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Astec Paints Australasia Pty Ltd Energy Star Coatings

CodeMark Certification Scope of BCA Compliance

This report has been prepared on behalf of **ELECTRONIC BLUEPRINT** by:



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Quasar Management Services Pty Ltd

Incorporated in NSW ABN 21 003 954 210

Scope

This report provides an assessment of the scope of BCA Vol 1 and BCA Vol 2¹ compliance in respect of the requirements for CodeMark certification of:

Astec Paints Australasia Pty Ltd
Energy Star Coatings

This report covers only those matters listed in the "Scope" and should not be interpreted as covering any other matter or any incomplete works. This report must be read and interpreted in the context of:

- Basis of Report;
- Appendix 1 - Background to BCA CodeMark Certification;
- Appendix 2 - General BCA Clauses Establishing the Certification Options
- Appendix 3 - Specific BCA Clauses and Referenced Documents

Limitation

The scope of the certification has been limited (at this stage) to Energy Star Coatings consisting of paints and coatings that have been specially formulated and tested to achieve enhanced radiation reflectance (including infrared, visible and ultraviolet radiation).

The certification includes, and is limited to, considerations of solar absorptance, as used in the Building Code of Australia. It also considers emissivity and solar reflectivity.

Deemed-to-Satisfy and Alternative Solutions

CodeMark certification may make provision for three possible uses:

1. Using the certified product in a Deemed-to-Satisfy application.
2. Using the certified properties of the product in a Deemed-to-Satisfy Solution requiring calculation.
3. Using the certified properties of the product in an Alternative Solution based on calculation from "first principles" or, where appropriate, comparison to some Deemed-to-Satisfy provisions.

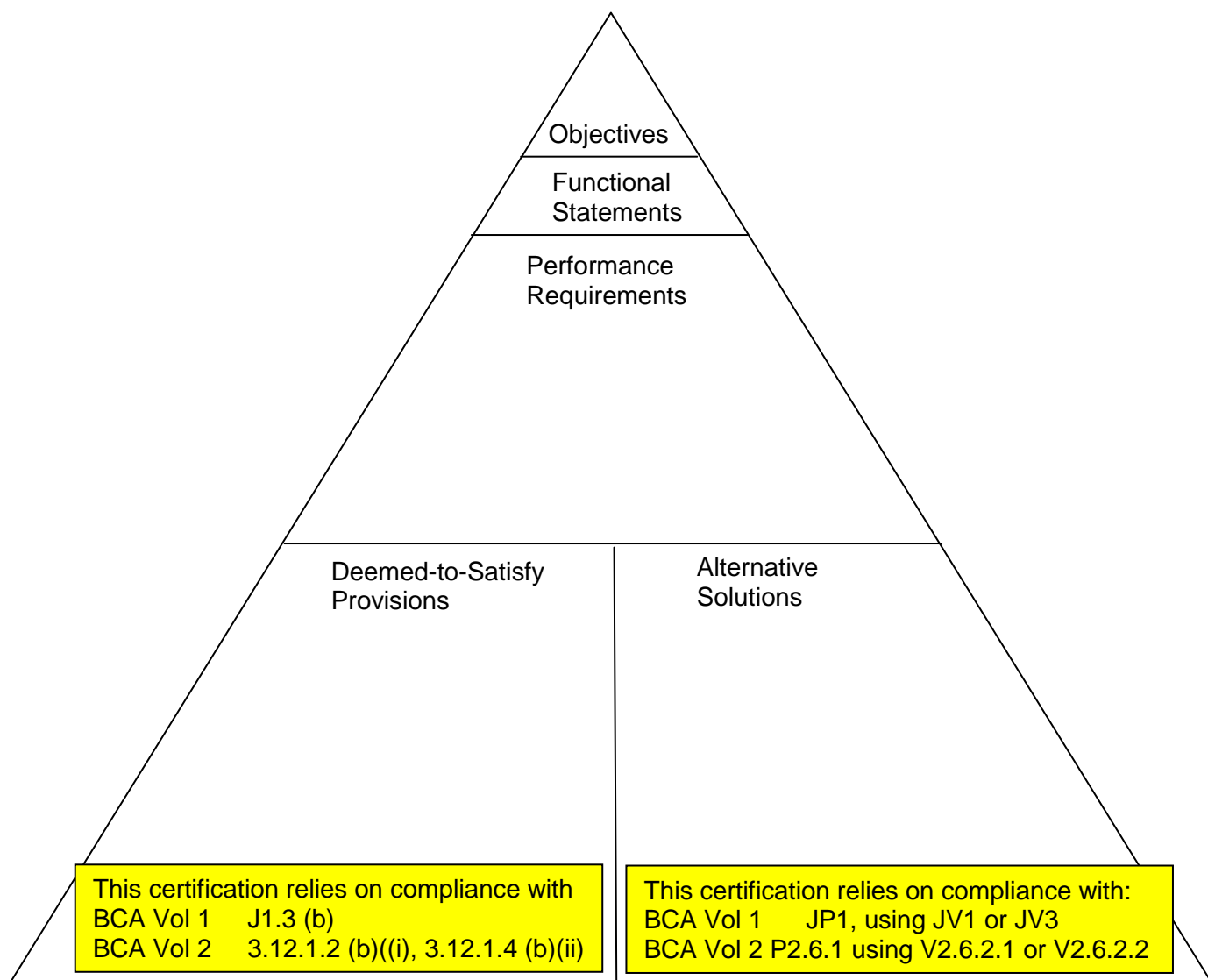
Product Properties and Product Applications

CodeMark certification will be:

- limited to the product property of solar absorptance (in the context of emissivity and solar reflectivity), and its use in Deemed-to-Satisfy Methods and as input for Verification Methods.
- rather than as part of total roof, wall or building systems with claimed thermal performance.

The first option is much simpler and more flexible, enabling the certified properties to be used in applications not covered by the Deemed-to-Satisfy provision.

¹ Building Code of Australia Volumes 1 and 2



Recommended CodeMark Certification

The following wording is recommended for inclusion in the CodeMark certification, and is based on the information presented in Appendices 1 and 2.

This is to certify that

Energy Star Coatings by Astec Paints Australasia Pty Ltd

Comply with Building Code of Australia (BCA):

1. Volume 1 – J1.3 (b) – Compliance as tabulated
2. Volume 2 – 3.12.1.2 (b)((i), 3.12.1.4 (b)(ii) – Compliance as tabulated

