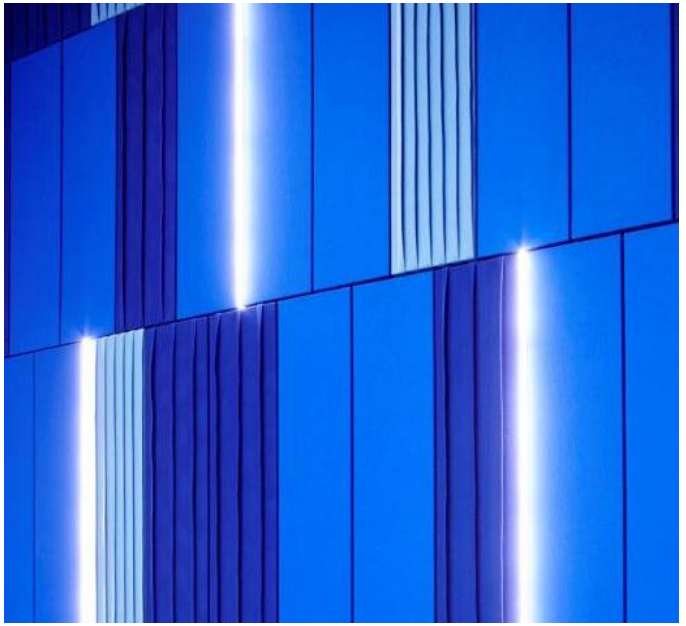


Acoustic & Thermal Insulation, Fire Risk and CODE Compliance

Historical Large Loss Interior Finish Fires

- Coconut Grove, Boston, 1942 - 492 fatalities
- Winecoff Hotel, Atlanta GA, 1946 - 119 fatalities
- Beverly Hills Supper Club, Southgate KY, 1977 - 165 fatalities
- The Station Night Club, West Warwick, RI, 2003 - 100 fatalities
- Kiss Night Club, Santa Maria, Brazil, 2016 - 240 fatalities

"Interior finishes have contributed to some of the deadliest assembly occupancy fires on record, and new building products continue to raise concerns among fire and life safety communities".

"The regulation of rapid progression fire on interior finish materials is as relevant today as it was 70 years ago"

NFPA®
National Fire Protection Association

Sources:

Inside Threat, Published July 1, 2014, NFPA (The National Fire Protection Association)

Case Histories: Fires Influencing the Life Safety Code, 2009 Life Safety Code Handbook

Underwriters Laboratory, UL's Iconic Steiner Tunnel Withstands The Test Of Time

Applicable ASTM Fire Test Standard And Classifications

- Per Building CODE, exposed thermal and acoustic insulation must be tested to ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E84 provides the fire classification of a product as a measure of Flame Spread and Smoke Development
- Product Fire Classifications:
  - Class A, 0-25 Flame Spread, 0-450 Smoke Development
  - Class B, 26-75 Flame Spread, 0-450 Smoke Development
  - Class C, 76-200 Flame Spread, 0-450 Smoke Development

ASTM E84 Steiner Tunnel Testing
(Other references UL 723, NFPA 255)

The Importance of Class A, Fire Rated Products

Acoustic insulation was installed to control club noise

It was not Class A rated

Classic rock band starts the show

40 seconds in stage area on fire

Packed House at The Station Night Club, Rhode Island

100 Died, 200+ injured

Feb 20, 2003

IBC Related CODE Requirements (IBC 2012 & 2105)

- IBC 2012 – Chapter 7, Fire And Smoke Protection Features
  - Section 720 - Thermal and Sound Insulating Materials
  - Section 720.3, Exposed Insulation – Insulating materials, where exposed as installed in buildings of any type of construction, shall have a flame spread index on not more than 25 and a smoke development index of not more than 450 (Class A Rating)

Related CODE sections address the as supplied material, not the material "components". The intent is for test data to reflect as supplied material fire performance.

This is a Life Safety Concern!

2018 IBC Important Update

720.1 General.

Insulating materials shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted. Insulating materials, when tested in accordance with the requirements of this section, shall include facings, when used, such as vapor retarders, vapor permeable membranes and similar coverings, and all layers of single and multilayer reflective foil insulation and similar materials.

