



Solvent cements and priming fluids for PVC (PVC-U and PVC-M) and ABS and ASA pipes and fittings



This Australian Standard® was prepared by Committee PL-021, PVC, ABS and Polyamide Pipe Systems. It was approved on behalf of the Council of Standards Australia on 15 November 2011.

This Standard was published on 23 December 2011.

The following are represented on Committee PL-021:

- Australian Chamber of Commerce and Industry
 - Certification Interests (Australia)
 - CSIRO Manufacturing and Infrastructure Technology
 - Energy Networks Association
 - Engineers Australia
 - Master Plumbers, Gasfitters and Drainlayers New Zealand
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 - New Zealand Water and Waste Association
 - Plastics Industry Pipe Association of Australia
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This Standard was issued in draft form for comment as DR AS/NZS 3879.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard®

Solvent cements and priming fluids for PVC (PVC-U and PVC-M) and ABS and ASA pipes and fittings

Originated as AS A185—1971 and AS 3691—1989.
AS A185—1971 revised and redesignated AS 3879(Int)—1991.
Previous edition AS/NZS 3879:1995.
AS 3879:1995 and AS 3691—1989 jointly revised and redesignated AS/NZS 3879:2006.
Second edition AS/NZS 3879:2011.
Reissued incorporating Amendment No. 1 (December 2018) and
redesignated as AS 3879:2011.

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Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 74342 012 6

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee PL-021, PVC, ABS and Polyamide Pipe Systems, to supersede AS/NZS 3879:2006, *Solvent cements and priming fluids for PVC (PVC-U and PVC-M) and ABS pipes and fittings*.

This Standard incorporates Amendment No. 1 (December 2018). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

A1 | Amendment No. 1 to this Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee PL-021, PVC, ABS and Polyamide Pipe Systems. As a consequence of Amendment No. 1 which is published as an Australian-only amendment, the designation of this Standard has been changed from AS/NZS 3879:2011 to AS 3879:2011.

The objective of this revision is to include the jointing of ABS and ASA fittings to PVC pipes in non-pressure drainage applications.

In this edition the scope has been widened to include jointing of ABS and ASA fittings to PVC pipes in non-pressure drainage applications.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard

Solvent cements and priming fluids for PVC (PVC-U and PVC-M) and ABS and ASA pipes and fittings**1 SCOPE**

This Standard specifies requirements for solvent cements and priming fluids used in the jointing of—

- (a) tapered/interference and parallel/no or low interference fit polyvinyl chloride (PVC-U and PVC-M) pressure and non-pressure piping systems;
- (b) acrylonitrile butadiene styrene (ABS) pressure and non-pressure piping systems; and
- (c) ABS and acrylonitrile styrene acrylate (ASA) fittings for non-pressure drainage applications with PVC-U pipes.

2 APPLICATION

Solvent cements and priming fluids made in accordance with this Standard are intended for use with pipes, fittings and PVC conduits complying with AS/NZS 1254, AS/NZS 1260, AS/NZS 1477, AS/NZS 4765, AS/NZS 3518, AS 2887 and AS/NZS 2053.

NOTE: For ABS pipes and fittings for non-pressure applications, refer to WSA 117.

Jointing ABS or ASA fittings to PVC pipes shall only be undertaken on non-pressure drainage and plumbing pipelines.

NOTES:

- 1 For the recommended procedures for jointing PVC-U, PVC-M and ABS pipe systems using solvent cement, reference should be made to AS/NZS 2032 (PVC-U and PVC-M) and AS 3690 (ABS), and the manufacturer's installation instructions.
- 2 The general principles described in AS/NZS 2032 for solvent cement jointing of PVC to PVC are appropriate.

A1 3 DEMONSTRATION OF CONFORMANCE

Where required, methods of demonstrating conformance with this Standard shall be in accordance with Appendix A.

4 NORMATIVE REFERENCES

The following normative documents are referenced in this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS

- 1199 Sampling procedures for inspection by attributes
- 1199.1 Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection)

2382 Surface roughness comparison specimens

2887 Plastic waste fittings

AS/NZS

- 1254 PVC-U pipes and fittings for stormwater and surface water applications
- 1260 PVC-U pipes and fittings for drain, waste and vent application
- 1477 PVC pipes and fittings for pressure applications

AS/NZS

2053	Conduits and fittings for electrical installations (all parts)
3500	Plumbing and drainage
3500.0	Part 0: Glossary of terms
3690	Installation of ABS pipe systems
3518	Acrylonitrile butadiene styrene (ABS) compounds, pipes and fittings for pressure applications
4020	Testing of products for use in contact with drinking water
4765	Modified PVC (PVC-M) pipes for pressure applications
A1 AS ISO/IEC	
17025	General requirements for the competence of testing and calibration laboratories
HB18	Conformity assessment
HB18.28	Guide 28: Guidance on a third-party certification system for products
BS 2634	
2634	Roughness comparison specimens (series)

5 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 3500.0 and those below apply.