Building Code of Australia Clause	Volume 1 J1.3 (b)		Volume 2 3.12.1.2 (b)((i)	Volume 2 3.12.1.4 (b)(ii)	NSW BASIX Classification
	0.55	0.35	0.55	0.45	
Solar Absorptance requirement					Light <0.475 Medium 0.475 – 0.700 Dark > 0.700
Complying Products					
Sportscoat	Yes	Yes	Yes	Yes	Light
EC 100 Dirtguard White	Yes	Yes	Yes	Yes	Light
Cool Pave White	Yes	Yes	Yes	Yes	Light
DG IR Elastic White	Yes	Yes	Yes	Yes	Light
ES Metal-Flex GLS/LS	Yes	Yes	Yes	Yes	Light
Tile Guard SM White	Yes	Yes	Yes	Yes	Light
Tile Guard White	Yes	Yes	Yes	Yes	Light
DG IR Gloss White	Yes	Yes	Yes	Yes	Light
GLS/LS White	Yes	Yes	Yes	Yes	Light
Ceram - 4000 White	Yes	Yes	Yes	Yes	Light
E100 T SM White	Yes	Yes	Yes	Yes	Light
Broken White	Yes	Yes	Yes	Yes	Light
C/B Smooth Cream	Yes	Yes	Yes	Yes	Light
Light Cream	Yes	Yes	Yes	Yes	Light
Neutral White	Yes	Yes	Yes	Yes	Light
Armatex White	Yes	Yes	Yes	Yes	Light
Sandalwood	Yes	Yes	Yes	Yes	Light
Pale Biscuit	Yes	Yes	Yes	Yes	Light
Off White	Yes	Yes	Yes	Yes	Light
Light Latte	Yes	Yes	Yes	Yes	Light
Mid Biscuit	Yes	Yes	Yes	Yes	Light
Stone	Yes	Yes	Yes	Yes	Light
C/B Merino	Yes	Yes	Yes	Yes	Light
Gull Grey	Yes	Yes	Yes	Yes	Light
Tuscany	Yes	Yes	Yes	Yes	Light
C/B Birch Grey	Yes		Yes	Yes	Light
Autumn	Yes		Yes	Yes	Light
Pewter	Yes		Yes	Yes	Light
Chino	Yes		Yes	Yes	Light
Quarry	Yes		Yes	Yes	Light
Warm Clay	Yes		Yes	Yes	Light
Mocca	Yes		Yes	Yes	Light
C/B Saltbush	Yes		Yes	Yes	Light
C/B Beige	Yes		Yes		Light
French Green	Yes		Yes		Light
Clay Tone	Yes		Yes		Medium
C/B Rivergum					Medium
Terracotta					Medium
C/B Mist Green					Medium
C/B Slate Grey					Medium
C/B Iron Bark					Medium

Olive Green					Medium
C/B Weathered Copper					Medium
Red Oxide					Medium
Regal Brown					Medium
C/B Heritage Red					Medium
Yallara Brown					Medium
Blue Grass					Medium
Nimbus					Medium
Cobalt					Medium
Charcoal					Medium
Pioneer					Dark
Botanic					Dark
Mid Brunswick Green					Dark
C/B Mountain Blue					Dark
Carriage green					Dark

3. Volume 1 JP1 when it use is verified by methods JV1 or JV3
4. Volume 2 P2.6.1 when it use is verified by methods V2.6.2.1 or V2.6.2.2

Solar Absorptance and Emissivity Values		
For use in verification by computer simulation to BCA Volume 1 JV1 or JV3, or BCA Volume 2 V2.6.2.1 or V2.6.2.2		
Product	Solar Absorptance	Emissivity
Sportscoat	0.09	0.92
EC 100 Dirtguard White	0.10	0.91
Cool Pave White	0.10	0.87
DG IR Elastic White	0.11	0.91
ES Metal-Flex GLS/LS	0.11	0.90
Tile Guard SM White	0.11	0.88
Tile Guard White	0.11	0.91
DG IR Gloss White	0.11	0.89
GLS/LS White	0.13	0.88
Ceram - 4000 White	0.16	0.90
E100 T SM White	0.17	0.91
Broken White	0.19	0.89
C/B Smooth Cream	0.22	0.88
Light Cream	0.22	0.86
Neutral White	0.22	0.83
Armatex White	0.23	0.94
Sandalwood	0.23	0.87
Pale Biscuit	0.25	0.90
Off White	0.25	0.93
Light Latte	0.29	0.90
Mid Biscuit	0.31	0.90
Stone	0.31	0.90
C/B Merino	0.32	0.90
Gull Grey	0.32	0.89
Tuscany	0.34	0.90
C/B Birch Grey	0.38	0.86
Autumn	0.39	0.90
Pewter	0.39	0.90
Chino	0.39	0.90
Quarry	0.40	0.90

Warm Clay	0.41	0.83
Mocca	0.42	0.90
C/B Saltbush	0.44	0.90
C/B Beige	0.46	0.85
French Green	0.46	0.90
Clay Tone	0.53	0.90
C/B Rivergum	0.57	0.83
Terracotta	0.58	0.90
C/B Mist Green	0.58	0.87
C/B Slate Grey	0.60	0.85
C/B Iron Bark	0.60	0.92
Olive Green	0.61	0.90
C/B Weathered Copper	0.61	0.90
Red Oxide	0.61	0.85
Regal Brown	0.61	0.91
C/B Heritage Red	0.63	0.82
Yallara Brown	0.63	0.90
Blue Grass	0.64	0.90
Nimbus	0.65	0.90
Cobalt	0.66	0.90
Charcoal	0.68	0.88
Pioneer	0.71	0.90
Botanic	0.72	0.90
Mid Brunswick Green	0.74	0.87
C/B Mountain Blue	0.75	0.92
Carriage green	0.75	0.90

5. Volume 1 State variations –

In New South Wales BCA Volume 1 Section J is replaced by NSW Section J.

- For Class 2 and Class 4 buildings, NSW BASIX applies in accordance with NSW Subsection JA.
- For Class 3, 5, 6, 7a, 7b, 9a, 9b and 9c buildings, BCA Volume 1 Section J applies in accordance with NSW Subsection JB.

In Northern Territory, BCA Volume 1 Section J does not apply.

In Victoria, there is a variation of the star requirements for JV1.

6. Volume 2 State variations –

In New South Wales Part 3.12 does not apply. New South Wales BASIX classifications are as tabulated.

In Northern Territory, Queensland and Tasmania, BCA 2005 Part 2.6 applies.

Subject to the following conditions and limitations:

Product installation shall be carried out by a competent tradesman under the direction of a Builder, both of whom have ready access to all relevant technical information related to the required coating installation.

Responsibilities

The following organisations shall assume responsibility for the designated tasks.

- Product development – Astec Paints Australasia Pty Ltd
- Product testing – Astec Paints Australasia Pty Ltd
- Preparation of technical manuals – Astec Paints Australasia Pty Ltd
- Verification of tests and manuals – Astec Paints Australasia Pty Ltd

- Operation of a quality management system based on AS/NZS ISO 9001 – Astec Paints Australasia Pty Ltd

- Preparation of documentation for a quality management system based on AS/NZS ISO 9001 – Electronic Blueprint

- Internal management auditing – Electronic Blueprint

- Preparing this scoping report, which lists those parts of the Building Code of Australia with which the Certification Body may determine product compliance – Quasar Management Services Pty Ltd (on behalf of Electronic Blueprint)

- Verification that the product complies with the nominated BCA clauses – Global-Mark

- Certification of compliance with the nominated BCA clauses – Global-Mark

Basis of the Report

This report lists those parts of the Building Code of Australia with which the Certification Body may determine that the product complies. ^{See Note 1}

The purpose of this report is assist the CodeMark certification process, and is offered for use by:

- The independent third-party JAS-ANZ accredited Certification Body (Global-Mark),
- The Australian Building Codes Board (ABCB); and
- Joint Accreditation System – Australia and New Zealand (JAS-ANZ). ^{See Note 2}

Whilst the responsibility for the accuracy and applicability of the tests and reports remain with their authors, I am of the opinion that such tests and reports appear consistent, and therefore likely to have been prepared, controlled and reviewed on sound basis. ^{See Note 3}

Document	Organisation responsible for preparing, controlling & reviewing the document	Organisation responsible for determining suitability for supporting CodeMark application	Checks carried out by Quasar Management Services Pty Ltd See Note 4
Test Reports Emissivity & Reflectance File SV16101 Project 05CA51080 1/12/05	United Underwriters Laboratories Inc	Global-Mark	O
Test Reports	Commercial laboratory commissioned by Astec Paints Australasia Pty Ltd ^{See Note 5}	Global-Mark	O
Technical report 05MAAD10444 Part 1 M Luke 2/11/05	Amde!	Global-Mark	O
D07092330-1 12/10/07 Consideration of reflectance, emissivity & absorptance data.	Quasar Management Services Pty Ltd	Global-Mark	NA

