



08 October 2020

Our Ref: EN13 / 2523

## TEST REPORT No. 8351

**Requested by:** SOUDAL PTY LTD  
1 Tollis Place  
Seven Hills  
NSW 2147

**On (date):** 25 June 2020  
**Product Descriptions:** Soudagum LM  
**Manufacturer:** Soudal

**Sampling Details**  
**Date Received:** 30 September 2020  
**How (methods):** Delivered to Clayton

### Copyright and disclaimer

© 2020 CSIRO To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO. CSIRO advises that the information contained in this publication comprises observations based on test results. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, CSIRO (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

The results reported herein relate only to the item(s) tested.

This test report consists of 12 pages.

## SUMMARY OF ASSESSMENTS REPORTED

AS/NZS 4858:2004	Appendix A – Table A1	Pass
AS/NZS 4858:2004	Appendix B, Resistance of Waterproofing Membranes to Cyclic Movement	Pass
AS 3558.1:1999	Water Absorption	3.04%
ASTM E96:2016	Moisture Vapour Transmission	Pass

### TERM OF VALIDITY

Soudagum LM is deemed to meet the requirements of:  
AS/NZS 4858: 2004 - Wet Area Membranes

This CSIRO wet area membrane report will lapse three years after the initial date of issue and assessment unless revalidation has been requested and granted.

**The Report number 8351 valid until 08 October 2023**



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 2 of 12

## SUMMARY OF RESULTS

### AS/NZS 4858:2004 Wet Area Membranes

#### Appendix A: Assessment of Durability of waterproof membranes

Report No.	7941	8351	
Year of test	2017	2020	
Control	321%	359%	<b>Class III</b>
Heat Ageing @ 50 °C	198%		PASS
Water Immersion	398%		PASS
Bleach Immersion	865%		PASS
Detergent Immersion	659%		PASS

SOUDAL PTY LTD test sample, Soudagum LM achieves the performance requirements of AS/NZS 4858: 2004 Durability of Membranes for Class III membrane installation.

#### Appendix B: Assessment of resistance of waterproofing membranes to cyclic movement

Class III type membrane: 2mm gauge length for a 4.00mm extension, repeated 50 cycles.

Requirement: No fatigue cracking exhibited.

Result: **PASS**

#### ASTM E96:2016 Water Vapour Transmission of Materials

1.97g/m<sup>2</sup>/24hr

#### Appendix C: Suitability of waterproofing membranes when used over particle board

Appendix C will not be required as the Soudagum LM has a water vapour transmission below 8g/m<sup>2</sup>/24hr.

#### AS 3558.1 Methods of testing plastics & composite materials sanitary plumbing fixtures:

##### Method 1: Determination of water absorption characteristics

Result:	Sample 1	3.04%	
	Sample 2	2.89%	
	Sample 3	2.72%	Maximum 3.04%



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 3 of 12

TEST CARRIED OUT IN ACCORDANCE WITH

Test Start Date: 30 September 2020

Test End Date: 07 October 2020

AS/NZS 4858:2004 Wet Area Membranes

Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: 002N.1.03 Laboratory  
Specimens: Prepared all specimens of type 5 in accordance with AS1145.3  
Specimen Conditions: 7 days at 23±2°C & 65 ±15% RH  
Test rate: 200mm/min.

## CONTROL SAMPLES

Specimen No.:	Thickness (mm)	Maximum Load (N)	Maximum Elongation (mm)	Maximum Stress (MPa)	Maximum Strain (%)
8351/01	0.89	8.86	83.89	1.66	336
8351/02	0.99	8.62	85.13	1.45	341
8351/03	0.92	8.42	94.80	1.52	379
8351/04	0.98	8.53	95.14	1.45	381
8351/05	1.02	8.29	90.02	1.35	360
Mean	<b>0.96</b>		<b>89.80</b>		<b>359</b>

**Requirement for Class III:** The specimens have an average percentage strain of ≥300%

**Classification:** Class III (High extensibility)



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 4 of 12

TEST CARRIED OUT IN ACCORDANCE WITH  
AS/NZS 4858:2004 Wet Area Membranes  
Appendix A: Assessment of Durability of waterproof membranes

