Building Regulations and Insulated Sandwich Panel

John Clampett

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Numerous examples of where product manufacturers, developers, importers and builders have either invested in R & D, testing program or construction work to find that they have taken the wrong path simply because they were not aware of the requirements.

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• Building Code Compliance and meeting insurance criteria are not the same thing!
• The Building Code is a life safety code, spread of fire to adjoining buildings and protection of fire fighters only.
• Not property protection.
• Common worldwide
Building Regulatory Environment

- Building Act
- Building Regulations
- National Construction Code
- Australian standards
- Fire testing
- Alternative Solutions
- Fire Safety Engineering
- Research update

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Building Regulatory Process

STATE & TERRITORY BUILDING ACTS

ADMINISTRATIVE MATTERS
- Administration
- Appeals
- Registrations
- Refurbishments
- Building standard

STATE & TERRITORY BUILDING REGULATIONS

TECHNICAL STANDARDS

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Building Codes

- Volume 1 - for building classes 2 to 9; and
- Volume 2 - for building classes 1 and 10, known as the “Housing Provisions”.
- Volume 3 – Plumbing Code
- Guide To Volume 1
- State Variations
BCA Coverage

• ISP’s are used in all building classifications – not just warehouses and factories and food industry.
• Internal walls, external walls, facades, roofing, ceilings etc
• Building attachments such as decorative cladding, awnings, sunshades etc
Class 1(a) – a single dwelling or attached dwellings

Class 1(b) - one or more buildings that constitute a boarding house, guest house, hostel (i.e., not exceeding 12 persons or 300m$^2$ in area).

Class 2 – building containing 2 or more units (e.g., flats, apartments).

Class 3 – a residential building for a number of persons such as a large scale boarding house, guest house, hostel, the residential part of a hotel, motel, school, etc.

Class 4 – a dwelling unit that is a part of a commercial use (a caretakers/managers flat).

Class 5 – an office building.

Class 6 – a shop or other building where goods or services are retailed direct public.
Class 7(a) – a car park building.

Class 7(b) – a storage building or building where goods are wholesaled (eg: a warehouse).

Class 8 – a laboratory or a building where a process takes place (eg: factory, workshop, etc).

Class 9(a) – a health care building (eg: a hospital, clinic, etc).

Class 9(b) – an assembly building (eg: community hall, sports hall, etc)

Class 9(c) – an aged care building.

Class 10(a) – a non-habitable building being a private garage, shed, or the like.

Class 10(b) – a structure (eg: a fence, wall, mast, swimming pool, etc).
Objectives – a statement that is considered to reflect community expectations.

Functional Statements – statements of how a building achieves the objective.

Performance Requirements – the level of performance a building solution must meet (ie: the minimum standard).
The way in which the performance requirements are met. The solution may be:
• One that complies with the deemed-to-satisfy provisions or
• An alternate solution or
• A combination of both.

The deemed-to-satisfy provisions are the “black and white” solutions and if followed ensure compliance with the performance requirements.

Alternate solutions allow for innovative design and use of materials and normally require certification by an expert in the particular field.
HIERARCHY OF THE PERFORMANCE-BASED BCA
Section A – General Provisions
Section B – Structure
Section C – Fire Resistance

• Type of Construction
• Fire Source Feature
• Fire-Resistance Level (FRL):
Section D – Access & Egress
Section E - Services & Equipment
Section F – Health & Amenity
Section G - Ancillary Provisions
Section H – Special Use Buildings
Section I – Maintenance
Section 1 – General Provisions
Section 2 – Performance Provisions
Section 3 – Acceptable Construction
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 a 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.

(ii) A current Certificate of Conformity or a current Certificate of Accreditation.

(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 specifications, rules, codes of practice or other publications 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).

(v) Any other form of documentary evidence that correctly describes the properties and performance of the material.

(b) Evidence to support that a calculation method complies with an ABCB protocol may be in the form of one or a combination of the following:

(i) A certificate from a professional engineer or other appropriately qualified person which—
   (A) certifies that the calculation method complies with a relevant ABCB protocol; and
   (B) sets out the basis on which it is given and the extent to which relevant specifications, rules, codes of practice and other publications have been relied upon.

(ii) Any other form of documentary evidence that correctly describes how the calculation method complies with a relevant ABCB protocol.

(c) Any copy of documentary evidence submitted, must be a complete copy of the original report or document.
• International and what is accepted here in Australia

• Warning on non Australian testing.

• Either over investing or under investing.

• Get independent advice before testing.
A2.3 Fire-resistance of building elements

Where a Deemed-to-Satisfy Provision requires a building element to have an FRL, it must be determined in accordance with Specification A2.3.

Registered Testing Authority means—(a) an organisation registered by the National Association of Testing Authorities (NATA) to test in the relevant field; or

(b) an organisation outside Australia registered by an authority recognised by NATA through a mutual recognition agreement; or

(c) an organisation recognised as being a Registered Testing Authority under legislation at the time the test was undertaken.
Fire Terminology

• Fire rated or Fire-resisting, applied to a building element, means having an FRL appropriate for that element.

• Fire-resisting construction means one of the Types of construction referred to in Part C1.

