Test report

1. Document Control

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Report Number: CLK-24-1-REP-PP900RTPP100RT-1

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Test Engineer
Date: 20/06/2024

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PROVE Authorised Signatory
Date: 21/06/2024

Issue Date	Release Number	Description
21/06/2024	01	Initial Issue

2. General

Test Item:	Plastic waste fitting
Standard tested to:	AS 2887:1993
Sample(s) selected by:	Caulkmate Pty Ltd
Mode of delivery:	Courier
Date Received:	13/05/2024

3. Referenced Documents

The following documents have been referenced for testing and reporting.

Standard	Standard Name
AS 2887:1993	Plastic waste fittings
AS/NZS 1462.11:1996	Methods of test for PVC pipes and fittings. Method 11: Method for high temperature stress-relief testing of fittings
AS 1462.1:2006	Methods of test for plastics pipes and fittings. Method 1: Method for determining the dimensions of pipes and fittings
AS 1260:2017	PVC-U pipes and fittings for drain, waste and vent applications
AS 2888.8:2002	Methods of testing plastics waste fittings. Method 8: Thermal cycling test

4. Specimens Description

Sample ID	Sample description		Specifications	
PP900RTPP100RT	Brand:	Caulkmate	Material:	ABS Plastic
	Model:	PuddlePro Flange	Inlet:	DN90
	Code:	PP900RTPP100RT	Outlet:	DN100
	Condition:	New – unpackaged		
	Markings:	None		