Test Date: 09 August 2017

RESULTS: Location: Ceramic Tile Laboratory  
Conditions: 7 days at 23°C 50%RH  
Sample Number: 7941 - 1 (Numbered 1 to 5)  
Samples: Average of 5 samples  
Load rate: 200mm/min

## Elongation at Break

### CONTROL SET

Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
7941 - 1 1 to 5	0.92	9.58	105.88	1.74	321

**Requirement for Class III:** The specimens have an average percentage strain of  $\geq 300\%$

**Classification:** Class III (High extensibility)



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 5 of 12

TEST CARRIED OUT IN ACCORDANCE WITH

Test Date: 07 September 2017

AS/NZS 4858:2004 Wet Area Membranes

Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory  
Conditioning: 23°C 50%RH  
Sample Number: 7941 - 2 (Numbered 1 to 4)  
Samples: Average of 4 samples  
Load rate: 200mm/min

## Elongation at Break

## HEAT AGEING @ 50 °C

Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
7941- 2 1 to 4	0.88	13.03	65.31	2.47	198

**Requirement:** The sample requires an elongation at break strain greater than 161% at 7 days.  
Less than 161% - fail.

**Result:** 198% PASS



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 6 of 12

TEST CARRIED OUT IN ACCORDANCE WITH

Test Date: 06 October 2017

AS/NZS4858:2004 Wet Area Membranes

Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory  
Conditions: 7 days at 23°C 50%RH  
Sample Number: 7941 - 3 (Numbered 1 to 9)  
Samples: Average of 3 samples  
Load rate: 200mm/min  
Solution: 1L of deionised water

## Elongation at Break

### WATER IMMERSION

Period & Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
<b>7 Days</b> 7941 – 3 1 to 3	0.61	2.65	152.08	0.72	461
<b>28 Days</b> 7941 – 3 4 to 6	0.62	3.76	140.67	1.01	426
<b>56 Days</b> 7941 – 3 7 to 9	0.65	4.43	131.24	1.09	398

**Requirement:** The sample requires an elongation at break strain greater than 161% at 56 days without additional bond relief. Between 161% and 81% additional bond strength is required. Less than 81% - fail.

**Result:** 398% **PASS**



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 7 of 12

TEST CARRIED OUT IN ACCORDANCE WITH

Test Date: 06 October 2017

AS/NZS 4858:2004 Wet Area Membranes

Appendix A: Assessment of Durability of waterproof membranes

RESULTS: Location: Ceramic Tile Laboratory  
Conditions: 7 days at 23°C 50%RH  
Sample Number: 7941 - 4 (Numbered 1 to 9)  
Samples: Average of 3 samples  
Load rate: 200mm/min  
Solution: 1L of 10.5 g/L sodium hypochlorite & 2.25 g/L of sodium hydroxide

## Elongation at Break

### BLEACH IMMERSION

Period & Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
<b>7 Days</b> 7941 – 4 1 to 3	0.69	2.51	138.75	0.61	420
<b>28 Days</b> 7941 – 4 4 to 6	0.72	2.20	202.14	0.51	613
<b>56 Days</b> 7941 – 4 7 to 9	0.73	2.50	285.43	0.57	865

**Requirement:** The sample requires an elongation at break strain greater than 161% at 56 days without additional bond relief. Between 161% and 81% additional bond strength is required. Less than 81% - fail.

**Result:** 865% **PASS**



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal Australia  
PRODUCT DESC: Soudagum LM

Page 8 of 12

TEST CARRIED OUT IN ACCORDANCE WITH  
AS/NZS 4858:2004 Wet Area Membranes  
Appendix A: Assessment of Durability of waterproof membranes

Test Date: 06 October 2017

RESULTS: Location: Ceramic Tile Laboratory  
Conditions: 7 days at 23°C 50%RH  
Sample Number: 7941 - 5 (Numbered 1 to 9)  
Samples: Average of 3 samples  
Load rate: 200mm/min  
Solution: 1L of 2% solution N8 detergent

## Elongation at Break

### DETERGENT IMMERSION

Period & Sample Number	Sample Thickness Mean (mm)	Maximum Load (N)	Maximum Extension (mm)	Maximum Stress MPa	Maximum Strain %
<b>7 Days</b> 7941 – 5 1 to 3	0.79	2.03	249.65	0.43	757
<b>28 Days</b> 7941 – 5 4 to 6	0.81	1.66	312.69	0.34	948
<b>56 Days</b> 7941 – 5 7 to 9	0.83	1.47	217.31	0.29	659

**Requirement:** The sample requires an elongation at break strain greater than 161% at 56 days without additional bond relief. Between 161% and 81% additional bond strength is required. Less than 81% - fail.