• Fire-resistance level (FRL) means the grading periods in minutes determined in accordance with Specification A2.3, for the following criteria—
  • (a) structural adequacy; and
  • (b) integrity; and
  • (c) insulation,
and expressed in that order. 60/60/60
How Standards operate.
Committees
Published but not law until called up by a regulation e.g. the Building Code of Australia.
But can be seen as best practice even if not called up.
BCA call up process and listed in BCA.
Application of BCA for ISP’s

• Class 7b and 8.
• Type of construction A, B or C - Size, height and use
• Fire rating of external walls – closer than 3 metres to title boundary.
• Internal fire rated walls for compartmentation.
• Building size – compartmentation, floor area and building volume
• Sprinklers – Compartment size, special hazards, State Variations,
• Part E2.2, - Smoke Control
• Large Isolated Buildings.
  • Less than 1800M2 or less than 10800M3
  • Greater than 1800m2 or greater than 10800M3
  • Addresses – sprinklers, automatic detection, smoke control and fire brigade vehicular access.
Be aware of what the fire engineer is proposing or imposing.

Maintenance of Essential Services

Don’t underestimate the influence of the fire brigades.

Large isolated buildings.

Approval Process can vary between States.

Code of Practice is having an impact. All fire brigades insisting on it now.

Choose the fire engineer and certifier carefully as many take the easy compliance road and some look for a fight with the approval authorities.

Pick your own.
2nd March 2011

Mr Ron Lawson
CEO
EPSA Inc
Expanded Polystyrene Panel Manufacturers Group
Level 10, 10 Queens Street
MELBOURNE VIC 3000

Dear Mr Lawson

EPS Panels Code of Practice Presentation

On behalf of the AFAC Built Environment Sub-Group (BESG), I thank you for your presentation at our meeting of 18 November 2010 on the Expanded Polystyrene Manufacturers Group (EPSA-INC PMG) Code of Practice for the installation of EPS Panels.

The industry is to be congratulated for voluntarily pursuing the development of the Code of Practice and we appreciate its efforts to date.

Whilst the Code is not addressing all of the concerns that firefighters have in relation to the fire performance of EPS Sandwich Panels, it is a step forward.

As the objective of the Code is to improve the safety of fire-fighters, fire services would be concerned and disappointed if the Code was not adopted by the industry.

Fire services involved in the building approval process would view the use of the Code of Practice as a positive step to be encouraged. However, it is clearly the view of the Committee that use of the Code should be complementary to any regulatory requirements; that is, it should not be seen as a substitute for any existing Building Code of Australia deemed-to-satisfy requirements through any alternative solution under the performance provisions.

We understand that the EPSA-INC PMG has also committed to undertaking further work to revise the Code of Practice with measures that demonstrate improved performance of EPS panels. AFAC would be pleased to be involved in any appropriate manner that would bring improvements to the Code.

AFAC and its member agencies will monitor the situation closely to gauge the effectiveness of the Code; both in terms of its uptake by industry, and its ability to achieve desired safety improvements.
What does the regulatory process mean to you?

Product development, import/exporting, market segmentation etc

• Don’t do above until you know you can.

Regulatory Acceptability.

• Make sure your product and construction methodology complies in Australia.
Research Update.
References


LPS 1208. 2005. LPCB Fire resistance requirements for elements of construction used to provide compartmentation. BRE Global Ltd.


Property and Business Fire Protection - Insulated Panels Kingspan Insulated Panels P/L marketing publication – April 2007

• IPENZ. Coolstore Engineering in New Zealand. 2009. IPENZ Engineers New Zealand. Practice Note 15.


• Dalton, Alan J. 1998. Safety, health and environmental hazards at the workplace. Page 30 Published by Cassell.

• HSE finds fire service at fault over firefighter deaths. Press report. http://www.guardian.co.uk/uk/2008/jan/16/firefighters.haroonsiddique


• Fire service bosses arrested over warehouse blaze that killed four. Press report. http://www.timesonline.co.uk/tol/news/uk/article7039387.ece


http://news.bbc.co.uk/go/pr/fr/-/hi/uk_news/england/coventry_warwickshire/8665001.stm
New South Wales Fire Brigade. Case Study #1 Greenacre Twelfth Alarm Meat processing Plant Fire. NSWFB Fire Operations Journal No. 3.
Nelligan, R.J. 2006. Guidelines for the use of expanded foam polystyrene panel systems in industrial buildings so as to minimise the risk of fire. Fire Engineering Research Report 06/1. Department of Civil Engineering, University of Canterbury, Christchurch, New Zealand.
Outcomes of Research

- Use of Case Studies
- Spread within the panel
- Combustibility
- Toxicity
- Improvements not publicised
Additional Testing

- Fire spread within the panel a major concern. Tests contradicted this view.
- Building Research Association of New Zealand Research report 2004
- Further verification testing at BRANZ in 2010
- Demonstration NSWFB Londonderry in 2011
Test Methodology
Testing Comparison

- BRANZ Report 2004
IPCA testing at BRANZ 2010
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Collaborative Process

Thank you for your correspondence of 15 April 2016 where you provided an update of measures taken to date to satisfy NSW Fire Brigades (NSWF) concerns about the risks posed to firefighters by Insulated Sandwich Panels (ISPs) in fire.

Commissioner Greg Mullins of the NSWF has advised me that officers from the NSWF’s Community Safety Division have been working with industry, including your company, to get a clearer picture of the problems and determine a way forward that addresses the concerns of fire services about firefighter safety.

To this end, I am pleased to see the positive response from industry in developing a Code of Practice cooperatively with the NSWF. I am advised that this Code is currently being reviewed by the NSWF on behalf of the Australian Fire and Emergency Services Authorities Council (AFAC) so that a nationally consistent position can be developed in relation to ISPs. This position will then form the basis for AFAC advocacy in regulatory reforms where required.

Thank you for the positive and cooperative approach taken by the Industry Group in addressing the safety concerns of NSWF.

Yours sincerely,

[Signature]
Steve Whan MP
Minister for Primary Industries
Minister for Emergency Services
Minister for Rural Affairs