



DAMP-PROOF COURSES AND FLASHINGS

1 SCOPE

- This specification applies to damp-proof course and flashing materials used in building construction to prevent the ingress of water.
- This document has been prepared in a manner compliant with the requirements of AS/NZS ISO/IEC 17065.
- 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

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

- Damp-Proof Course (DPC):** A barrier / continuous layer of impervious material built into a masonry wall or pier or between a wall or pier, to prevent upward or downward moisture movement by capillary action to any part of the wall or pier.
- Flashing:** A barrier of impervious material that is built-in to prevent the movement of moisture to any part of a building that needs protection, usually areas below the flashing. Flashing includes a waterproof strip barrier around a wall opening, roof junction or a roof penetration to prevent water ingress internally. In some instances, flashing can act as a DPC.

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
DPC	Damp-Proof Course
EO	APAS Executive Officer
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

- This specification applies to damp-proof course and flashing materials used in building construction to prevent the ingress of water.
- Damp-proof courses and flashings are manufactured from materials that ensure they have a substantial maintenance-free lifespan due to where and how they are positioned within a building structure.
- The types of damp-proof course typically seen in building construction are flexible, such as various forms of bitumen and corrosion resistant metals such as copper, zinc, and aluminium or plastics such as polyethylene. They can be applied horizontally and vertically and typically on the underside of masonry walls.
- The types of flashing typically seen in building construction are metals such as aluminium, steel, zinc, or copper. Examples of where flashings are used are as edging of roofing, roof valleys, around windows and around roof penetrations such as chimneys or skylights.
- Raising damp (a result of capillary action) and water ingress into a house through its roof and/or windows is seen in the building industry and can be the result of:
 - Inappropriate, incorrect, poorly fitting, inferior, non-compatible or damaged DPC / flashing materials used.
 - DPC / flashing materials have been inadequately installed.
 - No DPC / flashing has been installed at all.
 - Moisture ingress above the DPC / flashing that has not been fully discharged into the wall cavity.
 - Extremely porous masonry that has been subject to high rainfall that exceeds the capacity of the discharge system i.e., DPC, flashing and weep holes.
- Both DPC and flashings can either be **concealed** within the structure and not directly exposed to weathering or **exposed** where it is continuously open to weathering.
- The manufacturer's Technical Data Sheet (TDS) or Product Data Sheet (PDS) should be consulted to confirm that the exposure conditions to which the damp-proof course / flashing is to be exposed is within the capabilities of that system.
- Industry consultation with the AIW, HIA, MBA, MPDA and Industry experts was sought in the preparation of this specification.

NOTE: The application of damp-proof courses and flashing can be performed by waterproofing contractors, bricklaying contractors, roofing contractors and/or building contractors or a combination of the above.

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4.2 Sub-Classes

- a) This specification incorporates the following sub-classes based on the materials that are currently commonly in use within the building industry for damp-proof courses and flashings:
 - i. **METAL:** Coated or uncoated metals
 - ii. **BCM:** Bitumen coated metals
 - iii. **PCM:** Polyethylene coated metals
 - iv. **BIM:** Bitumen impregnated materials without metal centres
 - v. **PE:** Polyethylene
- b) Other materials, combinations or thicknesses may also be considered, on a case by case basis, by the APAS EO.

4.3 Basis of this Specification

- a) This specification is based on AS/NZS 2904 and relevant areas of the National Construction Code.

5 REFERENCED DOCUMENTS

- a) The following standards are referenced in this document:
 - i. **AS 1397[^]:** Continuous hot-dip metallic coated steel sheet and strip – Coatings of zinc and zinc alloyed with aluminium and magnesium
 - ii. **AS 1566[^]:** Copper and copper alloys – Rolled flat products
 - iii. **AS 1804[^]:** Soft lead – Sheet and strip
 - iv. **AS/NZS 2341.8[^]:** Methods of testing bitumen and related roadmaking products – Method 8: Determination of matter insoluble in toluene
 - v. **AS 2341.12[^]:** Methods of testing bitumen and related roadmaking products – Method 12: Determination of penetration
 - vi. **AS 2341.18[^]:** Methods of testing bitumen and related roadmaking products – Method 18: Determination of softening point (ring and ball method)
 - vii. **AS/NZS 2904[^]:** Damp-proof courses and flashings
 - viii. **AS 3700:** Masonry structures
 - ix. **AS/NZS 4131[^]:** Polyethylene (PE) compounds for pressure pipes and fittings
 - x. **AS/NZS 4347.1[^]:** Damp-proof courses and flashings – Methods of test – Method 1: Determination of water permeability
 - xi. **AS/NZS 4347.2[^]:** Damp-proof courses and flashings – Methods of test – Method 2: Determination of continuity of coating on metal centres
 - xii. **AS/NZS 4347.3[^]:** Damp-proof courses and flashings – Methods of test – Method 3: Determination of pliability of bitumen coating on metal centres
 - xiii. **AS/NZS 4347.4[^]:** Damp-proof courses and flashings – Methods of test – Method 4: Determination of pliability – Materials with fabric or felt base