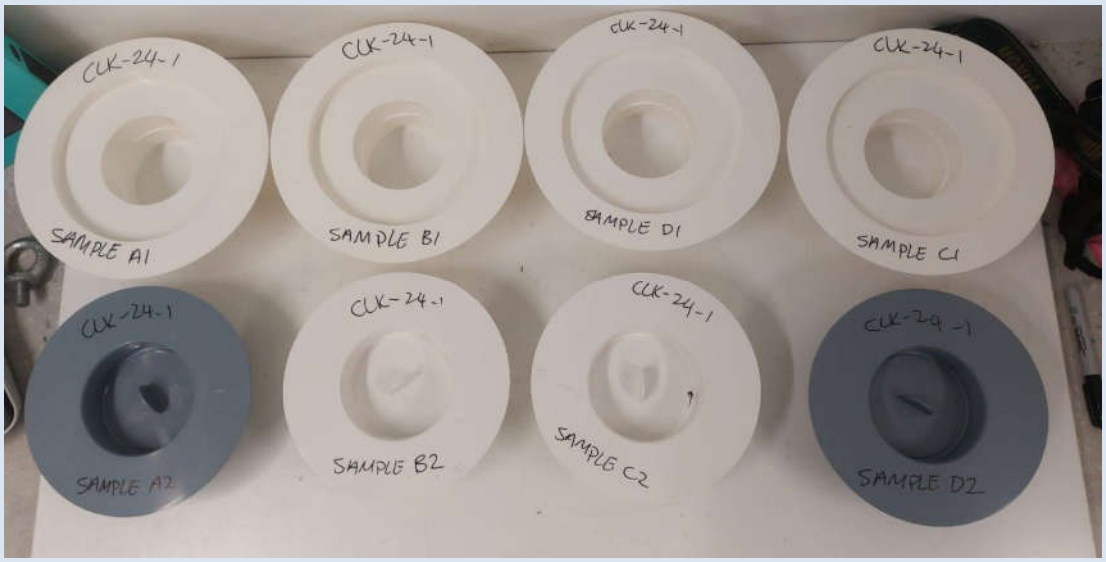


Figure 4.1 – Disassembled puddle flanges supplied for testing

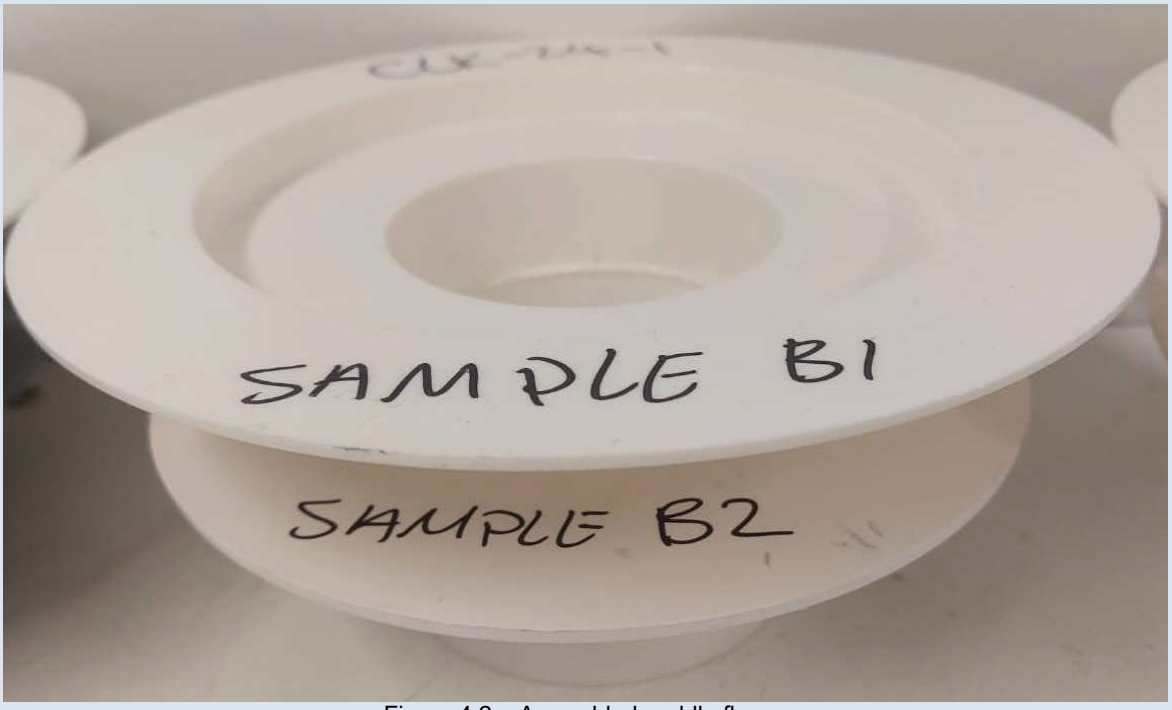


Figure 4.2 – Assembled puddle flange

- Legend: Text featured in *Italics* corresponds to customer supplied information which may affect the validity of results.
- Sample provided by customer. All results of testing in this report relate only to the items tested and listed above.
- Results presented in this report are as indicated by calibrated equipment during testing. No interpretations or allowances will be made where a test result falls within uncertainty levels of equipment used.

5. Performance Requirements – AS 2887:1993

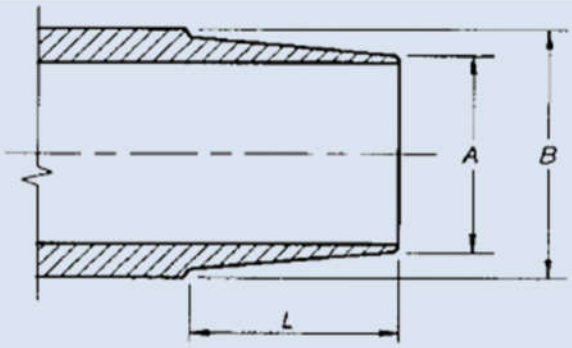
Section 1 of AS 2887:1993 – Scope and General

Test Reference Standard:	Clause 1.6.1 of AS 2887:1993 – Connection ends – General
Test Method Standard:	Clause 1.6.1 of AS 2887:1993 – Connection ends – General
Date of Test:	17/06/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 1.6.1 of AS 2887:1993
Sample D1 & Sample D2	Connection ends of plastic waste fittings shall have one of the forms specified in Clauses 1.6.2 to 1.6.9.	Connection end is tapered spigot end. See results of Cl 1.6.7.	**Conforms**

