



WATERPROOFING MEMBRANES FOR ABOVE GROUND USE (EXTERNAL)

1 SCOPE

- a) This specification applies to waterproofing membranes for external above-ground use, such as, but not limited to, those in the areas of roofs, decks, and balconies, to prevent the ingress of water.
- b) This document has been prepared in a manner compliant with the requirements of AS/NZS ISO/IEC 17065.
- c) APAS® is a trademark registered with IP Australia, owned by CSIRO, the Scheme Owner, and protected under applicable laws. Use of the trademark or the Certification Scheme is prohibited unless prior approval in writing is obtained from CSIRO via the APAS Secretariat.

2 BACKGROUND

- a) To obtain a broad overview of the Australian Paint Approval Scheme (APAS), refer to APAS document AP-D001.
- b) To obtain an overview of restricted ingredients in APAS certified products, refer to APAS document AP-D123.
- c) To obtain the current list of APAS participating manufacturers and resellers, refer to APAS document AP-D152.
- d) To obtain an overview of how to participate in the APAS, refer to APAS document AP-D177.

3 DEFINITIONS AND ACRONYMS

3.1 Definitions

The definition of terms used in this document and in the Certification Scheme can be found in APAS Document AP-D001. In addition, the following definitions shall apply:

- a) **Bioresistance:** A membranes resistance to degradation by biological attack.
- b) **Trafficable:** A surface that is intended to withstand a specific type of traffic, such as pedestrian or vehicle.
- c) **Waterproof:** The property of a material that prevents moisture from penetrating it, rendering it impervious to water.
- d) **Waterproofing Membrane:** A layer of water-tight material, such as a liquid or a sheet, that is laid onto a surface to prevent leaks or damage to the underlying substrate.
- e) **Waterproof Membrane System:** A combination of membrane-associated products used in membrane installation such as primers, mechanical fasteners, waste outlets and flashings that form a waterproof barrier.

3.2 Acronyms

The following acronyms appear in this document:

AIW	Australian Institute of Waterproofing
APAS	Australian Paint Approval Scheme
AS	Australian Standard
AS/NZS	Australian Standard / New Zealand Standard
CSIRO	Commonwealth Scientific and Industrial Research Organisation

HIA	Housing Industry Association
MBA	Master Builders Australia
MPDA	Master Painters & Decorators Australia
PDS	Product Data Sheet
SDS	Safety Data Sheet
TDS	Technical Data Sheet
WHS	Workplace Health and Safety

4 DESCRIPTION AND GUIDE FOR USERS

4.1 General Information

- a) This specification applies to waterproofing membranes for external above-ground use, such as, but not limited to, those in the areas of roofs, decks, and balconies, to prevent the ingress of water.
- b) The most commonly reported complaints in the building industry have root causes based on water ingress issues. These issues can stem from a number of sources, including, but not limited to:
 - i. Preparation and/or installation inadequate or not to specification i.e., surface was not clean, free from dust, was not appropriately dry / had moisture content.
 - ii. Lack of experience, training, and education.
 - iii. Variability in commonwealth, state and territory licensing and regulatory requirements for waterproofing contractors.
 - iv. Selection and use of inferior or non-compatible materials and products.
 - v. Job Supervision, and
 - vi. Inadequate or no maintenance.
- c) Waterproofing membranes are typically used as a system. Currently there are 5 main types of waterproof membrane systems:
 1. **Ballasted Membranes:** Systems that are held down by ballast or another type of finish such as gravel, river-washed stones, or pavers.
 2. **Fully Bonded Membranes:** Systems that are fully bonded to the substrate, such as:
 - Sheet membranes, held in place by a material applicable to their type i.e., adhesives, bitumen heated to a bitumen primed substrate etc.
 - Liquid membrane systems, such as those comprised of materials like polyurea or polyurethane (water or solvent-based).
 3. **Inverted Roof Membrane Assembly (IRMA):** Systems where the ballasted roof insulation is placed on top of the membrane.
 4. **Mechanically Fixed Membrane:** Systems that are held down by mechanical fastening that secure the membrane either direct to substrate or over the top of insulation.
 5. **Partially Bonded Membranes:** Systems where only part of the surface area of the membrane is designed to be bonded to the substrate.
- d) All of the above membrane systems can either be:
 - i. **Exposed:** Unprotected from weather and/or mechanical damage and/or chemical damage.
 - ii. **Non-Exposed:** Protected from weather, mechanical and chemical damage.
- e) The manufacturer's Technical Data Sheet (TDS) or Product Data Sheet (PDS) should be consulted to

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confirm that the exposure conditions to which the membrane system is to be exposed is within the capabilities of that system.