5.1 Priming fluid

A fluid used to prepare the pipe or fitting surface for bonding.

5.2 Solvent cement

A solvent-based fluid designed for the bonding of plastics materials.

6 CLASSIFICATION

Solvent cements shall be classified as follows:

- (a) *Pressure (Type P)* For jointing PVC or ABS pipe systems with tapered/interference fit joints designed for pressure applications or other applications where high bond strength is required.
- (b) *Non-pressure (Type N)* For jointing PVC pipe to PVC pipe and PVC fittings and PVC pipe to ABS and ASA fittings with tapered/interference fit joints, not subjected to internal pressure or other applications where high bond strength is not required.
- (c) *Gap filling (Type G)* For jointing PVC and ABS pressure or non-pressure pipes where parallel/no or low interference fit joints are used and where a high bond strength and ability to fill small gaps is required.

7 GENERAL REQUIREMENTS

7.1 Materials

Only clean rework plastics material or virgin plastics material shall be used for solvent cement manufacture.

Solvent contents or priming fluids shall not contain lumps, macroscopic undissolved material, or any foreign material.

7.2 Effect on water

Dried solvent cement (and priming fluids), intended for use on joints in contact with drinking or recycled water, shall comply with AS/NZS 4020. A scaling factor of 0.05 shall apply. Evaluation of the primer and solvent cement may be done in one test by treating them as coatings in accordance with AS/NZS 4020.

NOTES:

- 1 Reference should be made to the manufacturer to determine the length of time a particular product requires to attain the dried condition.
- 2 Effect on water tests should be carried out on a dried film on a primed glass plate.

7.3 Colour

The colour of the priming fluid shall be different from the colour of the pipe to which it is applied and the solvent cement.

NOTE: Generally, the priming fluid is pink and the solvent cement is green for Type P PVC, blue for Type N PVC, grey for Type P ABS and clear for Type G.

8 TEST REQUIREMENTS

8.1 General

To qualify a particular primer/solvent combination, the following tests shall be undertaken:

- (a) For primer/solvent to be used on PVC-U pressure pipeline systems, the tests specified in Clauses 8.2 and 8.3 shall be undertaken using PVC-U pipes.
- (b) For primer/solvent to be used on PVC-M pressure pipeline systems, the test specified in Clauses 8.2 may be undertaken using either PVC-U or PVC-M pipes; however, for the test specified in Clause 8.3, PVC-M pipes shall be used.
- (c) For primer/solvent to be used on ABS pipeline systems, the tests specified in Clauses 8.2 and 8.3 shall be undertaken using ABS pipes.
- (d) For primer/solvent to be used on PVC-U non-pressure pipeline systems, the tests specified in Clauses 8.2 and 8.3 shall be undertaken using PVC pipes and also with PVC pipes with ABS or ASA fittings.

8.2 Rate of strength development

When tested in accordance with Appendix B, the shear strength shall at all times be greater than the value taken from the appropriate reference curve given in Appendix B.

8.3 Joint strength

8.3.1 Pressure joints (Types P and G)

The joint shall withstand (without any leakage, weeping or cracking) a hydrostatic pressure test in accordance with Appendix C for 1000 h, to a pressure specified in Table 1.

TABLE 1
TEST PRESSURE FOR TYPE P
JOINT STRENGTH TEST

Material	Test pressure MPa
PVC-U	4.5
PVC-M	3.0
ABS	3.5

8.3.2 *Non-pressure joints (Types N and G)*

When tested in accordance with Appendix D, each non-pressure joint shall withstand a pressure of 0.2 MPa for 5 +2, -0 min.

8.4 Application suitability

8.4.1 *General*

The application suitability of the solvent cement shall be determined either by the viscosity test (see Clause 8.4.2) or the spreadability test (see Clause 8.4.3).

NOTE: Generally, the viscosity test is used for ABS cements and the spreadability test is used for PVC-U and PVC-M cements.

8.4.2 *Viscosity test*

When tested in accordance with Appendix E, the viscosity shall be in the range 0.6 Pa.s to 1.9 Pa.s.

8.4.3 *Spreadability test*

When tested in accordance with Appendix F, the score allocated to each test piece shall range from 2 to 8.

9 PRIMING FLUIDS

When applied to the surface by wiping with a clean cloth, priming fluids used to prepare the surfaces for jointing shall be capable of removing any dirt, oil or other surface contamination.

10 PACKAGING

Solvent cements and priming fluids shall be packed in sealed containers fitted with replaceable lids.

11 MARKING

Each container of solvent cement and priming fluid shall be marked on the outside with the following information:

- (a) Manufacturer's name.
- (b) Pipe material for which the product is suited.
- (c) For solvent cements—
 - (i) type P;
 - (ii) type N; or
 - (iii) type G.
- (d) Net mass or volume.
- (e) For primers and cements suitable for use in contact with drinking water, the words 'DRINKING WATER'.

