



A brief overview of key points
relating to paint systems for
exterior concrete

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Construction Systems


Altex
Yacht & Boat Paint


carboline[®]
Coatings - Linings - Fireproofing

Resene
Automotive & Light Industrial



Based on Code of Practice
Weathertight Concrete &
Concrete Masonry construction
CCANZ CP 01:2014

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Definitions from CCANZ CP 01:2014

Waterproof

The complete and total resistance of a building element to the ingress of any water in either liquid or vapour state.

Waterproof membrane

A membrane impervious to water which is placed to prevent the passage of water and water vapour through a concrete or concrete masonry element.

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Definitions from CCANZ CP 01:2014

Weathertightness and weathertight

Terms used to describe the resistance of a building to the weather. Weathertightness is a state where water is prevented from entering and accumulating behind the cladding in amounts that can cause undue dampness or damage to the building element

COMMENT:

A weathertight building, even under severe weather conditions, is expected to limit moisture ingress to inconsequential amounts, insufficient to cause undue dampness inside buildings or damage to building elements. Moisture that may occasionally enter is able to harmlessly escape or evaporate.

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Definitions from CCANZ CP 01:2014

Weatherproof

A term synonymous with weathertight and usually referring to a component of a weathertight system. In general, this document uses the terms 'weathertight' and 'weathertightness' in preference.

Weathertight coating

A multi-coat liquid applied coating system applied to exterior walls to make them weathertight.

(Note: Resene X-200, X-300E, X-400 are weathertight membrane coatings)

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Key References

The Code of Practice covers 3 types of concrete walls

- A. Concrete masonry construction
- B. Insitu Concrete construction
- C. Precast concrete construction

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Wall Construction type Designation A Concrete Masonry

- A1 - Concrete Masonry - Internal Insulation
- A2 - Concrete Masonry - EIFS
- A3 - Concrete Masonry - Integral Insulation
- A4 - Concrete Masonry - Masonry Veneer

(A1, A3 are relevant for this overview)

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Wall Construction type Designation B Insitu Concrete

B1 - Insitu Concrete - Internal Insulation

B2 - Insitu Concrete - EIFS

B3 - Insitu Concrete - Integral Insulation

(B1, B3 are relevant for this overview)



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Wall Construction type Designation C Precast Concrete

C1 - Precast Concrete - Internal Insulation

C2 - Precast Concrete - EIFS

C3 - Precast Concrete - Integral Insulation

(C1, C3 are relevant for this overview)



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Where wall Designations sit in coating guide

CCANZ CP 01:2014

1.1.2.1 Wall weathertightness systems

Exterior finishes for wall construction types as specified in section 1.1.2 shall be as shown in Table 1.

Table 1		Section references of acceptable wall weathertightness systems							
Wall type	Weathertightness system								
	EIFS	Plaster systems			Masonry veneer ¹	Coating systems			Weathertight concrete ³
		Polymer based plaster	Polymer modified cement plaster	3 coat solid plaster		Pigmented standard or elastomeric high build acrylic (≥180µm)	Pigmented acrylic (≥80µm)	Clear coating ²	
Masonry	4.1	4.2	4.2	4.2	3.2.9 & 4.6	4.3.2	n/a ⁴	4.4	n/a
Wall Construction Type	A2	A1/ A3	A1/ A3	A1/ A3	A4	A1/ A3		A1/ A3	
Insitu	4.1	4.2	4.2	n/a	n/a	4.3	4.3	4.4	4.5
Wall Construction Type	B2	B1/ B3	B1/ B3			B1/ B3	B1/ B3	B1/ B3	B1/ B3
Precast	4.1	4.2	4.2	n/a	n/a	4.3	4.3	4.4	4.5
Wall Construction Type	C2	C1/ C3	C1/ C3			C1/ C3	C1/ C3	C1/ C3	C1/ C3

Wall Weathertight systems:
Full table 1.1.2.1
 (“Snip out” summary for coatings on following pages)

A1/ A3

Masonry example

From Wall construction type designation:

A1 - Concrete Masonry - Internal Insulation
A3 - Concrete Masonry - Integral Insulation

NOTES:

1. Masonry veneer on concrete masonry construction requires a clear cavity of at least 40 mm.
2. Acceptability of clear coatings is specified in section 4.4.2.
3. Weathertight concrete, as specified in section 4.5, will meet NZBC Clause E2 without the need for a coating.
4. n/a stands for not acceptable.