- f) Industry consultation with the AIW, HIA, MBA, MPDA and Industry experts was sought in the preparation of this specification.

4.2 Sub-Classes

- a) This specification incorporates the following sub-classes:

Sub-class:	Description:
Fully Bonded Membrane	
FSETP ¹	Fully Bonded Membrane – Sheet – Exposed – Traffic – Pedestrian
FSETO ²	Fully Bonded Membrane – Sheet – Exposed – Traffic – Occasional Service Vehicle
FSETR ²	Fully Bonded Membrane – Sheet – Exposed – Traffic – Regular Service Vehicle
FSEN	Fully Bonded Membrane – Sheet – Exposed – Non-trafficable
FSN	Fully Bonded Membrane – Sheet – Non-Exposed
FLETP	Fully Bonded Membrane – Liquid – Exposed – Traffic – Pedestrian
FLETO	Fully Bonded Membrane – Liquid – Exposed – Traffic – Occasional Service Vehicle
FLETR	Fully Bonded Membrane – Liquid – Exposed – Traffic – Regular Service Vehicle
FLEN	Fully Bonded Membrane – Liquid – Exposed – Non-trafficable
FLN	Fully Bonded Membrane – Liquid – Non-Exposed
Partially Bonded Membrane	
PSETP ¹	Partially Bonded Membrane – Sheet – Exposed – Traffic – Pedestrian
PSETO ²	Partially Bonded Membrane – Sheet – Exposed – Traffic – Occasional Service Vehicle
PSETR ²	Partially Bonded Membrane – Sheet – Exposed – Traffic – Regular Service Vehicle
PSEN	Partially Bonded Membrane – Sheet – Exposed – Non-Trafficable
PSN	Partially Bonded Membrane – Sheet – Non-Exposed
Sub-class:	Description:
Ballasted Membrane	
BSETP ¹	Ballasted Membrane – Sheet – Exposed – Traffic – Pedestrian
BSETO ²	Ballasted Membrane – Sheet – Exposed – Traffic – Occasional Service Vehicle

Sub-class:	Description:
Ballasted Membrane (Cont.,)	
BSETR ²	Ballasted Membrane – Sheet – Exposed – Traffic – Regular Service Vehicle
BSEN	Ballasted Membrane – Sheet – Exposed – Non-trafficable
BSN	Ballasted Membrane – Sheet – Non-Exposed
Mechanically Fastened Membrane	
MSETP ¹	Mechanically Fixed Membrane – Sheet – Exposed – Traffic – Pedestrian
MSETO ²	Mechanically Fixed Membrane – Sheet – Exposed – Traffic – Occasional Service Vehicle
MSETR ²	Mechanically Fixed Membrane – Sheet – Exposed – Traffic – Regular Service Vehicle
MSEN	Mechanically Fixed Membrane – Sheet – Exposed – Non-trafficable
MSN	Mechanically Fixed Membrane – Sheet – Non-Exposed

NOTE¹: Sheet membranes are designed for occasional maintenance foot traffic only. Where regular foot traffic is to occur, a dedicated platform or other type of protective overlay is required.

NOTE²: Sheet membranes are not designed to be trafficked by vehicles unless protected by a dedicated platform or other type of protective overlay.

4.3 Basis of this Specification

- a) This specification is based on AS 4654.1 and relevant areas of the National Construction Code.

5 REFERENCED DOCUMENTS

- a) The following standards are referenced in this document:
- i. **AS 1580.403.2^A:** Paints and related materials: Methods of test – Abrasion resistance
 - ii. **AS 4654.1^A:** Waterproofing membranes for external above-ground use – Part 1: Materials
 - iii. **AS 4654.2^A:** Waterproofing membranes for external above-ground use – Part 2: Design and installation
 - iv. **AS ISO 13007.5^A:** Ceramic tiles – grouts and adhesives, Part 5: Requirements, test methods, evaluation of conformity, classification, and designation of liquid-applied waterproofing membranes for use beneath ceramic tiling bonded with adhesive
 - v. **ASTM C794-18^A:** Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants

