplasticized PVC (UPVC) Pipes and Fittings
AS 1821-23	Suppliers Quality Control Systems
AS 2000	Guide to AS 1821-1823, Suppliers Quality Control Systems
AS 2032	Code of Practice for Installation of UPVC Pipe Systems
ASTM D2444	Method of Test for Impact Resistance of Thermoplastic Pipe and Fittings By Means of a Tup (Falling Weight)
BS 2537	Ethenediol (Ethylene Glycol)

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

LIGHTWEIGHT UNPLASTICIZED PVC (LUPVC) PIPE FOR SOIL, WASTE
AND VENT (SWV) APPLICATIONS

1 SCOPE. This standard specifies requirements for lightweight unplasticized PVC (LUPVC) pipe for soil, waste and vent applications above ground.

NOTES:

1. It is intended that lightweight unplasticized PVC (LUPVC) pipe be installed in accordance with AS 2032, Part 6 and jointed in accordance with AS 2032, Part 3. Threaded joints are not recommended.
2. Advisory information on the assessment of compliance with this standard is given in Appendix A.

2 CLASSIFICATION. Pipe manufactured to this standard shall be classified as Class LSWV.

3 DEFINITION. For the purpose of this standard, the following definition applies:

Lightweight unplasticized PVC (LUPVC)—cellular or foamed, unplasticized polyvinyl chloride.

NOTE: The term 'lightweight' indicates that the normal UPVC density* has been reduced from approximately 1400 kg/m³ to less than 1000 kg/m³.

4 GENERAL REQUIREMENTS.

4.1 Composition. The material from which the pipe is produced shall consist of polyvinyl chloride (PVC) to which shall be added suitable lubricants, pigments and stabilizers.

The total plasticizer content shall not exceed one part per 100 parts by mass of the PVC content. The total additives shall not exceed 20 parts per 100 parts by mass of the PVC content of which not less than five parts shall be rutile titanium dioxide (TiO₂).

Re-work material of the same composition, regenerated from the pipe manufacturer's own production, may be used.

No constituent material shall be used which will adversely affect the long-term mechanical strength, fabrication or solvent-cementing properties of the LUPVC.

The dispersion of ingredients in the composition shall be uniform.

4.2 Diameter and Wall Thickness. When measured in accordance with Appendix B, the pipe shall conform to the dimensions given in Table 1.

4.3 Length. Unless otherwise specified by the purchaser, pipe shall be supplied in standard lengths equivalent to 6 m + 50 – 0 mm at 20°C.

NOTE: The thermal linear coefficient of expansion of LUPVC pipe is $7 \times 10^{-5} / ^\circ\text{C}$.

4.4 Pipe Ends. The pipe shall be supplied with ends within ± 2 degrees of normal to the main axis of the pipe, free from chips and rough edges and with sharp edges removed.

4.5 Freedom from Defects. The pipe walls and the internal and external surfaces shall be clean, smooth and free from grooves, blisters, wrinkles, dents, heat marks and other defects that could impair the performance of the pipe in service.

4.6 Colour. The colour of pipe shall be white and no darker than colour No. 10B 15 of AS 1433.

5 TEST SAMPLE. Depending upon pipe diameter and the testing alternatives provided for, up to ten consecutive lengths of pipe may be required in order to perform all the tests included in this standard.

6 PROPERTIES.

6.1 Compatibility with UPVC Fittings—Elevated Temperature Cycling. When tested in accordance with Appendix C, a test assembly made up of LUPVC pipe and UPVC fittings complying with AS 1415, Part 2, shall not show signs of leaks or deformation.

6.2 Flattening. When pipe is tested in accordance with Appendix D, it shall show no evidence of splitting, cracking or breaking.

6.3 Impact Characteristics at 20°C. When pipe is tested at 20°C in accordance with Paragraph E5 of Appendix E, using the appropriate mass specified in Table E1 and a drop height of 2 + 0.1 – 0 m, there

*1 kg/m³ \equiv 1.0 \times 10⁻³ g/m³.

TABLE 1
DIMENSIONS OF LUPVC PIPE FOR SOIL, WASTE AND VENT APPLICATIONS

Nominal size	Outside diameter				Wall thickness	
	Mean <i>D</i>		Incl. ovality <i>D</i>		millimetres	
	min.	max.	min.	max.	min.	max.
32	36.2	36.5	36.0	36.7	2.1	2.4
40	42.8	43.1	42.6	43.3	2.3	2.6
50	55.7	56.0	55.4	56.3	2.4	2.7
65	68.7	69.1	68.4	69.4	2.7	3.1
80	82.3	82.7	82.0	83.1	3.0	3.4
100	110.0	110.4	109.5	110.9	3.2	3.6
150	160.0	160.5	159.3	161.3	4.0	4.5

**D* = any measured diameter.