Test Reference Standard:	Clause 1.6.7 of AS 2887:1993 – Connection ends – Tapered spigot end
Test Method Standard:	AS/NZS 1462.1
Date of Test:	20/06/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 1.6.7 of AS 2887:1993
Sample D1 & Sample D2	Tapered spigots, including tapered spigot ends for pan connectors for use on 100mm outlets of WC pans, shall have dimensions in accordance with Figure 1.6.	Measurements recorded: L: 56.8mm (PASS) D_{minor}: 102.3mm (PASS) D_{major}: 103.2 (PASS)	**Conforms**



millimetres

Nominal size DN	Taper length L (min.)	Mean OD—minor		Mean OD—major	
		$A_{min.}$	$A_{max.}$	$B_{min.}$	$B_{max.}$
32	24	31.1	31.4	31.8	32.1
40	27	37.3	37.6	38.0	38.3
50	30	50.0	50.3	50.7	51.0
65	38	62.1	62.5	62.8	63.2
80	44	75.1	75.5	75.8	76.2
100	50	102.2	102.8	103.0	103.5
150	76	150.2	151.0	151.1	151.7

Figure 1.6 of AS 2887:1993 - Tapered spigot connection ends

Test Reference Standard:	Clause 1.9 of AS 2887:1993 – Freedom from defects
Test Method Standard:	Clause 1.9 of AS 2887:1993
Date of Test:	22/05/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 1.9 of AS 2887:1993
Sample A1 & Sample A2	Defects described in Clauses 1.9.1 and 1.9.2 cannot be completely quantified. Where presence, size or frequency of any of these are considered to be of concern, arrangements should be made between the purchaser/approving authority/certifying body and the manufacturer. This may be achieved by provision of acceptable type samples. Where defects are present and the product is submitted for acceptance, the manufacturer should be able to demonstrate fitness for purpose.		**Conforms**
	1.9.1 – General Defects shall not affect performance, function or safe handling of the fitting in service. Fittings shall be free from blisters and heat marks.	No defects are present, fitting is free of defects and heat marks	
	1.9.2 – Fitting ends Fitting ends shall be free from chips and rough edges and shall have sharp edges removed. Jointing surfaces shall be smooth. Jointing surfaces of fittings, sockets and tapered spigots for solvent cement jointing shall taper uniformly from the mouth to the root.	Fitting ends are free from defects and all sharp edges are removed. Joining surfaces are smooth.	

Test Reference Standard:	Clause 1.10.3 of AS 2887:1993 – High temperature stress relief
Test Method Standard:	AS/NZS 1462.11
Date of Test:	22/05/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 1.10.3 of AS 2887:1993
Sample A1 & Sample A2	ABS waste fittings shall be tested in accordance with the requirements of AS 3518.2 (AS/NZS 1462.11) The sample is placed into an oven at 150±4°C for a period of 60 minutes. At the completion of the test time, the sample is removed and cut whilst still hot through the injection point, weld lines or other areas of concern. The sample shall comply with the following: • No evidence of inclusions • Injection point shall be greater than 50% of original wall thickness • Weld line shall not open to greater than 50% of original wall thickness • Entire internal and external surfaces shall not show more than 5% of blisters or delamination.	Temperature: 150 +, - 2 °C Duration: 60 minutes Observations: No presence of blisters, inclusions or voids. Thickness at injection point is greater than 50% of original wall thickness. No surface delamination. Internal and external surfaces do not show more than 5% of blisters or delamination.	**Conforms**