This update clearly eliminates products that only list material "components" as Class A

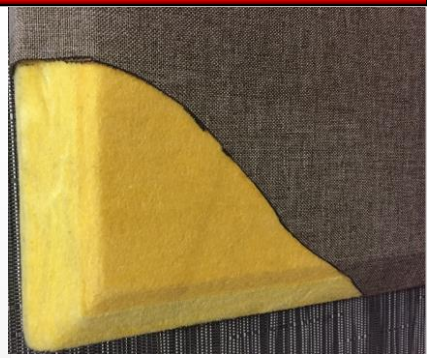
CODE States Minimum Requirements

Industry Standard Fabric Wrapped Acoustic Panel Components

- The standard acoustic substrate is nominal 6-7 PCF density fiberglass core available from manufacturers such as Johns Manville, Owens Corning & Knauf
- The fiberglass manufacturers report Class A fire classification performance Flame Spread and Smoke Development for unfinished panels per ASTM E84
- Industry standard, Guilford of Maine Style 2100, FR-701 is 100% polyester, acoustically transparent fabric. This is the most widely used fabric by the acoustic panel industry
- The manufacturer reports the fabric has a Class A rating per ASTM E84

Factors Impacting Panel "As Built" Fire Performance

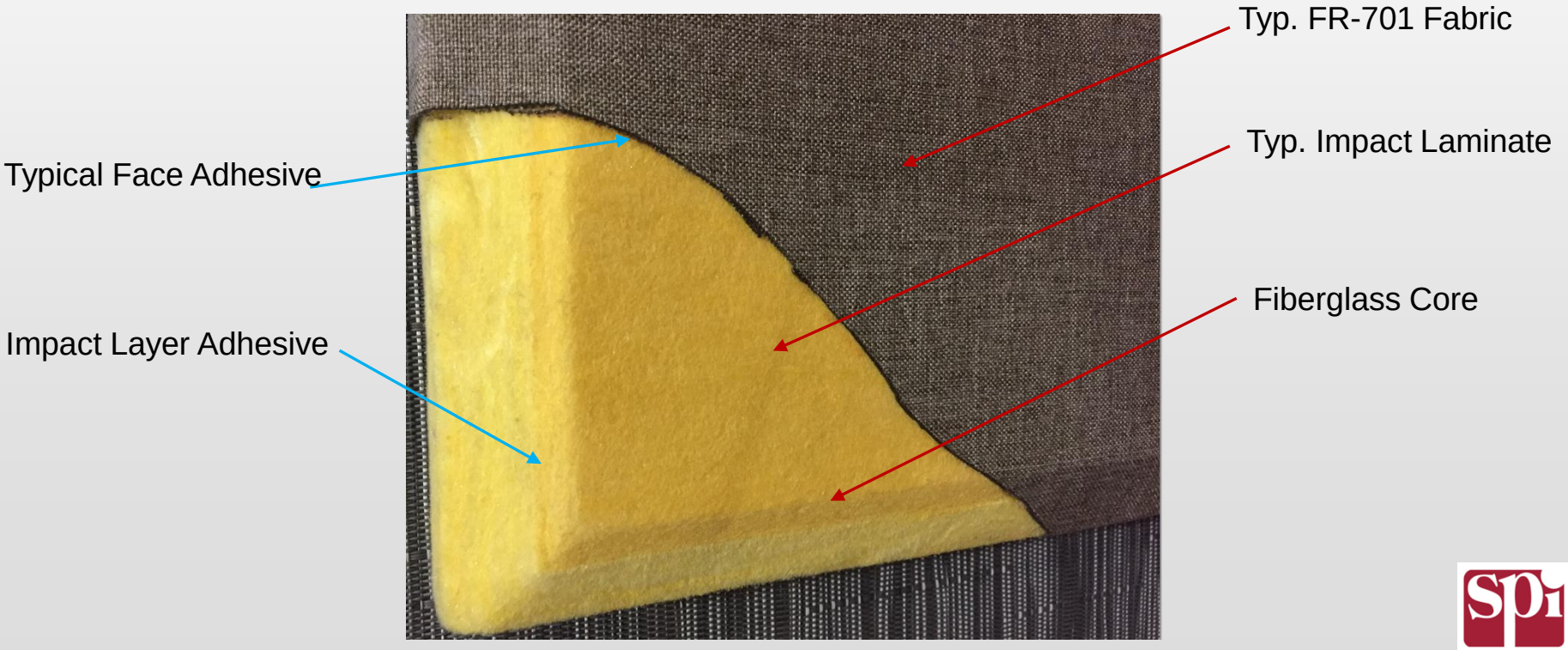
- To prevent fabric sagging and maintain alignment, Specifiers require panel fabric be full face bonded
- Accordingly, panel manufacturers apply full face bonding adhesive
- The type adhesive used, application method and application rate play a role in the "composite" panel's fire performance characteristics
- Combined with the insulation core, fabric or facing material, impact laminate and layer(s) of bonding adhesive influence the supplied product Flame Spread and Smoke Development ratings
- To confirm critical, Life Safety CODE compliance Thermal and Acoustic panels must be tested in the <u>As Built</u> condition