Notes

1. This report deals only with the technical aspects of the product, and does not deal with the Quality Assurance aspects of the CodeMark application. These are covered by the Internal Management Auditing function carried out by Electronic Blueprint and reported in the DRIVER Quality Management spreadsheet.
2. Notwithstanding that the purpose of this report is to assist the CodeMark certification process, it is not intended to replace independent third party assessment of the product and the supporting material (test reports and calculations), upon which the certification is to be based. The responsibility for that assessment rests with the independent third-party JAS-ANZ accredited Certification Body (Global-Mark).
3. This opinion is based on the checks listed in the fourth column of the schedule.
4. Key of checks carried out:
 - O = Subjectively overview the tests and/or reports to determine the relevance to the application and consistency with industry practice.
 - S = Spot check calculations in the tests or reports, to determine consistency with industry benchmarks or expectations.
 - T = Inspect evidence of third-party certification (e.g. NATA certification or ISO 9001 certification) of the quality system used to prepare, control and/or review the tests and/or reports.
 - Q = Overview of the quality system used to prepare, control and/or review the tests and/or reports.
5. The identity of the laboratory commissioned by Astec Paints Australasia Pty Ltd to carry out these tests is confidential for commercial reasons. However, the identity can and will be provided to the third-party Certification Body, for purposes of determining its credibility.

Declaration

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance, which I regard as relevant, have to my knowledge been withheld.

A handwritten signature in black ink on a light background. The signature is cursive and appears to read 'Rod Johnston' with a long horizontal flourish extending to the right.

Rodney Kentwell Johnston

Appendix 1

Background to BCA CodeMark Certification

Performance Requirements, Deemed-to-Satisfy & Alternative Solutions

The following section describes the various means employed within the building design and construction industry to satisfy the performance requirements of the BCA.

All building design must comply with the relevant State Building Regulations, which are set out in the BCA Vol 1 and BCA Vol 2. The BCA defines the performance requirements, generally in very broad terms, and the means of compliance through:

- Deemed-to-Satisfy Provisions, which may include:
 - Acceptable Construction Manuals (e.g. nominated Australian Standards)
 - Acceptable Construction Practice (e.g. forms of construction reproduced in the BCA itself)
- Alternative Solutions (e.g. Designs based on test results and engineering principles).

Each of these paths to compliance has equal status under the BCA.

Definitions

The following definitions are taken from the BCA Volume 2 (Building Code of Australia)

Objective

... means a statement contained in the BCA which is considered to reflect community expectations.

Functional Statement (See Note below)

... means a statement which describes how buildings and building elements achieve the Objectives.

Performance Requirement (See Note below)

... means a requirement which states a level of performance which a Building Solution must meet.

Deemed-to-Satisfy Provisions (See Note below)

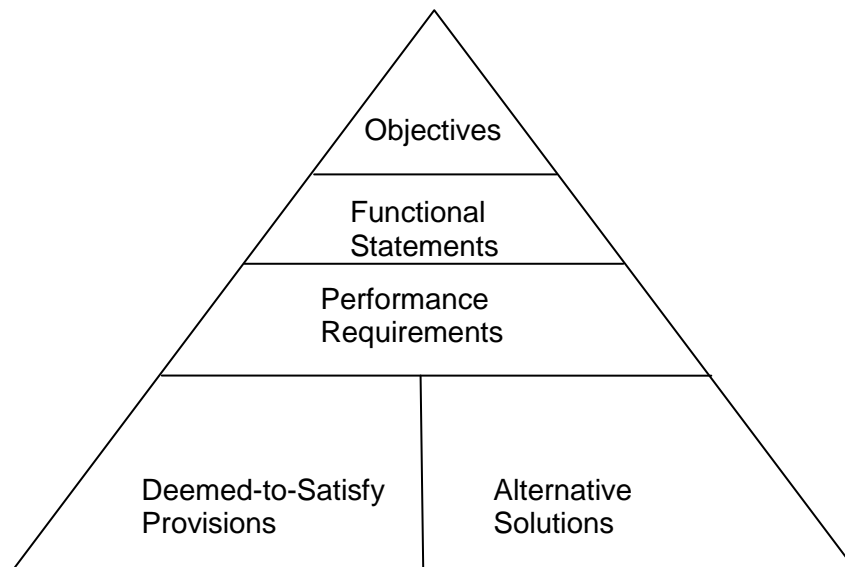
...means the provisions contained in Section 3 which are deemed to comply with the Performance Requirements.

Alternative Solution

... means a Building Solution which complies with the Performance Requirements other than by reason of complying with the Deemed-to-Satisfy Provisions.

Note:

Some of the definitions of in BCA Vol 1 have slightly different wording from those in BCA Vol 2.



CodeMark Certification

The intention of the CodeMark Certification is to give confidence that the particular product, when installed in the building, will satisfy the requirements of the BCA. Although CodeMark Certification is generally sought by building product manufacturers, there are actually three related considerations in the process:

- Design (including product selection)
- Manufacture and supply
- Construction

Design (including product selection)

Responsibility

The design process must encompass the selection of the appropriate product for the particular design application. The Architect and Engineer for any building project share responsibility (and authority) to determine and communicate the design (within the constraints of building regulations) to the builders. They are required to consider all relevant matters affecting the building and its components, and determine their designs drawing on professional training, experience, peer practices, ethics, client requirements, published standards, research and the like. CodeMark certifications and BCA DTS (Deemed-to-Satisfy) provisions play an important part in this decision making (and in many cases will be adopted by the Engineer or Architect), although there are also many cases where the Engineer or Architect may specify details that are different from these. This information is communicated to builders by Drawings and Specifications. It is essential that the authority of the Architect and Engineer to exercise and communicate their professional judgment via drawings and specifications should not be undermined by Builders and/or Certifiers assuming that the CodeMark conditions and/or BCA DTS overrides the design.

CodeMark Used to Build Confidence in the Design Process

The designer may be assisted by the manufacturer's literature, but the responsibility for the correct

determination of the product appropriate to the application remains with the Architect or Engineer.

Confidence in the design and product selection process may be boosted by making the following clause a condition of the CodeMark certification.

Product selection, and incorporation into the building design, shall be made by a professional Architect or Engineer (as appropriate) who:

- *Has qualifications and experience acceptable to the relevant approval authorities;*
- *Has received training in the use, application and technical aspects of the product; and*
- *Has ready access to all to the relevant technical information and test reports related to the product use.*

Manufacture and supply

It is commonly manufacturers (or suppliers) who seek CodeMark certification, to boost the acceptability of their products in the market place.

There are two principal requirements of the CodeMark Product Certification process for manufacturers.

- Ensure that the Company has a properly functioning Management System, capable of delivering consistent product and service to predetermined specifications. Substantial compliance with the provision of AS/NZS ISO 9001 is considered to be an indicator of such a properly functioning system.
- Ensure that the nominated products satisfy the requirements of nominated BCA clauses.

Construction

Responsibility

The construction process must faithfully ensure that the design expectations have been met, and that the product has been installed in accordance with the manufacturer's instructions. However, the Builder and the Contractors must assume responsibility for the quality of the construction work.

CodeMark Used to Build Confidence in the Construction Process

The installer (Builder, Contractor etc) may be assisted by the manufacturer's literature, but the responsibility for the correct installation of the product remains their responsibility.

Confidence in the product installation process may be boosted by making the following clause a condition of the CodeMark certification.