NOTE: This also includes recycled water applications (see Clause 7.2).

- (f) The use-by date.
- (g) Instructions for storage and use (including the minimum recommended period before any field pressure testing).

NOTE: Reference to the manufacturer's full installation instructions and relevant product data sheets should be included in these instructions.

- (h) The following statement:
‘PRIMING FLUIDS SHALL BE USED TO PREPARE THE JOINTING SURFACE PRIOR TO SOLVENT CEMENT APPLICATION’.
- (i) A statement on any toxic vapour or flammability hazards associated with the solvent cement or priming fluid.
- (j) The following (as applicable) statement:
‘NO ADDITIVES OF ANY KIND SHALL BE MIXED WITH THIS SOLVENT CEMENT/PRIMING FLUID’.
- (k) The number of this Standard, i.e. AS/NZS 3879.

NOTE: Manufacturers making a statement of compliance with this Australian/New Zealand Standard on a product, packaging, or promotional material related to that product are advised to ensure that such compliance is capable of being verified.

APPENDIX A

A1

DEMONSTRATION OF CONFORMANCE TO THIS STANDARD

(Normative)

A1 SCOPE

A1

This Appendix sets out a means for consistent demonstration of conformity with this Standard through the use of a minimum sampling and testing frequency plan. Where variations to this plan are made, demonstration of conformance with the minimum requirements may be necessary.

A2 RELEVANCE

The performance of priming fluids and solvent cement is critical to the long-term performance of installed pipe systems, which in turn is critical to the durability of building infrastructure, protection of public health and safety and protection of the environment.

A3 DEFINITIONS**A3.1 Acceptance quality limit (AQL)**

Where a continuous series of lots or batches is considered, the quality level which, for the purpose of sampling inspection, is the limit of a satisfactory process average.

NOTE: The designation of an AQL does not imply that a manufacturer has the right to knowingly supply any non-conforming unit of product (see AS 1199.1).

A3.2 Batch

A defined quantity of identical product produced from the same materials under uniform conditions.

NOTE: The batch is defined and identified by the producer.

A3.3 Batch release test (BRT)

A test performed on a sample from the batch or lot to confirm conformance to the requirements of this Standard before the batch can be released.

A3.4 Inspection level

The relationship between the batch or lot size and the sample size.

NOTE: See AS 1199.1.

A3.5 Lot

A clearly identifiable subdivision of a batch for inspection purposes.

A3.6 New formulation

A change in material formulation.

A3.7 Sample

One or more units of product drawn from a batch or lot, selected at random without regard to quality.

NOTE: The number of units of product in the sample is the sample size.

A3.8 Sampling plan

A specific plan that gives the number of samples and the frequency of inspection or testing.

A3.9 Type test (TT)

- A1 | Testing performed to prove that the material, component, joint or assembly is capable of conforming to the requirements of the relevant Standard.

A4 PRODUCT CERTIFICATION

- A1 | [Text deleted]

A5 MINIMUM SAMPLING AND TESTING FREQUENCY PLAN**A5.1 General**

Table A1 sets out the minimum sampling and testing frequency plan for demonstration of conformity to this Standard. Where variations to this plan are made, demonstration of conformance with the minimum requirements may be necessary.

A5.2 Testing

Testing shall be conducted by a testing laboratory or facility that fulfils the requirements of AS ISO/IEC 17025.

NOTE: AS ISO/IEC 17025 can apply to a first-party (i.e. manufacturer or supplier), second-party (i.e. user or purchaser) or third-party testing laboratories and facilities.

A5.3 Retesting

In the event of a test failure, the products manufactured since the previous test(s) conforming to the requirements specified in Table A1 shall be quarantined as a batch. A further set of samples shall be selected randomly from the quarantined batch using a sampling plan in accordance with AS 1199. If the retest requirements are met, the batch may be released and conformance with this Standard for the quarantined batch may be claimed.

Should a failure occur on retesting, then the quarantined batch shall be rejected and claims and/or marking indicating conformity to this Standard shall be suspended until the cause of the failure has been identified and corrected.

A5.4 Rejection after test

In the event of a quarantined batch being rejected after retesting in accordance with the procedures set out in Paragraph A5.3, it may be subjected to 100% testing for the failed requirement(s), and only those items found to conform may be claimed and/or marked as conforming with this Standard.

TABLE A1
MINIMUM SAMPLING AND TESTING FREQUENCY PLAN

Characteristics	Clause	Requirement	Test method	Frequency
Type tests (TT)				
Performance	7.2	Effect on water	AS/NZS 4020	Any new formulation, or once every 5 years, whichever occurs first
	8.2	Rate of strength development	Appendix B	
	8.3.1	Type P and Type G joint strength	Appendix C	
	8.3.2	Type N and Type G joint strength	Appendix D	
Batch release tests (BRT)				
Performance	8.4.2 or 8.4.3	Application suitability	Appendix E or F	Once per batch