Flame Retardancy Disambiguation

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i. Scope

The presentation aims to explore issues regarding flame retardancy, its testing, regulations, and requirements placed on the lightweight structures industry with specific reference to tensile membrane fabrics.

The presentation will look at the BCA 2007 regulations and clarify certain ambiguous entries that have led to industry confusion. Reference will also be made to the ongoing exploration of requirements for a new testing standard with specific relevance to the marquee and temporary structures market which has potential ramifications for all designers and manufacturers of lightweight structures.

ii. Flame Retardancy – Imperatives

Practical

To ensure that the correct test is applied to all components, depending on the intended end use or location of the structure.

To guide the industry in their interpretation of the BCA regulations to ensure certification does not hold up the development, tendering or construction process.

[slide show of BCA2007 criteria that lead to confusion]

To ensure that test reports are readily available to all relevant industry parties.

Ethical

To work with BCA authorities to guide the development of a standard that reflects the true requirements of the industry.

Current testing measures four areas of interest:

- Ignitability
- Spread of Flame
- Heat Evolved
- Smoke Developed

Only two of these criteria are actually then looked at by the BCA standards:

- Spread of Flame
- Smoke Developed

[slide show of various requirements depending on end usage]

These criteria are not particularly strict and, up until recently, have been quite easy to meet.

As those present at the last LSAA Symposium would be aware from Brian O'Flaherty's presentation, recent changes to the AS/NZ1530.3 testing methodology make this test extremely difficult for globally accepted architectural fabrics to pass. The important point to note is that this does not mean that these fabrics are deficient in terms of flame retardancy performance. Rather what it highlights very clearly is the unsuitability of the testing which was originally developed for materials quite different to ours.

The status quo, if pre–2003 reports may be accepted, is sufficient, if barely. The BCA have implied, though not widely communicated, that this is acceptable to them. However from an ethical standpoint we should be pushing for a standard that measures the behaviour of these materials in a way that is meaningful to the end use.

Measurements that should be taken include, but are not limited to:

- Ignitability: With a desired ignitability level that opens the membrane to vent gases.
- Behaviour: Does the material fuel the fire or self extinguish?
  Does the material rain flaming droplets?
- Smoke: How much smoke is generated by the burning or smouldering material?
  Is that smoke noxious or harmful?

[slide show of tent burn tests conducted by Ferrari]

We must acknowledge that architectural textiles and they way that they are used can influence the safety of individuals within a fire situation, however the authorities must also understand that the membranes in and of themselves cannot make a fire situation safe. Not all variables can be managed within the confines of a test that focuses on membrane fabrics. Therefore, we as an industry must resist the suggestion of some individuals within the BCA revision process that the full focus of fire safety regulation be placed on membrane fabrics. Equal or indeed greater regulatory attention must be placed on the construction, placement and usage of structures.

[examples from BCA meeting]

iii. Conclusion

A balance must be struck between practical and ethical concerns.

Practically, we need a system that is as simple and financially accessible as possible for all parties: fabric suppliers, fabricators, architects, engineers and project managers.

Ethically we need to accept that while we are aware of deficiencies in the current system and fail to act as an industry association we are all exposed to commercial and financial risk if we do not pursue a more appropriate testing outcome.

In acknowledging this, the LSAA has a strong role to play in guiding discussion to prevent a future in which a prohibitively expensive or inappropriately harsh testing standard is designed and regulated due to insufficient interest or pressure from our industry.