Product installation, shall be carried out by a competent tradesman under the direction of a Builder, both of whom:

- *Have qualifications and experience acceptable to the relevant approval authorities;*
- *Have received training in the use, application and technical aspects of the product; and*
- *Have ready access to all to the relevant technical information and test reports related to the product use.*

Simple Case – Product satisfies identifiable Deemed-to-Satisfy Requirements

The most simple cases for CodeMark certification are those where there is an easily identifiable DTS (Deemed-to-Satisfy) requirements referenced in the BCA. This may include an Australian Standard or a particular BCA DTS clause. In this case, consistent and reproducible compliance with the referenced standard, together with the above-mentioned provision for design and construction, will be sufficient to permit CodeMark certification to the nominated DTS standard.

Example

Steel lintels selected, manufactured and installed to either BCA-2006 Vol 2 Fig 3.3.3.5 or AS 3700 Table 12.8 would be acceptable for CodeMark certification, even though the two referenced documents provide different design solutions.

Complex Case – Product does not satisfy easily identified Deemed-to-Satisfy Requirements

There are many building elements (e.g. parts of the building structure), which must be selected and installed in the context of the overall building design. The performance of these elements can only be assessed in the context of their contribution to the performance of the structure as a whole.

Examples

Steel bracing and precast concrete panels are designed into a structure in accordance with AS 4100, AS 3600 and the like, but there is no simple identifiable isolated DTS rules that can be used to describe their design, manufacture and installation.

Because of a general lack of appropriate DTS rules specifically covering the details of this type of product, they are often treated as parts of Alternative Solutions. These products must be considered in the context of their contribution to meeting their overall performance requirements for the building. For example, BCA Vol 1 Clauses BP 1.1 to BP1.3 for structural actions; and CP1 to CP9 for fire performance etc.

Incomplete Compliance with DTS

One critical question is; "How do you certify a product that does not mimic all of the Deemed-to-Satisfy properties?".

In these circumstances, an assessment of the deviations (shortfalls?) should be made, and expert judgment under BCA Vol 1 A2.2 (a) (iii) or BVA Vol 2 1.2.2 (a) (iii) provided to determine whether such deviations are significant. For example, issues related to branding are not a significant issue, provided a combination of "identification" and "manufacturer's instructions" are provided.

Appendix 2

General BCA Clauses Establishing the Certification Options

The following clauses of BCA Volume 1 and BCA Volume 2 provide the criteria upon which the CodeMark certification process may proceed.

BCA Vol 1 Class 2 – 9 Buildings

Clause A0.4 Compliance with the BCA

Requirement

A Building Solution will comply with the BCA if it satisfies the Performance Requirements

Application

In this case the CodeMark certification shall be based on complying with this clause.

Clause A0.5 Meeting the Performance Requirements

Requirement

Compliance with the Performance Requirements can only be achieved by-

- (a) *complying with the Deemed-to-Satisfy Provisions; or*
- (b) *formulating an Alternative Solution, which:*
 - (i) *complies with the Performance requirements; or*
 - (ii) *is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or*
- (c) *a combination of (a) and (b)*

Application

In this case the CodeMark certification shall be based on

- (a) *complying with the Deemed-to-Satisfy Provisions for Solar Absorptance or NSW BASIX provisions for Solar Absorptance ; and*
- (b) *formulating an Alternative Solution, which utilizes the Verification Methods called up in the BCA or NSW BASIX.*

Clause A0.8 Meeting the Performance Requirements

Requirement

- (a) *An Alternative Solution must be assessed according to one or more of the Assessment Methods.*
- (b) *An Alternative Solution will only comply with the BCA if the Assessment Methods used to determine compliance with the Performance Requirements have been satisfied.*
- (c) *The Performance Requirements relevant to an Alternative Solution must be determined in accordance with A0.10.*

Application

In this case that part of the CodeMark certification involving Alternate Solutions complies fully with this clause.

Clause A0.9 Assessment Methods

Requirement

The following Assessment Methods, or any combination of them, can be used to determine that a Building Solution complies with the Performance Requirements:

- (a) *Evidence to support that the use of a material, form of construction or design meets a Performance Requirement or a Deemed-to-Satisfy Provision as described in A2.2.*
- (b) *Verification Methods such as—*
 - (i) *the Verification Methods in the BCA; or*
 - (ii) *such other Verification Methods as the appropriate authority accepts for determining compliance with the Performance Requirements.*
- (c) *Comparison with the Deemed-to-Satisfy Provisions.*
- (d) *Expert Judgment.*

Application

In this case the CodeMark certification shall be based on compliance with paragraphs

- (a) Evidence to support that the use of a material, form of construction or design meets a Performance Requirement or a Deemed-to-Satisfy Provision as described in A2.2.
- (b) Verification Methods such as—
 - (i) the Verification Methods in the BCA; or
 - (ii) such other Verification Methods as the appropriate authority accepts for determining compliance with the Performance Requirements.
- (c) Comparison with the Deemed-to-Satisfy Provisions.

Clause A0.10 Relevant Performance Requirements

Requirement

In order to comply with the provisions of A1.5 (to comply with Sections A to J inclusive) the following method must be used to determine the Performance Requirement or Performance Requirements relevant to the Alternative Solution:

- (a) Identify the relevant Deemed-to-Satisfy Provision of each Section or Part that is to be the subject of the Alternative Solution.
- (b) Identify the Performance Requirements from the same Sections or Parts that are relevant to the identified Deemed-to-Satisfy Provisions.
- (c) Identify Performance Requirements from other Sections and Parts that are relevant to any aspects of the Alternative Solution proposed or that are affected by the application of the Deemed-to-Satisfy Provisions, that are the subject of the Alternative Solution.

Application

In this case the CodeMark certification shall be based on full compliance with this paragraph.

Clause A2.1 Suitability of materials

Requirement

Every part of a building must be constructed in an appropriate manner to achieve the requirements of the BCA, using materials that are fit for purpose for which they are intended.

Application

In this case the CodeMark certification shall ensure that the Energy Star Coatings satisfies this criterion.

Clause A2.2 Evidence of suitability

Requirement

- (a) *Subject to A2.3 and A2.4, evidence to support that the use of a material, form of construction or design meets a Performance Requirement or Deemed-to-Satisfy Provision may be in the form of one or a combination of the following:*
- (i) *A report issued by a Registered Testing Authority, showing that the material or form of construction has been submitted to the tests listed in the report, and setting out the results of those tests and any other relevant information that demonstrates its suitability for use in the building.....*
- (iii) *A certificate from a professional engineer or other appropriately qualified person which-*
- (A) *certifies that a material, design or form of construction complies with the requirements of the BCA; and*
- (B) *sets out the basis on which it is given and the extent to which relevant specification, rules, codes of practice or other publication have been relied upon.*
- (iv) *A current certificate issued by a product certification body that has been accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).....*
- (b) *Any copy of documentary evidence submitted, must be a complete copy of the original report or document.*

Application

In this case the CodeMark certification shall be based on the following:

- The product will be certified by the JAZ-ANZ accredited certifier, as per paragraph (iv).
- Part of the basis of the certification may be by reference to reports issued by a registered testing authority as per paragraph (i). The reports shall be checked to ensure that they are complete, as per paragraph (b).

Specification A1.3 Documents Adopted by Reference Table 1 Schedule of Referenced Documents

Application

The following referenced documents, called up in BCA Vol 1-2007 Table 1, provide the source documents used to: *Identify the relevant Deemed-to-Satisfy Provision, Identify the Performance Requirements and Identify Performance Requirements from other Sections and Parts that are affected by the application of the Deemed-to-Satisfy Provisions ...*

- *Nil*

BCA Vol 2 Class 1 & 10 Buildings

Clause 1.0.4 Compliance with the BCA

Requirement

A Building Solution will comply with the BCA if it satisfies the Performance Requirements

Application

In this case the CodeMark certification shall be based on complying with this clause.