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- vi. **ASTM D5602 / D5602M-18[^]**: Standard Test Method for Static Puncture Resistance of Roofing Membrane Specimens
- vii. **ASTM D6207-03[^]**: Standard Test Method for Dimensional Stability of Fabrics to Changes in Humidity and Temperature
- viii. **ASTM E96 / E96M-16[^]**: Standard Test Methods for Water Vapor Transmission of Materials
- ix. **AS/NZS ISO/IEC 17065[^]**: Conformity assessment: Requirements for bodies certifying products, processes, and services
- x. **BS EN 12310-1[^]**: Flexible Sheets for Waterproofing - Determination of Resistance to Tearing (Nail Shank) - Bitumen Sheets for Roof Waterproofing
- xi. **BS EN 12691[^]**: Flexible Sheets for Waterproofing – Bitumen, Plastic and Rubber Sheets for Roof Waterproofing – Determination of Resistance to Impact
- xii. **BS PD CEN/TS 14416[^]**: Geosynthetic barriers. Test method for determining the resistance to roots
- xiii. **EN 13948[^]**: Flexible sheets for waterproofing – Bitumen, plastic, and rubber sheets for roof waterproofing – Determination of resistance to root penetration

These documents may be purchased through the Reference Standards Australia website:
<https://www.standards.org.au/>

- xiv. **The Therapeutic Goods (Poisons Standard - February 2023) Instrument 2023[^]**: Part 2: Controls on Substances, Division 9 - Paint or Tinters

This document is available from the Australian Government Federal Register of Legislation website at:
[Therapeutic Goods \(Poisons Standard—February 2023\) Instrument 2023 \(legislation.gov.au\)](https://www.legislation.gov.au/Therapeutic-Goods-(Poisons-Standard-February-2023)-Instrument-2023)

- xv. **National Construction Code[^] (NCC) 2022**: Volume 1, Volume 2, and Volume 3 (and any relevant amendments to these Volumes)

These documents can be downloaded from the Australian Building Codes Board website at: [National Construction Code 2022 | NCC \(abcb.gov.au\)](https://www.abcb.gov.au/National-Construction-Code-2022)

NOTE[^]: Australian and international standards, the NCC and the Poisons Standard can be subject to changes and variations, therefore it is important to check the regulatory requirements in the state or territory in which a product is to be used.

- b) The following APAS documents are referenced in this document:
 - i. AP-D001 Rules Governing How APAS[®] Operates
 - ii. AP-D114 Rules Governing APAS[®] Recognition as a Testing Authority
 - iii. AP-D123 Restrictions on Ingredients in Product Formulations
 - iv. AP-D152 APAS[®] Participating Manufacturers and Resellers

- v. AP-D177 Rules Governing How Product Manufacturers participate in APAS[®]
- vi. AP-D181 Volatile Organic Compounds (VOC) Limits
- vii. AP-D192 Rules Governing APAS[®] Product Certification Scheme

All APAS documents are available for download from the APAS website: [APAS Documents & Forms](#)

6 PRODUCT APPROVAL REQUIREMENTS

6.1 General Requirements

- a) The system shall comply with this specification and the relevant requirements of APAS document AP-D192 during the life of the approval.

6.2 Technical Requirements

- a) The system shall comply with **all** the applicable requirements of clause 7, Table 1 below.
- b) In line with the NCC, all laboratory testing requirements stated in clause 7, Table 1 must be undertaken by an AS ISO/IEC 17025 accredited laboratory with all applicable test methods included in their Scope of Accreditation. A grace period will exist in order for all testing facilities to achieve AS ISO/IEC 17025 accreditation. **This Grace period will end on 31st July 2025.**
- c) AS ISO/IEC 17025 accreditation shall be provided by an organisation accredited by an ILAC Mutual Recognition Arrangement signatory and having a Scope of Accreditation covering AS ISO/IEC 17025 requirements. In Australia, NATA provides AS ISO/IEC 17025 accreditation. A list of international ILAC accreditation bodies can be found on the ISO website.
- d) At the time of publication of this document, the following testing authorities were recognised by APAS for ability to test products to the requirements of AP-S4000, and have either currently or are working towards all testing under their AS ISO/IEC 170205 (NATA) Scope of Accreditation:
 - i. **XTec Gen Laboratory**
 30-32 Park Avenue
 Woodville North SA 5012
 Contact: Eric Scardigno
 T: 1300 152 298
 E: eric.s@xtecgen.com
 - ii. **CSIRO Materials Durability & Coatings Lab**
 71 Normanby Road
 Clayton VIC 3169
 (sample deliveries to Gate 3)
 Contact: Money Arora
 T: +61 3 9545 8774
 E: money.arora@csiro.au
- e) To claim compliance with this specification and the AS 4654.1, all tested membranes shall not record a FAIL result.