Test Reference Standard:	Clause 1.11 of AS 2887:1993 – Marking
Test Method Standard:	Clause 1.11 of AS 2887:1993
Date of Test:	22/05/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 1.11 of AS 2887:1993
Sample A1 & Sample A2	The major section of the plastic waste fitting shall be legibly and indelibly marked with the following information: a) Manufacturer's name or registered trademark. For waste outlets, this shall be marked on the upper surface of gratings or flanges or, if the gratings are removable, marking may be in a position that can be viewed when the grating is removed. b) Where the plastic waste fitting is intended for outdoor applications exposed to direct sunlight, the letters 'UV' are used to indicate the presence of ultraviolet light stabilizer in the plastics formulation. c) The plastic material used in the major section of the waste fitting.	a) Manufacturer's name: Not present. b) UV marking: Not present. c) Plastic material: Not present.	**Does Not Conform**

Section 3 of AS 2887:1993 – Plastic waste outlets and gratings

Test Reference Standard:	Clause 3.2 of AS 2887:1993 – Designation of size
Test Method Standard:	Clause 3.2 of AS 2887:1993
Date of Test:	22/05/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 3.2 of AS 2887:1993
Sample A1 & Sample A2	Where grating and outlet connection ends are the same size, the size of the waste outlet shall be designated by the nominal size of the outlet connection end, e.g. DN 50. Where outlet and grating sizes are different, the waste outlet shall be designated by the nominal size of the grating followed by the nominal size of the outlet connection end, e.g. DN 80 × DN 50.	Outlet connection size: DN 90 x DN 100	**Conforms**

Test Reference Standard:	Clause 3.3.4.1 of AS 2887:1993 – Design – Waste outlet bodies – Waterway
Test Method Standard:	Clause 3.3.4.1 of AS 2887:1993
Date of Test:	23/05/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 3.3.4.1 of AS 2887:1993
Sample C1 & Sample C2	The minimum waterway through the body of a waste outlet fitting at any section, but excluding the grating, shall not be less than the area specified in Table 3.1.	Size waste fitting: DN 90 x DN100 Measured minimum waterway through body: 6151mm^2 > 1000mm^2	**Conforms**

TABLE 3.1
AREA OF WATERWAY FOR WASTE OUTLETS AND GRATINGS

Nominal size DN	Min. waterway area mm^2
32	250
40	450
50	800
65	800
80	800
90	1 000
100	1 200
150	2 000

Table 3.1 of AS 2887:1993 – Area of waterway for waste outlets and gratings

Test Reference Standard:	Clause 3.3.4.2 of AS 2887:1993 – Design – Waste outlet bodies – Fixture waste outlets
Test Method Standard:	Clause 3.3.4.2 of AS 2887:1993
Date of Test:	22/05/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 3.3.4.2 of AS 2887:1993
Sample A1 & Sample A2	Dimensions of fixture waste outlets shall be in accordance with the requirements of Figure 3.1. For a waste outlet that is supplied as in integral part of the fixture or designed to suit a particular fixture, Compliance with the flange requirements A, B, C, D, specified in Figure 3.1, need not be achieved. When checking to ensure that openings and recesses in fixtures are capable of accommodating a Standard waste outlet fitting, a plug gauge as detailed in Figure 3.2 shall be used.	Fixture waste outlet is of manufacturer's own design and not designed to suit a particular fixture.	**Conforms**

Test Reference Standard:	Clause 3.5.3 of AS 2887:1993 – Thermal cycling test
Test Method Standard:	AS 2888.8:2002
Date of Test:	24/05/2024
Test Officer:	Nick Oag

Sample ID	Requirement	Result	Conformity to Clause 3.5.3 of AS2887:1993
Sample B1 & Sample B2	When tested in accordance with AS 2888.8, all joints or seals shall be tightened to a torque of 10 +2, -0 N.m and the fitting shall not suffer any cracking or distortion and the surface finish shall not split, flake or peel.	Torque applied: Not applicable Thermal cycling temperatures: 80+, -0°C / 20 ±5°C Cycles completed: 1000 Observations: No cracking, distortion or degeneration of the fitting surface was observed.	**Conforms**