Clause 1.0.5 Meeting the Performance Requirements

Requirement

Compliance with the Performance Requirements can only be achieved by-

- (a) complying with the Deemed-to-Satisfy Provisions; or*
- (b) formulating an Alternative Solution, which:
 - (i) complies with the Performance requirements; or*
 - (ii) is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or**
- (c) a combination of (a) and (b)*

Application

In this case the CodeMark certification shall be based on

- (a) complying with the Deemed-to-Satisfy Provisions for Solar Absorptance or NSW BASIX provisions for Solar Absorptance ; and*
- (b) formulating an Alternative Solution, which utilizes the Verification Methods called up in the BCA or NSW BASIX.*

Clause 1.0.8 Meeting the Performance Requirements

Requirement

- (a) An Alternative Solution must be assessed according to one or more of the Assessment Methods.*
- (b) An Alternative Solution will only comply with the BCA if the Assessment Methods used to determine compliance with the Performance Requirements have been satisfied.*
- (c) The Performance Requirements relevant to an Alternative Solution must be determined in accordance with 1.0.10.*

Application

In this case that part of the CodeMark certification involving Alternate Solutions complies fully with this clause.

Clause A0.9 Assessment Methods

Requirement

The following Assessment Methods, or any combination of them, can be used to determine that a Building Solution complies with the Performance Requirements:

- (a) Evidence to support that the use of a material, form of construction or design meets a Performance Requirement or a Deemed-to-Satisfy Provision as described in 1.2.2.*
- (b) Verification Methods such as—
 - (i) the Verification Methods in the BCA; or*
 - (ii) such other Verification Methods as the appropriate authority accepts for determining compliance with the Performance Requirements.**
- (c) Comparison with the Deemed-to-Satisfy Provisions.*
- (d) Expert Judgement.*

Application

In this case the CodeMark certification shall be based on compliance with paragraphs

- (a) *Evidence to support that the use of a material, form of construction or design meets a Performance Requirement or a Deemed-to-Satisfy Provision as described in A2.2.*
- (b) *Verification Methods such as—*
 - (i) *the Verification Methods in the BCA; or*
 - (ii) *such other Verification Methods as the appropriate authority accepts for determining compliance with the Performance Requirements.*
- (c) *Comparison with the Deemed-to-Satisfy Provisions.*

Clause A0.10 Relevant Performance Requirements

Requirement

The following method must be used to determine the Performance Requirement or Performance Requirements relevant to the Alternative Solution:

- (a) *Identify the relevant Deemed-to-Satisfy Provision of Section 3 that is to be the subject of the Alternative Solution.*
- (b) *Identify the Performance Requirements from Section 2 that are relevant to the identified Deemed-to-Satisfy Provisions.*
- (c) *Identify Performance Requirements from Section 2 that are relevant to any aspects of the Alternative Solution proposed or that are affected by the application of the Deemed-to-Satisfy Provisions, that are the subject of the Alternative Solution.*

Application

In this case the CodeMark certification shall be based on full compliance with this paragraph.

Clause 1.2.1 Suitability of materials

Requirement

Every part of a building must be constructed in an appropriate manner to achieve the requirements of the Housing Provisions, using materials that are fit for purpose for which they are intended.

Application

In this case the CodeMark certification shall ensure that the Energy Star Coatings satisfies this criterion.

Clause 1.2.2 Evidence of suitability

Requirement

- (a) *Subject to 1.2.3 and 1.2.4, evidence to support that the use of a material, form of construction or design meets a Performance Requirement or Deemed-to-Satisfy Provision may be in the form of one or a combination of the following:*
- (i) *A report issued by a Registered Testing Authority, showing that the material or form of construction has been submitted to the tests listed in the report, and setting out the results of those tests and any other relevant information that demonstrates its suitability for use in the building.....*
- (iii) *A certificate from a professional engineer or other appropriately qualified person which-*
- (A) *certifies that a material, design or form of construction complies with the requirements of the BCA; and*
- (B) *sets out the basis on which it is given and the extent to which relevant specification, rules, codes of practice or other publication have been relied upon.*
- (iv) *A current certificate issued by a product certification body that has been accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).....*
- (b) *Any copy of documentary evidence submitted, must be a complete copy of the original report or document.*

Application

In this case the CodeMark certification shall be based on the following:

- The product will be certified by the JAZ-ANZ accredited certifier, as per paragraph (iv).
- Part of the basis of the certification may be by reference to reports issued by a registered testing authority as per paragraph (i). The reports shall be checked to ensure that they are complete, as per paragraph (b).

Specification 1.4.1 and Table 1.4.1 Schedule of Referenced Documents

Application

The following referenced documents, called up in BCA Vol 2 Table 1.4.1, provide the source documents used to: *Identify the relevant Deemed-to-Satisfy Provision, Identify the Performance Requirements and Identify Performance Requirements from other Sections and Parts that are affected by the application of the Deemed-to-Satisfy Provisions ...*

- *Nil*

Appendix 3

Specific BCA Clauses and Referenced Documents

The following clauses of BCA Volume 1 and BCA Volume 2 provide the criteria upon which the specific CodeMark certification has been based.

BCA Vol 1 Class 2 – 9 Buildings

BCA Volume 1 – J1.3 (b)

Requirement

- (b) The Total R-Value specified in Table J1.3 is reduced –
- (i) in climate zones 1, 2 and 3, for a Class 2 or 3 building, Class 4 part of a building or Class 9c aged care building with a roof upper surface solar absorptance value of not more than 0.55, by R0.5; and
 - (ii) in climate zone 5, for a Class 5 to 8, 9a and 9b building with –
 - (A) a roof upper surface solar absorptance value of not more than 0.55, by R0.25; or
 - (B) a roof upper surface solar absorptance value of not more than 0.35, by R0.5.

State variations

In New South Wales BCA Volume 1 Section J is replaced by NSW Section J.

- For Class 2 and Class 4 buildings, NSW BASIX applies in accordance with NSW Subsection JA.
- For Class 3, 5, 6, 7a, 7b, 9a, 9b and 9c buildings, BCA Volume 1 Section J, in accordance with NSW Subsection JB.

In Northern Territory, BCA Volume 1 Section J does not apply.

Application

Quasar Management Services Pty Ltd spreadsheet D07092330-1 (12/10/07) “Consideration of reflectance, emissivity & absorptance data” ranks the solar absorptance values reported by the two test laboratories for all products in the range, against the BCA criteria, and shows compliance by the word “Yes”.

The complying NSW BASIX classifications are also shown.

This is set out in the table below, for which CodeMark compliance is sought.