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- f) The **bioresistance of a membrane** shall be:
 - i. appropriate for the membranes intended purpose, and
 - ii. shall be stated in the Test Report with all applicable tests undertaken relating to bioresistance (as per the manufacturers guidelines) and supplied to APAS as part of the product submission.
- g) Where the membrane is intended for use where not protected by a root resistant barrier, the membrane shall:
 - i. have properties that resist attack from root systems that may cause membrane puncture or degradation beyond serviceable condition, and
 - ii. be tested for Root Resistance in accordance with either BS PD CEN/TS 14416 (short term resistance) or EN 13948 (long term resistance) with all results provided including photographic evidence of the samples resistance to root penetration.

6.3 Health and Safety Requirements

- a) The manufacturer's Safety Data Sheet (SDS), product data sheet (PDS) and/or technical data sheet (TDS) must be studied closely prior to using the product(s) within the waterproofing system and must be complied with during use of the product(s) and system.
- b) As products covered by this specification may contain solvents, the product(s) may be considered flammable and should be stored away from all sources of heat or ignition.
- c) Containers should be resealed immediately after use and good ventilation provided during use to minimise the risk of fire or explosion and the long-term toxic effects of absorption of the vapour into the lungs.
- d) Care should be taken to avoid contact with the skin using protective clothing and barrier cream. All pumping equipment should be adequately earthed. A full-face air fed respirator should be used when spraying.
- e) Products intended for sale in Australia shall comply with all the requirements of the Therapeutic Goods (Poisons Standard - February 2023). Products intended for sale in other countries shall comply with all local WHS and environmental requirements.
- f) The product shall comply with all requirements of clause 6.3 and 6.4 of APAS document AP-D192.



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7 TABLE 1: PERFORMANCE PROPERTIES

PROPERTY REQUIREMENT	TEST METHOD	RESULTS REQUIREMENTS
FULLY BONDED MEMBRANES		
Water Impermeability	AS ISO 13007.5, Table 1, and Clause A.7	<p>Applicable to LIQUID sub-classes ONLY (FLETP, FLETO, FLETR, FLEN and FLN).</p> <ul style="list-style-type: none"> No visual penetration below membrane. ≤ 20 g weight gain. <p>State results.</p>
Abrasion Resistance	AS 4654.1 clause 2.3 and Table 2.1; AS 1580.403.2	<p>FSETP: < 0.2 mm FSETO: < 0.1 mm FSETR: < 0.05 mm FSEN: < 0.2 mm FSN: Not Applicable FLETP: < 0.2 mm FLETO: < 0.1 mm FLETR: < 0.05 mm FLEN: < 0.2 mm FLN: Not Applicable</p> <p>State results.</p>
Bond Strength ³	AS 4654.1 clause 2.4 and Table 2.1; ASTM C794-18	<p>Applicable to ALL sub-classes.</p> <p>State results.</p>
Cyclic Movement ^{3, 4}	AS 4654.1 Table 2.1 and Appendix B (in conjunction with Table A1 and A3)	<p>Applicable to ALL sub-classes.</p> <p>Specify if membrane has been tested as Class I, II or III.</p> <p>State results:</p> <ul style="list-style-type: none"> Noting the onset of crazing, surface tears and membrane rupture. If rupture occurs in line with clause B4 of Appendix B, report the number of cycles to failure. If failure does not occur after 50 cycles, report with type of surface defect induced (if any) and the number of cycles at which time the defect occurred.
Dimensional Stability ³	AS 4654.1 Table 2.1; ASTM D6207-03	<p>Applicable to SHEET sub-classes ONLY (FSETP, FSETO, FSETR, FSEN and FSN).</p> <p>State results.</p>
Elongation at Break	AS 4654.1 Table 2.1, Appendix A and Table A1	<p>Applicable to ALL sub-classes.</p> <p>State Membrane Class (I, II or III).</p>

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7 TABLE 1: PERFORMANCE PROPERTIES (Cont..)