- xiv. **AS/NZS 4347.5[^]:** Damp-proof courses and flashings – Methods of test – Method 5: Determination of compression properties
- xv. **AS 4773.2[^]:** Masonry in small buildings – Part 2: Construction
- xvi. **AS/NZS 4347.6[^]:** Damp-proof courses and flashings – Methods of test – Method 6: Determining impact resistance (falling dart impact test)
- xvii. **AS/NZS 4347.7[^]:** Damp-proof courses and flashings – Methods of test – Method 7: Determination of thickness of bitumen coating and thickness or mass of metallic centre
- xviii. **AS/NZS 4347.8[^]:** Damp-proof courses and flashings – Methods of test – Method 8: Preparation of coating bitumen for testing
- xix. **AS/NZS 4347.9[^]:** Damp-proof courses and flashings – Methods of test – Method 9: Determining thickness
- xx. **AS/NZS 4347.10[^]:** Damp-proof courses and flashings – Methods of test – Method 10: Determination of mass of desaturated base and percentage saturation
- xxi. **AS 4773.2[^]:** Masonry in small buildings – Part 2: Construction
- xxii. **AS/NZS ISO/IEC 17065[^]:** Conformity assessment: Requirements for bodies certifying products, processes, and services
- xxiii. **ASTM D1894[^]:** Standard Test Method for Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting
- xxiv. **BS 849[^]:** Code of Practice for Plain Sheet Zinc Roofing
- xxv. **ISO 6964[^]:** Polyolefin pipes and fittings – Determination of carbon black content by calcination and pyrolysis - Test method

These documents may be purchased through the Reference Standards Australia website:

<https://www.standards.org.au/>

- xxvi. **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)

- xxvii. **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.



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- b) The following APAS documents are referenced in this document:
- AP-D001 Rules Governing How APAS® Operates
 - AP-D123 Restrictions on Ingredients in Product Formulations
 - AP-D152 APAS® Participating Manufacturers and Resellers
 - AP-D177 Rules Governing How Product Manufacturers participate in APAS®
 - AP-D181 Volatile Organic Compounds (VOC) Limits
 - 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 damp-proof course / flashing 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 damp-proof course / flashing 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-S4002, and have either currently or are working towards all testing under their AS ISO/IEC 170205 (NATA) Scope of Accreditation:
- 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

- XTec Gen Laboratory**
30-32 Park Avenue
Woodville North SA 5012
Contact: Eric Scardigno
T: 1300 152 298
E: eric.s@xtecgen.com

- e) Materials under test must comply with the minimum manufacturing thicknesses and construction materials as detailed in AS/NZS 2904 Table 2. All information relating to compliance must be supplied at the time of product certification submission.

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) 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.
- c) 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
PERFORMANCE REQUIREMENTS		
Impermeability to Water	AS/NZS 2904 clause 6.2; AS/NZS 4347.1	The damp-proof course or flashing shall show no moisture due to penetration on the exposed surface of the membrane. State results.
Continuity of Coating	AS/NZS 2904 clause 6.3; AS/NZS 4347.2	Applicable to sub-class METAL, BCM and PCM only. The damp-proof course or flashing shall show no signs of reaction or pitting in the surface of the metal. State results.
Corrosion Resistance	AS/NZS 2904 clause 6.4 and Table 2; AS 3700 and AS 4773.2	Must be resistant to corrosion and weathering; state means of compliance.
Pliability	AS/NZS 2904 clause 6.5; AS/NZS 4347.3 or AS/NZS 4347.4	METAL: No sign of cracking. BCM: No sign of cracking. PCM: No sign of cracking. BIM: ≤ 3mm. PE: Not Applicable.
Compressive Modulus and Compressive Set	AS/NZS 2904 clause 6.6; AS/NZS 4347.5	Applicable to ALL sub-classes with a manufacturing thickness ≥ 5mm. Compression Modulus: ≥ 0.3 MPa and ≤ 6.0 MPa Compression Set: ≤ 20%
Impact Resistance	AS/NZS 2904 clause 6.7; AS/NZS 4347.6	State results. NOTE: Five samples must be tested and results from all five samples reported.
MATERIAL REQUIREMENTS – METALS (Sub-class METAL only)		
Quality	AS/NZS 2904 clause 7.2.1; and where applicable AS 1566, AS 1804, BS 849 & AS 1397	Aluminium*: ≥ 99.00 % aluminium content in annealed temper condition (coiled, sheet or foil). Copper: ≥ 99.9 % complying with designation 110 or 122. Lead: ≥ 99.8 %. Zinc*: ≥ 99.95 % zinc content in alloy (sheet). Zinc-coated Steel*: Complies with requirements for G2 Grade, Coating Class Z350. Aluminium/Zinc-coated Steel*: Complies with requirements for G300 Grade, Coating Class AZ150. Aluminium/Zinc/Magnesium Alloy-coated Steel*: Complies with requirements for G300 Grade, Coating Class AM125 (bare metallic sheets) or AM100 (factory pre-painted sheets). *NOTE: Are not suitable for use as DPC without additional protective coatings.