Building Code of Australia Clause	Volume 1 J1.3 (b)		Volume 2 3.12.1.2 (b)(i)	Volume 2 3.12.1.4 (b)(ii)	NSW BASIX Classification
	0.55	0.35	0.55	0.45	
Solar Absorptance requirement	0.55	0.35	0.55	0.45	Light <0.475 Medium 0.475 – 0.700 Dark > 0.700
Complying Products					
Sportscoat	Yes	Yes	Yes	Yes	Light
EC 100 Dirtguard White	Yes	Yes	Yes	Yes	Light
Cool Pave White	Yes	Yes	Yes	Yes	Light
DG IR Elastic White	Yes	Yes	Yes	Yes	Light
ES Metal-Flex GLS/LS	Yes	Yes	Yes	Yes	Light
Tile Guard SM White	Yes	Yes	Yes	Yes	Light

Tile Guard White	Yes	Yes	Yes	Yes	Yes	Light
DG IR Gloss White	Yes	Yes	Yes	Yes	Yes	Light
GLS/LS White	Yes	Yes	Yes	Yes	Yes	Light
Ceram - 4000 White	Yes	Yes	Yes	Yes	Yes	Light
E100 T SM White	Yes	Yes	Yes	Yes	Yes	Light
Broken White	Yes	Yes	Yes	Yes	Yes	Light
C/B Smooth Cream	Yes	Yes	Yes	Yes	Yes	Light
Light Cream	Yes	Yes	Yes	Yes	Yes	Light
Neutral White	Yes	Yes	Yes	Yes	Yes	Light
Armatex White	Yes	Yes	Yes	Yes	Yes	Light
Sandalwood	Yes	Yes	Yes	Yes	Yes	Light
Pale Biscuit	Yes	Yes	Yes	Yes	Yes	Light
Off White	Yes	Yes	Yes	Yes	Yes	Light
Light Latte	Yes	Yes	Yes	Yes	Yes	Light
Mid Biscuit	Yes	Yes	Yes	Yes	Yes	Light
Stone	Yes	Yes	Yes	Yes	Yes	Light
C/B Merino	Yes	Yes	Yes	Yes	Yes	Light
Gull Grey	Yes	Yes	Yes	Yes	Yes	Light
Tuscany	Yes	Yes	Yes	Yes	Yes	Light
C/B Birch Grey	Yes		Yes	Yes	Yes	Light
Autumn	Yes		Yes	Yes	Yes	Light
Pewter	Yes		Yes	Yes	Yes	Light
Chino	Yes		Yes	Yes	Yes	Light
Quarry	Yes		Yes	Yes	Yes	Light
Warm Clay	Yes		Yes	Yes	Yes	Light
Mocca	Yes		Yes	Yes	Yes	Light
C/B Saltbush	Yes		Yes	Yes	Yes	Light
C/B Beige	Yes		Yes			Light
French Green	Yes		Yes			Light
Clay Tone	Yes		Yes			Medium
C/B Rivergum						Medium
Terracotta						Medium
C/B Mist Green						Medium
C/B Slate Grey						Medium
C/B Iron Bark						Medium
Olive Green						Medium
C/B Weathered Copper						Medium
Red Oxide						Medium
Regal Brown						Medium
C/B Heritage Red						Medium
Yallara Brown						Medium
Blue Grass						Medium
Nimbus						Medium
Cobalt						Medium
Charcoal						Medium
Pioneer						Dark
Botanic						Dark
Mid Brunswick Green						Dark
C/B Mountain Blue						Dark
Carriage green						Dark

Justification

CodeMark certification shall be based on the following documentation:

Document	Organisation responsible for preparing, controlling & reviewing the document
Test Reports Emissivity & Reflectance File SV16101 Project 05CA51080 1/12/05	United Underwriters Laboratories Inc
Test Reports	Commercial laboratory commissioned by Astec Paints Australasia Pty Ltd <small>See Note</small>
D07092330-1 12/10/07 Consideration of reflectance, emissivity & absorptance data.	Quasar Management Services Pty Ltd
Note The identity of the laboratory commissioned by Astec Paints Australasia Pty Ltd to carry out these tests is confidential for commercial reasons. However, the identity can and will be provided to the third-party Certification Body, for purposes of determining its credibility.	

BCA Volume 1 JP1, when its use is verified by methods JV1 or JV3

The BCA makes provision for the verification of buildings, whose energy-saving provisions are not in accordance with the Deemed-to-Satisfy provisions. In BCA Volume 1, two suitable methods, JV1 and JV3, are referenced and considered suitable. It is proposed that a third method (JV2) be deleted in May 2008. The AccuRATE software and other software packages make provision for the input of various properties, including paint solar absorptance and emissivity.

Requirement

JP1

A building, including its services, must have, to the degree necessary, features that facilitate the efficient use of energy appropriate to—

- (a) the function and use of the building and services; and
- (b) the internal environment; and
- (c) the geographic location of the building; and
- (d) the effects of nearby permanent features such as topography, structures and buildings; and
- (e) solar radiation being—
 - (i) utilised for heating; and
 - (ii) controlled to minimise energy for cooling; and
- (f) the sealing of the building envelope against air leakage; and
- (g) the utilisation of air movement to assist heating and cooling; and
- (i) the energy source of the services.

Requirement

JV1 Verification using a stated value for a sole-occupancy unit of a Class 2 building or for a Class 4 part of a building

- (a) For a Class 2 building or Class 4 part of a building, other than its services, compliance with JP1 is verified when it is determined using a thermal calculation method that –
 - (i) each sole-occupancy unit has an energy rating of not less than 3 stars; and
 - (ii) the average energy rating of all of the sole-occupancy units is not less than –
 - (A) in climate zones 1 to 3, 3.5 stars; and
 - (B) in climate zones 4 to 8, 4 stars.
- (b) The thermal calculation method used in (a) must comply with the ABCB Protocol for House Energy Rating Software.
- (c) Averaging of energy ratings must be carried out in MJ/m².annum or points.

Requirement

JV3 Verification using a reference building

BCA Vol 1 JV3 sets out a verification method based on comparing the energy use of the proposed building to the energy use of a “reference building” that reflects common construction.

The annual energy consumption of the reference building must be calculated using:

- The Deemed-to-Satisfy provisions
- A solar absorption of 0.7 for external walls and roofs
- Specified values for lamp power density or maximum illumination power density.

The annual energy consumption of the proposed building must be calculated using the same:

- Thermal calculation method
- Environmental conditions and orientation
- Building form (dimensions, storeys, wall density etc)
- Services (lifts, lighting etc)
- Floor coverings

- Use profiles and air-conditioning zones.

By keeping these parameters constant, the designer ensures that only changes in the target features (e.g. insulation, glazing, wall type, air-conditioning plant) affect the annual energy consumption of the proposed building.

However, in the proposed building the designer is at liberty to vary the paint solar absorptance and emittance, insulation, glazing, wall type, air-conditioning plant and the like, in order to optimise the design.

State Variations

In New South Wales BCA Volume 1 Section J is replaced by NSW Section J.

- For Class 2 and Class 4 buildings, NSW BASIX applies in accordance with NSW Subsection JA.
- For Class 3, 5, 6, 7a, 7b, 9a, 9b and 9c buildings, BCA Volume 1 Section J, in accordance with NSW Subsection JB.

In Northern Territory, BCA Volume 1 Section J does not apply.
In Victoria, there is a variation of the star requirements for JV1.

Application

The table below shows the Solar Absorptance and Emissivity properties for each coating for which CodeMark compliance is sought.