Source: CCANZ CP 01:2014
 Code of Practice Weathertight Concrete &
 Concrete Masonry construction

Key Point

Excerpt from CCANZ CP01 - 4.5 Weathertight concrete:

- The use of weathertight Insitu & Precast concrete will provide weathertightness without need for exterior plaster or coating.

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Source: CCANZ CP 01:2014
Code of Practice Weathertight Concrete &
Concrete Masonry construction

Full definition for weathertight concrete

CCANZ CP 01:2014

4.5 Weathertight concrete

This section specifies weathertight concrete used to construct either:

- i) An Insitu Concrete Wall type B1 or B3, or
- ii) A Precast Concrete Wall type C1 or C3.

The use of weathertight concrete will provide weathertightness without the need for exterior plaster or coating. Weathertight concrete limits moisture ingress to inconsequential amounts insufficient to cause undue dampness inside the building or damage to building elements.

Weathertight concrete shall:

- a) Have a minimum specified 28 day concrete strength of 30 MPa,
- b) Have a water/cementitious (w/c) ratio (by weight) no greater than 0.50,
- c) Be designed and constructed in accordance with section 2.1, 3.3 and 3.4.

COMMENT:

Weathertight concrete will not prevent the passage of water vapour. Silane or siloxane sealers can be used to further protect and enhance water repellent properties. AS 1478.1 Appendix F covers permeability reducing admixtures.

The requirements of 4.5, c) are to ensure that weathertight concrete is designed and constructed correctly:

- Properly compacted concrete from a well designed mix will be weathertight, but areas of poor compaction, large cracks or poor joints will compromise weathertightness of otherwise sound construction.
- Precast concrete wall panels must be designed to withstand handling and erection without cracking.
- In situ wall construction requires consideration of shrinkage and flexural cracks.

Masonry summary

Pigmented coating

- Pigmented acrylic coatings (non-high build) shall not be applied to concrete masonry walls
- 4.3.2 - Pigmented standard or elastomeric High Build acrylic coating is required, greater than:

>180 microns DFT

(topcoats - Resene X-200, X-300E, X-400)

Clear coating

- Standard clear coatings shall not be applied to masonry walls
- 4.4.2 - must meet the permeability requirements of AS/NZS4456.16 for Masonry
(Resene XC-700 clear high build)

	Coating systems		
	Pigmented standard or elastomeric high build acrylic ($\geq 180\mu\text{m}$)	Pigmented acrylic ($\geq 80\mu\text{m}$)	Clear coating ²
Masonry	4.3.2	n/a ⁴	4.4
Wall Construction Type	A1/ A3		A1/ A3
Insitu	4.3	4.3	4.4
Wall Construction Type	B1/ B3	B1/ B3	B1/ B3
Precast	4.3	4.3	4.4
Wall Construction Type	C1/ C3	C1/ C3	C1/ C3

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Source: CCANZ CP 01:2014
Code of Practice Weathertight Concrete &
Concrete Masonry construction

Coating systems

	Pigmented standard or elastomeric high build acrylic ($\geq 180\mu\text{m}$)	Pigmented acrylic ($\geq 80\mu\text{m}$)	Clear coating ²
Masonry	4.3.2	n/a ⁴	4.4
Wall Construction Type	A1/ A3		A1/ A3
Insitu	4.3	4.3	4.4
Wall Construction Type	B1/ B3	B1/ B3	B1/ B3
Precast	4.3	4.3	4.4
Wall Construction Type	C1/ C3	C1/ C3	C1/ C3

Insitu & Precast (weathertight construction)

Pigmented coating

- 4.3 - Pigmented acrylic (non-high build) is satisfactory (pigmented high builds ok also) providing it is no less than:

>80 microns DFT

Minimum 2 coats applied

(pigmented acrylic - Resene Lumbersider, Sonyx 101)
(high build acrylic - Resene X-200, X300E, X-400)

Clear Coating

- Not required to meet the permeability requirements of AS/NZS4456.16 as uncoated substrate is deemed weathertight itself.

