

Intumescent and SPF: SPRAY IT SAFE

THE CODE FOR SPRAYING INTUMESCENT COATINGS OVER SPRAY POLYURETHANE FOAM HAS CHANGED. GET THE FACTS HERE.

An International Fireproof Technology, Inc. eBook

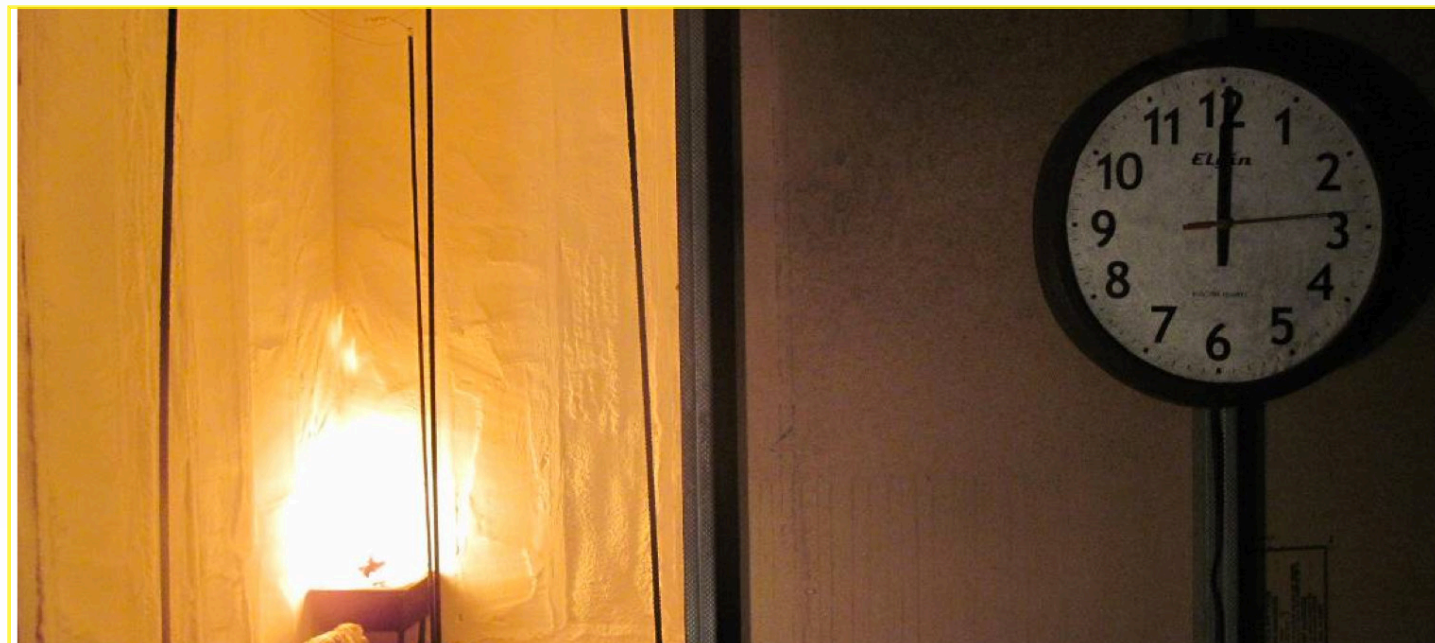
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Introduction

Using an intumescent coating as an alternative thermal barrier over spray polyurethane foam (SPF) is an effective, efficient means of fire prevention. The code for alternative thermal barriers has recently changed and the new Acceptance Criteria will be in effect October 2017. This means that if you spray intumescent coatings over SPF, you need to be aware of the changes and how they affect you. But before we look at the future, let's look at the past. How did we get to this point? And why?

The process for certifying an intumescent coating for use over spray polyurethane foam is lengthy and involved, and rightly so. After all, thermal barriers and the service they provide are a matter of public safety. The story behind that certification process, however, reads like a popular novel tinged with suspense. Read about it in this e-Book from IFTI.