Solar Absorptance and Emissivity Values		
For use in verification by computer simulation		
BCA Volume 1 JV1 or JV3, or BCA Volume 2 V2.6.2.1 or V2.6.2.2		
Product	Solar Absorptance	Emissivity
Sportscoat	0.09	0.92
EC 100 Dirtguard White	0.10	0.91
Cool Pave White	0.10	0.87
DG IR Elastic White	0.11	0.91
ES Metal-Flex GLS/LS	0.11	0.90
Tile Guard SM White	0.11	0.88
Tile Guard White	0.11	0.91
DG IR Gloss White	0.11	0.89
GLS/LS White	0.13	0.88
Ceram - 4000 White	0.16	0.90
E100 T SM White	0.17	0.91
Broken White	0.19	0.89
C/B Smooth Cream	0.22	0.88
Light Cream	0.22	0.86
Neutral White	0.22	0.83
Armatex White	0.23	0.94
Sandalwood	0.23	0.87
Pale Biscuit	0.25	0.90
Off White	0.25	0.93
Light Latte	0.29	0.90
Mid Biscuit	0.31	0.90
Stone	0.31	0.90
C/B Merino	0.32	0.90

Gull Grey	0.32	0.89
Tuscany	0.34	0.90
C/B Birch Grey	0.38	0.86
Autumn	0.39	0.90
Pewter	0.39	0.90
Chino	0.39	0.90
Quarry	0.40	0.90
Warm Clay	0.41	0.83
Mocca	0.42	0.90
C/B Saltbush	0.44	0.90
C/B Beige	0.46	0.85
French Green	0.46	0.90
Clay Tone	0.53	0.90
C/B Rivergum	0.57	0.83
Terracotta	0.58	0.90
C/B Mist Green	0.58	0.87
C/B Slate Grey	0.60	0.85
C/B Iron Bark	0.60	0.92
Olive Green	0.61	0.90
C/B Weathered Copper	0.61	0.90
Red Oxide	0.61	0.85
Regal Brown	0.61	0.91
C/B Heritage Red	0.63	0.82
Yallara Brown	0.63	0.90
Blue Grass	0.64	0.90
Nimbus	0.65	0.90
Cobalt	0.66	0.90
Charcoal	0.68	0.88
Pioneer	0.71	0.90
Botanic	0.72	0.90
Mid Brunswick Green	0.74	0.87
C/B Mountain Blue	0.75	0.92
Carriage green	0.75	0.90

Justification

CodeMark certification shall be based on the following documentation:

Document	Organisation responsible for preparing, controlling & reviewing the document
Test Reports Emissivity & Reflectance File SV16101 Project 05CA51080 1/12/05	United Underwriters Laboratories Inc
Test Reports	Commercial laboratory commissioned by Astec Paints Australasia Pty Ltd <small>See Note</small>
D07092330-1 12/10/07 Consideration of reflectance, emissivity & absorptance data.	Quasar Management Services Pty Ltd
<p>Note The identity of the laboratory commissioned by Astec Paints Australasia Pty Ltd to carry out these tests is confidential for commercial reasons. However, the identity can and will be provided to the third-party Certification Body, for purposes of determining its credibility.</p>	

BCA Vol 2 Class 1 & 10 Buildings

BCA Volume 2 – 3.12.1.2 (b)(i) - Roofs

Requirement

(b) In climate zones 1, 2 and 3, the Total R-Value specified in Table 3.12.1.1 is reduced by R0.5 for each of the following:

- (i) The roof upper surface has a solar absorptance value of not more than 0.55
- (ii)

BCA Volume 2 – 3.12.1.4 (b)(ii) – External Walls

Requirement

(b) In climate zones 1 and 2, the requirements of (a) do not apply to the storey on a building provided –

- (i)
- (ii) the external surface of the external walls achieves a solar absorptance value of not more than 0.45
- (iii)
- (iv)

State variations

In New South Wales BCA Volume 1 Section J is replaced by NSW Section J.

- For Class 2 and Class 4 buildings, NSW BASIX applies in accordance with NSW Subsection JA.
- For Class 3, 5, 6, 7a, 7b, 9a, 9b and 9c buildings, BCA Volume 1 Section J, in accordance with NSW Subsection JB.

In Northern Territory, BCA Volume 1 Section J does not apply.

Application

Same as BCA Volume 1

Justification

Same as BCA Volume 1

Volume 2 P2.6.1 when it use is verified by methods V2.6.2.1 or V2.6.2.2

Requirement

P2.6.1 Building

A building must have, to the degree necessary, a level of thermal performance to facilitate the efficient use of energy for artificial heating and cooling appropriate to—

- (a) the function and use of the building; and
- (b) the internal environment; and
- (c) the geographic location of the building; and
- (d) the effects of nearby permanent features such as topography, structures and buildings; and
- (e) solar radiation being—
- (i) utilised for heating; and

- (ii) controlled to minimise energy for cooling; and
- (f) the sealing of the building envelope against air leakage; and
- (g) the utilisation of air movement to assist cooling.

STATE AND TERRITORY VARIATIONS

P2.6.1 has been replaced in Victoria as follows:

P2.6.1 Building

A building must have, to the degree necessary, a level of thermal performance to facilitate the efficient use of energy for artificial heating and cooling and a level of water use performance to facilitate the efficient use of water, appropriate to—

- (a) the function and use of the building; and
- (b) the internal environment; and
- (c) the geographic location of the building; and
- (d) the effects of nearby permanent features such as topography, structures and buildings; and
- (e) solar radiation being—
 - (i) utilised for heating; and
 - (ii) controlled to minimise energy for cooling; and
- (f) the sealing of the building envelope against leakage; and
- (g) the utilisation of air movement to assist cooling; and
- (h) water resources available; and -
- (l) pertinent water management measures of the responsible water authority.

BCA Vol 2 V2.6.2.2 – Verification using a reference building

BCA Vol 2 also makes provision for verification using reference building for Class 1 and certain Class 10a buildings, whereby computer simulations to calculate the annual energy use of the proposed building using designated software must demonstrate performance of a standard not worse than that of a “reference building”.

The buildings covered are:

Class 1 buildings

Single dwelling, row house, terrace house, town house, villa unit, boarding house, guest house, hostel etc.

Class 10a enclosed building (e.g. garage) attached to a new Class 1 building.

State variations

In New South Wales Part 3.12 does not apply. New South Wales BASIX classifications are as tabulated below.

In Northern Territory, Queensland and Tasmania, BCA 2005 Part 2.6 applies.

Application

Same as BCA Volume 1

Justification

Same as BCA Volume 1

Summary of Test Data Used in this CodeMark Application

Astec Paints Energy Star System	Code	Emissivity	Solar Reflectance	Solar Reflectance	Solar Reflectance	Solar Reflectance	Solar Absorbance
		Underwriters Test	Underwriters Test	???? Test	Astec Manual	Calculated	Calculated
Sportscoat		0.9225	0.910			0.910	0.090
EC 100 Dirtguard White		0.9085	0.896	0.903		0.896	0.104
Cool Pave White		0.8664	0.896			0.896	0.104
DG IR Elastic White		0.9120	0.892	0.903		0.892	0.108
ES Metal-Flex GLS/LS				0.892		0.892	0.108
Tile Guard SM White		0.8804	0.888	0.892		0.888	0.112
Tile Guard White		0.9085	0.888	0.892		0.888	0.112
DG IR Gloss White		0.8875	0.887	0.892		0.887	0.113
GLS/LS White		0.8840	0.884	0.867		0.867	0.133
Ceram - 4000 White		0.9015	0.838	0.879		0.838	0.162
E100 T SM White		0.9085	0.830	0.863		0.830	0.170
Broken White	8091	0.8875	0.810	0.813	0.813	0.810	0.190
C/B Smooth Cream	8087	0.8804	0.784	0.785	0.785	0.784	0.216
Light Cream	8096	0.8629	0.783	0.787	0.787	0.783	0.217
Neutral White	8092	0.8279	0.779	0.785	0.785	0.779	0.221
Armatex White		0.9400	0.774	0.879		0.774	0.226
Sandalwood	8086	0.8734	0.775	0.767	0.767	0.767	0.233
Pale Biscuit	8093			0.754	0.754	0.754	0.246
Off White	8085	0.9259	0.752	0.747	0.747	0.747	0.253
Light Latte	8097			0.709	0.709	0.709	0.291
Mid Biscuit	8095			0.695	0.695	0.695	0.305
Stone	8089			0.689	0.689	0.689	0.311
C/B Merino	8084			0.683	0.683	0.683	0.317
Gull Grey	8109	0.8910	0.688	0.683	0.683	0.683	0.317
Tuscany	8073			0.660	0.660	0.660	0.340
C/B Birch Grey	8081	0.8559	0.628	0.622	0.622	0.622	0.378
Autumn	8111			0.609	0.609	0.609	0.391
Pewter	8110			0.607	0.607	0.607	0.393
Chino	8112			0.606	0.606	0.606	0.394
Quarry	8094			0.598	0.598	0.598	0.402
Warm Clay	8072	0.8314	0.594	0.595	0.595	0.594	0.406
Mocca	8088			0.576	0.576	0.576	0.424
C/B Saltbush	8106			0.558	0.558	0.558	0.442
C/B Beige	8083	0.8454	0.540	0.543	0.543	0.540	0.460
French Green	8105			0.539	0.539	0.539	0.461
Clay Tone	8071			0.467	0.467	0.467	0.533
C/B Rivergum	8101	0.8279	0.428	0.445	0.445	0.428	0.572
Terracotta	8070			0.424	0.424	0.424	0.576
C/B Mist Green	8100	0.8699	0.419	0.440	0.440	0.419	0.581
C/B Slate Grey	8080	0.8524	0.405	0.403	0.403	0.403	0.597
C/B Iron Bark	8074	0.9225	0.402	0.409	0.409	0.402	0.598
Olive Green	8102			0.394	0.394	0.394	0.606
C/B Weathered Copper	8078			0.391	0.391	0.391	0.609
Red Oxide	8069	0.8524	0.392	0.390	0.390	0.390	0.610
Regal Brown	8076	0.9120	0.390	0.386	0.386	0.386	0.614