- Standard clear coatings or sealers are acceptable

(Resene Concrete Clear , Uracryl 400 clear, Uracryl GraffitiShield clear, Aquapel etc)

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Source: CCANZ CP 01:2014
Code of Practice Weathertight Concrete &
Concrete Masonry construction

Resene coating options quick guide

	<u>HIGH BUILD ACRYLIC</u> Pigmented standard or elastomeric <u>High Build</u> acrylic coating >180 microns DFT <u>Topcoat options:</u> Resene X-200 Resene X-300E Resene X-400	<u>PIGMENTED ACRYLIC</u> Pigmented Acrylic >80microns DFT (min 2 coats) <u>Topcoat options:</u> Resene Lumbersider Resene Sonyx 101	<u>CLEAR COAT HIGH BUILD</u> Clear Coat <u>High Build Meets:</u> AS/NZS4456.16 Permeability requirements: <u>Topcoat options:</u> Resene XC-700	<u>CLEAR COAT STANDARD</u> Clear Coat or Sealer Standard: Not suitable where weathertight coating is required. <u>Topcoat options:</u> Resene Concrete Clear Resene Uracryl Clear Resene GraffitiShield Resene Aquapel
Masonry	✓	✗	✓	✗
Non-Weathertight Insitu	✓	✗	✓	✗
Weathertight Insitu	✓	✓	Not required	✓
Weathertight Precast	✓	✓	Not required	✓

Key Point

Clear Coating Precast or Insitu Concrete

Clear coats typically won't fill or bridge bugholes, pin holes etc. If moisture ingress occurs often an unsightly "halo" effect or clouding of the coating can occur



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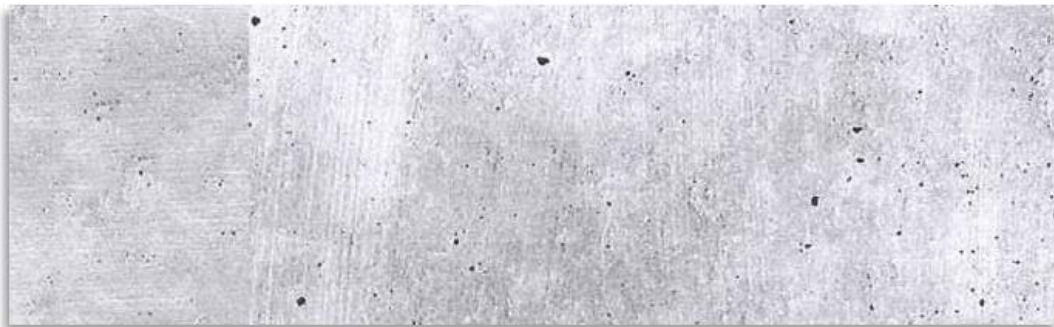
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Precast Panel level of finish showing bug holes (air voids) in F4 & F5 panels

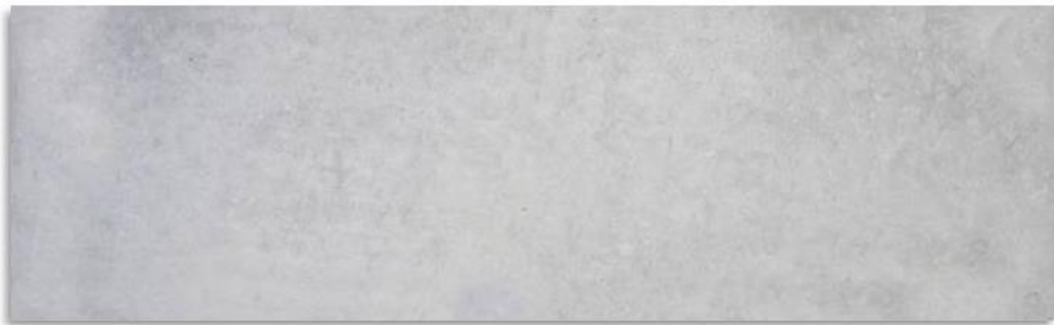
F4



F5



F6





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