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7 TABLE 1: PERFORMANCE PROPERTIES (Cont..)

PROPERTY REQUIREMENT	TEST METHOD	RESULTS REQUIREMENTS
MATERIAL REQUIREMENTS – METALS (Sub-class METAL only) – Cont.,		
Thickness	AS/NZS 2904 clause 7.2.2 and Table 2; AS/NZS 4347.7	Thickness of material under test is \geq applicable figures specified in AS/NZS 2904 Table 2.
MATERIAL REQUIREMENTS – BITUMEN COATED MATERIALS (Sub-class BCM only)		
General	AS/NZS 2904 clause 7.3	Complies with requirements; state results.
Metal Centre	AS/NZS 2904 clause 7.3.2 (clause 7.2.1 and Table 2)	Complies with requirements; state results.
Bitumen Coating	AS/NZS 2904 clause 7.3.3	
- Thickness	AS/NZS 4347.7	$\geq 0.13\text{mm}$ and $\leq 0.25\text{mm}$.
- Physical Constants	AS/NZS 4347.8; AS 2341.12 and AS 2341.18	Penetration: Between 1.0 mm to 3.0 mm. Softening Point: Between 80° C and 110°C.
- Inert Matter	AS/NZS 4347.8; AS/NZS 2341.8	$\leq 30\%$.
Surfacing Material	AS/NZS 2904 clause 7.3.4	State results.
MATERIAL REQUIREMENTS – POLYETHYLENE COATED MATERIALS (Sub-class PCM only)		
General	AS/NZS 2904 clause 7.4.1	Complies with requirements; state results.
Metal Centre	AS/NZS 2904 clause 7.4.2 (clause 7.2.1 and Table 2)	Complies with requirements; state results.
Bitumen Adhesive	AS/NZS 2904 clause 7.4.3	Complies with requirements; state results.
Polyethylene	AS/NZS 2904 clause 7.4.4	
- Thickness	AS/NZS 4347.9	$\geq 0.1\text{ mm}$.
- Impact Resistance	AS/NZS 4347.6	Report results.
- Slip	ASTM D1894	NOTE: Five samples must be tested and results from all five samples reported. Report results.
Pigment	AS/NZS 2904 clause 7.4.5; AS/NZS 4131 and ISO 6964	Complies with requirements, state results.
Finished Embossed Laminate	AS/NZS 2904 clause 7.4.6 and Table 2; AS/NZS 4347.9	Mass: $\geq 780\text{ g/m}^2$. Thickness: $\geq 0.75\text{ mm}$.



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7 TABLE 1: PERFORMANCE PROPERTIES (Cont..)

PROPERTY REQUIREMENT	TEST METHOD	RESULTS REQUIREMENTS
MATERIAL REQUIREMENTS – BITUMEN IMPREGNATED MATERIALS WITHOUT METAL CENTRE (Sub-class BIM only)		
General	AS/NZS 2904 clause 7.5.1	Complies with requirements; state results.
Base	AS/NZS 2904 clause 7.5.2 AS/NZS 4347.10	≥ 250 g/m ² .
Percentage Saturation of the Base	AS/NZS 2904 clause 7.5.3 AS/NZS 4347.10	≥ 125 % of the mass of the dry base.
Saturating Material	AS/NZS 2904 clause 7.5.4 AS 2341.12	Complies with requirements; state results. ≥ 2.0 mm.
Bitumen Coating	AS/NZS 2904 clause 7.5.5 AS/NZS 4347.10	Complies with requirements; state results.
- Penetration	AS 2341.12	Between 1.0 mm and 2.0 mm.
- Softening Point	AS 2341.18	Between 80° C and 110°C.
Surfacing Material	AS/NZS 2904 clause 7.5.6	Complies with requirements; state results.
Mass per Unit Area	AS/NZS 2904 clause 7.5.7	≥ 1.5 Kg/m ² .
MATERIAL REQUIREMENTS – POLYETHYLENE (Sub-class PE only)		
Material	AS/NZS 2904 clause 7.6.1 and 7.6.5	Complies with requirements; state results.
Thickness	AS/NZS 2904 clause 7.6.2 AS/NZS 4347.9	Standard Prior to Embossing: ≥ 0.5 mm. After Embossing: ≥ 0.75 mm. Heavy Duty Prior to Embossing: ≥ 0.75 mm. After Embossing: ≥ 1.0 mm.
Mass per Unit Area	AS/NZS 2904 clause 7.6.3	Standard: ≥ 425 g/m ² . Heavy ≥ 640 g/m ² .
Pigment	AS/NZS 2904 clause 7.6.4 and 7.4.5	Complies with requirements; state results.
Impact Resistance	AS/NZS 2904 clause 7.6.5 AS/NZS 4347.6	Standard: Measured at 660 mm height and 640 g mass; report results. Heavy Duty: Measured at 660 mm height and 750 g mass; report results. NOTE: Five samples must be tested and results from all five samples reported



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APPENDIX A

Document History

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0	22-05-2023	<ul style="list-style-type: none">Initial specification version