PROPERTY REQUIREMENT	TEST METHOD	RESULTS REQUIREMENTS
FULLY BONDED MEMBRANES (Cont..)		
Field Seam Strength ^{3,4}	AS 4654.1 clause 2.5 and Table 2.1	Applicable to SHEET sub-classes ONLY (FSETP, FSETO, FSETR, FSEN and FSN). State results.
Heat Ageing	AS 4654.1 Table 2.1, Appendix A and Table A4	Applicable to ALL sub-classes. State results.
Ultraviolet Resistance	AS 4654.1 clause 2.7, Table 2.1, Appendix A and Table A4	Applicable to ALL sub-classes <u>except</u> FSN and FLN. State results.
Tensile Strength	AS 4654.1 Table 2.1, Appendix A and Table A4	Applicable to ALL sub-classes. State results.
Thickness	Various Methods	Applicable to ALL sub-classes. State results.
Durability	AS 4654.1 Table 2.1, Appendix A, Table A4	Applicable to ALL sub-classes. State results.
Temperature Resistance ⁴ and Water Vapour Transmission Rate (WVTR)	AS 4654.1 clause 2.6 and Table 2.1; AS 4654.2 AS 4654.1 Table 2.1; ASTM E96 / E96M-16 (in conjunction with Table A3)	Applicable to ALL sub-classes. State results: <ul style="list-style-type: none"> Temperature range tested – cold and hot conditions WVTR test method used – Desiccant or Water WVTR in g/m²/24 hours
ADDITIONAL TESTING REQUIREMENT – Liquid Membrane sub-classes FLETP, FLETO, FLETR, FLEN or FLN ONLY		
Volatile Organic Content (VOC)	APAS AP-D181	Solvent-borne: ≤ 200 g/L Water-borne: ≤ 70 g/L Report results.

NOTE³: Bond Strength, Cyclic Movement, Dimensional Stability and Field Seam Strength testing must also be performed on a sheet to sheet connection. All results must be reported.

NOTE⁴: RMUs and alternative testing authorities that are compliant to APAS document AP-D114, and who are seeking to provide test results for:

- Cyclic Movement, Field Seam Strength, and Temperature Resistance Property Requirements for Fully and/or Partially Bonded Membranes, and/or
- Field Seam Strength and Temperature Resistance Property Requirements for Ballasted and/or Mechanically Fastened Membranes

Must provide evidence to the prescriptive test methods used to prove the outcome of the testing. These prescriptive test methods will be lab specific and must be reviewed and approved for compliance by the APAS EO prior to the supply of test results for a product seeking certification.

APAS reserves the right for final decision regarding the suitability of a test method being fit-for-purpose. Agencies that have already been assessed for such test methods are stated in clause 6.2 d) of this specification.



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7 TABLE 1: PERFORMANCE PROPERTIES (Cont..)

PROPERTY REQUIREMENT	TEST METHOD	RESULTS REQUIREMENTS
PARTIALLY BONDED MEMBRANES		
Abrasion Resistance	AS 4654.1 clause 2.3 and Table 2.2; AS 1580.403.2	PSETP: < 0.2 mm PSETO: < 0.1 mm PSETR: < 0.05 mm PSEN: < 0.2 mm PSN: Not Applicable
Bond Strength	AS 4654.1 clause 2.4 and Table 2.2; ASTM C794-18	State results.
Cyclic Movement ⁴	AS 4654.1 Table 2.2 and Appendix B (in conjunction with Table A1 and A3)	All parameters and test results shall be recorded and reported; overall results shall be reported as PASS or FAIL.
Dimensional Stability	AS 4654.1 Table 2.2; ASTM D6207-03	State results.
Elongation at Break	AS 4654.1 Table 2.2, Appendix A and Table A1	State Membrane Class (I, II or III).
Field Seam Strength ⁴	AS 4654.1 clause 2.5 and Table 2.2	State results.
Heat Ageing	AS 4654.1 Table 2.2, Appendix A and Table A4	State results.
Puncture Resistance	AS 4654.1 Table 2.2, Appendix B and B4; ASTM D5602 / D5602M-18 or BS EN 12691	State results.
Tear Resistance	AS 4654.1 Table 2.2; BS EN 12310-1	State results.
Ultraviolet Resistance	AS 4654.1 clause 2.7, Table 2.2, Appendix A and Table A4	Applicable to ALL sub-classes <u>except</u> PSN. State results.
Tensile Strength	AS 4654.1 Table 2.2, Appendix A and Table A4	State results.
Thickness	Various Methods	State results.
Durability	AS 4654.1 Table 2.2, Appendix A, Table A4	State results.
Temperature Resistance ⁴ and Water Vapour Transmission Rate	AS 4654.1 clause 2.6 and Table 2.2; AS 4654.2 AS 4654.1 Table 2.2; ASTM E96 / E96M-16 (in conjunction with Table A3)	State results: <ul style="list-style-type: none"> • Temperature range tested – cold and hot conditions • WVTR test method used – Desiccant or Water • WVTR in g/m²/24 hours



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7 TABLE 1: PERFORMANCE PROPERTIES (Cont..)