C/B Heritage Red	8068	0.8244	0.393	0.375	0.375	0.375	0.625
Yallara Brown	8077			0.369	0.369	0.369	0.631
Blue Grass	8103			0.360	0.360	0.360	0.640
Nimbus	8082			0.355	0.355	0.355	0.645
Cobalt	8107			0.338	0.338	0.338	0.662
Charcoal	8079	0.8840	0.320	0.328	0.328	0.320	0.680
Pioneer	8075			0.288	0.288	0.288	0.712
Botanic	8104			0.279	0.279	0.279	0.721
Mid Brunswick Green	8099	0.8664	0.280	0.259	0.259	0.259	0.741
C/B Mountain Blue	8108	0.9155	0.259	0.255	0.255	0.255	0.745
Carriage green	8098			0.246	0.246	0.246	0.754

AccuRATE Values

The following are default values for Solar Absorptance and Emissivity in the AccuRATE software. CodeMark certification of the Energy Star range of coatings will enable their use as Alternate Solutions to these values.

AccuRATE Default Values	Solar	
	Absorptance	Emissivity
Paint - Black	0.96	0.90
Paint - Light cream	0.30	0.90
Paint - Light green	0.50	0.90
Paint - Light grey	0.75	0.90
Paint - Pink	0.49	0.90
Paint - White	0.23	0.90

NSW BASIX Values

The following are default values for Solar Absorptance in the NSW BASIX on-line software. CodeMark certification of the Energy Star range of coatings will enable their use as Alternate Solutions to these values.

NSW BASIX Default Values	Solar Absorptance	
	Dark	> 0.70
Medium	0.475 <	< 0.70
Light	< 0.475	

Appendix 4

Rod Johnston – Qualifications and Experience

Name Rodney Kentwell Johnston
Address 80A The Scenic Road, Killcare Heights NSW 2257, Australia

Tertiary Qualifications

Master of Engineering Science (Structural & Foundation Engineering)
Master of International and Community Development
Bachelor of Technology (Civil Engineering)

Building, Trade and Other Qualifications

Qualified Building Supervisor (NSW 18087-S)
Apprenticeship in Boilermaking
Train the Trainer (University short course)

Professional Associations

Member, Institution of Engineers, Australia
Chartered Professional Engineer
National Professional Engineers Register, NPER Membership No 377019
Registered Professional Engineer, Queensland
Member, Association of Consulting Structural Engineers

Company and Association Boards

Quasar Management Services Pty Ltd
Chairman (1990 – Current)

Consulting structural and civil engineer, specialising in design of concrete, masonry and steel structures, including residential buildings and retaining walls, preparation of design manuals and design aids, technical problem solving and expert witness.

Design Detail Deliver Pty Ltd (Trading as Electronic Blueprint)
Chairman (2000 – Current)

Company providing design and construction specification, detailing, software, education, training for residential building design and construction.

Partner Housing Australasia (Building) Inc

Previously Trading as Habitat for Humanity Western Sydney Inc.
Chairman (2002-Current)

Charitable home builder organization providing professional design and construction services for affordable housing in Australia and the Asia-Pacific region.

Association of Consulting Structural Engineers (NSW)
Director (2004 – Current)

Previous Board and Similar Positions

Habitat for Humanity Australia Inc - Director 2003-2005

Hornsby Shire Council

Councillor from 1987 to 1991. Deputy President 1990-1991
Local authority (Area 510 sq. km, approximate population 120,000, northern Sydney)

Engineering and Building Experience

Since May, 1990 to the current date, Rod Johnston has been the chairman/managing director of Quasar Management Services Pty Ltd, a consulting structural and civil engineer, specialising in design of concrete, masonry and steel structures, including residential buildings and retaining walls, preparation of design manuals and design aids, technical problem solving and expert witness. He is also chairman of Electronic Blueprint (Design Detail & Deliver Pty Ltd) , a company specialising in design and construction software, education, training and specialised building products for residential building.

Previous experience since from 1974 to 1990 includes building and construction industries in Australia, United Kingdom and Zambia in roles which included structural design engineer, draftsman, registered builder, contract controller, estimator and tradesman. For nine years he was employed by Amatek Limited (formerly Monier Limited and now part of Rocla) as Project Manager, Manager Engineering and Construction and Technical Marketing Manager in the Masonry Division.

Australian Building Codes Board

Rod Johnston represents the Association of Consulting Engineers Australia (ACEA) on the Building Codes Committee (BCC), the peak technical advisory committee to the Australian Building Codes Board, which prepares the Building Code of Australia (BCA). He therefore has an intimate knowledge of the BCA and its requirements.

He has served on the following committees and working groups, assisting the Australia Building Codes Board to prepare amendments to the Building Code of Australia for energy saving.

- Technical Committee (Residential)
- Technical Committee (Commercial)
- Building Fabric (Housing) WGH 5 - Chairman
- Building Fabric (Commercial Buildings) WGC 2

Australian Standards Technical Committees

Active member of Standards Australia Technical Committees, preparing the following standards:

AS/NZS 1170 Loading codes
AS 2870 Residential slabs and footings
AS 4678 Earth retaining structures
AS 3700 Masonry structures
AS 4773 Draft standard for masonry in small buildings
AS/NZS 4455 Masonry units and segmental pavers
AS/NZS 4456 Masonry units and segmental pavers - Methods of test
AS 2904 Damp proof courses and flashings
AS 2701 Sampling and testing mortar
AS/NZS 2699 Built in components for masonry construction
AS 3727 Guide to residential pavements
AS/NZS 4586 Slip resistance classification of new pedestrian surfaces
AS/NZS 4663 Slip resistance classification of existing pedestrian surfaces
AS/NZS 4960 Draft standard for segmental pavements (currently being prepared)
HB 197 An introductory guide to the slip resistance of pedestrian surface materials
AS 2627.1 Thermal insulation of dwellings - Thermal insulation roofs and walls

- Chairman of Standards Australia Committee BD/26 for masonry units and test methods.
- Chairman of Standards Australia Committee BD/97 for residential masonry construction.

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