**Result:** **659%** **PASS**





REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 9 of 12

TEST CARRIED OUT IN ACCORDANCE WITH  
AS/NZS 4858:2004 Wet Area Membranes  
Appendix B: Assessment of Resistance of  
Waterproofing Membranes to Cyclic Movement

Test Date: 22 September 2017

RESULTS: Location: Laboratory  
Test Rig: Applied Test Systems  
Series 904 Vertical Sealant Tester  
Number of Cycles: 50  
Type of Cycle: Full cycle  
Cycle Time: 2 hours to complete full cycle  
Cycle expansion: 50% of Control elongation at break  
Sample Size: 65mm x 25mm  
Sample Span: 2mm between header plates  
Sample Thickness: 0.83mm

The test sample achieved a control Elongation of Break of 321% as per AS4858 Appendix A. For a Class III membrane type the extension movement used for cycling is 4.00mm extension.

Number of Cycles completed 50  
Surface Crazeing Nil  
Surface Tears Nil  
Membrane Rupture Nil

**Result: PASS**



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 10 of 12

TEST CARRIED OUT IN ACCORDANCE WITH  
ASTM E96:2016 Water Vapour Transmission of Materials

Test Date: 01 September 2017

RESULTS: Location: Ceramic Tile Laboratory  
Open mouth dish: Diameter 100mm  
Test Period: 456 hours  
Conditions: 23°C / RH 50%  
Desiccant: Silica gel

## Desiccant Method (Procedure A)

Sample	Thickness (mm)	Water Vapour Tx g/m <sup>2</sup> /24hr	Permeance Perms (in. lbs)
Specimen 1	0.72	2.13	40.90
Specimen 2	0.81	2.03	39.06
Specimen 3	0.82	1.75	33.65
Mean	0.78	1.97	37.87

**Requirement:** If > 8g/m<sup>2</sup>/24 hours, additional testing referred to in (e) of Table A1 will be required to establish suitability for use over particleboard.

**Permeance:** 37.87 Perms (in. lbs)

**Water Vapour Tx:** 1.97g/m<sup>2</sup>/24 hours

**Result:** PASS



REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

Page 11 of 12

TEST CARRIED OUT IN ACCORDANCE WITH  
AS 3558.1-1999: Water Absorption

Test Date: 14 September 2017

RESULTS: Location: Ceramic Tile Laboratory  
Test Period: 24 hours  
Conditions: 23°C / RH 50%

Sample	Thickness (mm)	Water Absorption		
		Mass (m1)	Mass (m2)	% Mass Difference
Specimen 1	0.71	10.51	10.83	3.04
Specimen 2	0.82	11.77	12.11	2.89
Specimen 3	0.87	12.48	12.82	2.72
Mean	<b>0.80</b>	<b>11.59</b>	<b>11.92</b>	<b>2.88</b>

**Requirement:** Determine maximum water absorption

**Result:** 3.04%



## Infrastructure Technologies

Gate 5, 2 Normanby Road Clayton VIC 3168, Australia  
Telephone: 61 3 9545 2777 Web: <http://www.csiro.au>

---

REPORT NO: 8351  
ISSUE DATE: 08 October 2020  
MANUFACTURER: Soudal  
PRODUCT DESC: Soudagum LM

---

Page 12 of 12

---

**Prepared on behalf of CSIRO by:**

---

Name: Khanh Ho  
Position: Research Project Officer  
Date: 08 October 2020

Signature:

A handwritten signature in black ink, appearing to be "Khanh Ho", written over a horizontal line.