PROPERTY REQUIREMENT	TEST METHOD	RESULTS REQUIREMENTS
BALLASTED MEMBRANES		
Abrasion Resistance	AS 4654.1 clause 2.3 and Table 2.3; AS 1580.403.2	BSETP: < 0.2 mm BSETO: < 0.1 mm BSETR: < 0.05 mm BSEN: < 0.2 mm BSN: < 0.2 mm
Dimensional Stability	AS 4654.1 Table 2.3; ASTM D6207-03	State results.
Elongation at Break	AS 4654.1 Table 2.3, Appendix A and Table A1	State Membrane Class (I, II or III).
Field Seam Strength ⁴	AS 4654.1 clause 2.5 and Table 2.3	State results.
Heat Ageing	AS 4654.1 Table 2.3, Appendix A and Table A4	State results.
Puncture Resistance	AS 4654.1 Table 2.3, Appendix B and B4; ASTM D5602 / D5602M-18 or BS EN 12691	State results.
Tear Resistance	AS 4654.1 Table 2.3; BS EN 12310-1	State results.
Ultraviolet Resistance	AS 4654.1 clause 2.7, Table 2.3, Appendix A and Table A4	Applicable to ALL sub-classes <u>except</u> BSN. State results.
Tensile Strength	AS 4654.1 Table 2.3, Appendix A and Table A4	State results.
Thickness	Various Methods	State results.
Durability	AS 4654.1 Table 2.3, Appendix A, Table A4	State results.
Temperature Resistance ⁴ and Water Vapour Transmission Rate	AS 4654.1 clause 2.6 and Table 2.3; AS 4654.2 AS 4654.1 Table 2.3; ASTM E96 / E96M-16 (in conjunction with Table A3)	State results: <ul style="list-style-type: none"> • Temperature range tested – cold and hot conditions • WVTR test method used – Desiccant or Water • WVTR in g/m²/24 hours



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7 TABLE 1: PERFORMANCE PROPERTIES (Cont..)

PROPERTY REQUIREMENT	TEST METHOD	RESULTS REQUIREMENTS
MECHANICALLY FASTENED MEMBRANES		
Abrasion Resistance	AS 4654.1 clause 2.3 and Table 2.3; AS 1580.403.2	MSETP: < 0.2 mm MSETO: < 0.1 mm MSETR: < 0.05 mm MSEN: < 0.2 mm MSN: < 0.2 mm
Dimensional Stability ⁵	AS 4654.1 Table 2.3; ASTM D6207-03	State results.
Elongation at Break	AS 4654.1 Table 2.3, Appendix A and Table A1	State Membrane Class (I, II or III).
Field Seam Strength ^{4, 5}	AS 4654.1 clause 2.5 and Table 2.3	State results.
Heat Ageing	AS 4654.1 Table 2.3, Appendix A and Table A4	State results.
Puncture Resistance	AS 4654.1 Table 2.3, Appendix B and B4; ASTM D5602 / D5602M-18 or BS EN 12691	State results.
Tear Resistance	AS 4654.1 Table 2.3; BS EN 12310-1	State results.
Ultraviolet Resistance	AS 4654.1 clause 2.7, Table 2.3, Appendix A and Table A4	Applicable to ALL sub-classes <u>except</u> MSN. State results.
Tensile Strength	AS 4654.1 Table 2.3, Appendix A and Table A4	State results.
Thickness	Various Methods	State results.
Durability	AS 4654.1 Table 2.3, Appendix A, Table A4	State results.
Temperature Resistance ⁴ and Water Vapour Transmission Rate	AS 4654.1 clause 2.6 and Table 2.3; AS 4654.2 AS 4654.1 Table 2.3; ASTM E96 / E96M-16 (in conjunction with Table A3)	State results: <ul style="list-style-type: none"> • Temperature range tested – cold and hot conditions • WVTR test method used – Desiccant or Water • WVTR in g/m²/24 hours

NOTE⁵: Dimensional Stability and Field Seam Strength testing must also be performed on a sheet to sheet connection. All results must be reported.



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APPENDIX A

Document History

Status: Current
Version: 0
Date Published: 22-05-2023

Document Version No.:	Date Published:	Summary of Changes:
0	22-05-2023	<ul style="list-style-type: none">Initial specification version