Typical Fabric Wrapped Acoustic Panel

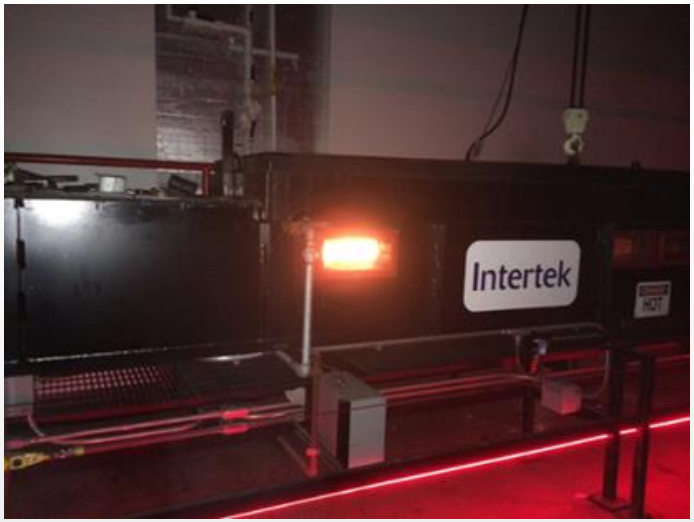
(1 + 1 + 1 Does Not = 1)

- Class A fabric is wrapped to the insulation core
- Class A fiberglass insulation core
- Adhesive is used to bond fabric to panel face, edges & back wrap area per Spec.
- A molded fiberglass impact layer may be required (also adhesive bonded)
- Combined "components" may not achieve a Class A rating for the supplied panel
- Finished panel testing is required to confirm as built "composite" performance



SPI Absorption Plus Composite Fire Test per Code (Ref. UL723, NFPA 255)

- ASTM E84 (Provides Flame Spread / Smoke Development Ratings)
- Absorption Plus Wall Panels achieved 15/40 vs Max allowable 25/450 for a composite Class A rating
- Absorption Plus Deck/Cloud, Baffle and High Impact/Tackable panels also meet CODE for Class A material
- Many other suppliers only provide material component ratings. This is not an accurate indicator of the assembled panel fire performance and does not comply with CODE requirements



Flame Spread Monitored Via Viewing Ports
Smoke Development Established From
Tunnel Exhaust Gases

Panel finish side to fire

Test exposure begins

Direct flame impingement

Test completion

SPI Absorption Plus® High NRC, Rated Class A Per CODE

Other product suppliers may only have product “component” fire test data. This does not meet CODE requirements for faced “As Built”, faced product testing

Panel fire performance is a Life Safety Issue

SPI PG BOARD TAF™ Insulation System, Class A Rated Per CODE

Other product suppliers may only have product “component” fire test data. This does not meet CODE requirements for the product “As Built” test data

Panel fire performance is a Life Safety Issue

All Published Product Test Data is Not the Same

IMPORTANT: To ensure the reliability of reported product test results, testing must be performed by an Accredited Test Facility

- **The International Accreditation Service** (IAS) provides objective evidence that an organization operates at the highest level of ethical, legal and technical standards. IAS is a nonprofit, public-benefit corporation that has been providing accreditation services since 1975. It is a subsidiary of the International Code Council (ICC), a professional membership association that develops the construction codes and standards used by most municipalities within the United States. IAS accreditation programs are based on recognized national and international standards that ensure domestic and/or global acceptance of its accreditations.
- **National Voluntary Laboratory Accreditation Program** (NVLAP) is a National Institute of Standards and Technology (NIST) program in the USA which provides an unbiased third-party test and evaluation program to accredit laboratories in their respective fields to the ISO 17025 standard. NVLAP is in compliance with ISO 17011.

Summary, Panel Fire Performance Is A Life Safety Issue

- Many suppliers only report the panel "components" meet a Class A rating. This is not in compliance with CODE
- Avoid project issues such as product rejection, remove & replace, delays and potential liability due to noncompliance to CODE
- SPI Absorption Plus: Wall, Deck/Cloud, High Impact-Tackable, Baffle and High NRC panels achieved a Class A rating when tested by an accredited lab
- SPI PG Board TAF™ achieved a Class A rating tested by an accredited lab

QUESTIONS?

Call (855) 519-4044

Or

Fabteam@spi-co.com