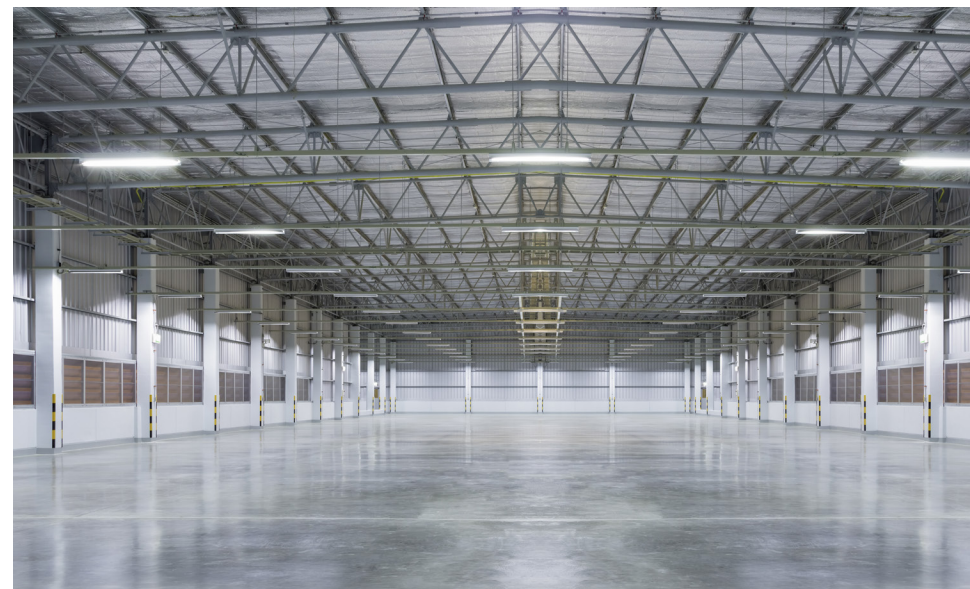
Red Tag, No SALE

To hear Gary Wolfe of IFTI tell it, the job began like any other. It was a 100,000-square-foot interior insulation project in a shopping plaza in a major metropolitan area. The work went well. Then, post-job, the problems started.

The insurance company on the project was familiar with the brand of spray polyurethane foam used; however, they didn't recognize the intumescent coating that had been specified as the thermal barrier. As a result, they red tagged the building.

Think about that.

The coatings are typically the last items to be addressed on any project. That was the case here. This meant that all of the merchant tenants had started moving in when the building was red tagged...which meant that they all had to



either move out or their merchandise and fixtures had to be protected when the coatings and foam were removed and reapplied. It was not a cheap proposition.

One of the consequences was that the state fire marshal was sued for approving the intumescent coating. He, in turn, threatened to ban all coatings from use with SPF. Realizing that reform was the crux of the issue, Wolfe said, "Give me time. I'll fix it," and promptly set about standardizing an industry.



A+B=C: The Testing Process



The testing process for alternative thermal barrier assemblies, in this case, intumescent coatings over SPF, is complex and dramatic. Both the SPF and the alternative thermal barrier in question must be tested to National Fire Protection Association (NFPA) 286 or equivalent, as an entire system (BRAND SPECIFIC / TYPE SPF+ Thermal Barrier = Assembly). Each brand and type of SPF must be individually tested with each proposed type of thermal barrier to create a complete assembly. It is NOT sufficient to test one type of foam and assume that the entire product line has passed muster as an alternative thermal barrier.

The test must be performed in a full-scale room, configured with an ignition source in one corner. The test runs for 15 minutes. The heat output is held at 40KW for the first

five minutes and then raised to 160 KW for the remaining 10 minutes. In order to pass the test, the complete assembly must be able to prevent flashover, slow the spread of fire, reduce the amount of smoke generated, and eliminate the heat that would be contributed if the foam were to burn.

And, although it is thorough, this full scale testing process is now no longer sufficient to satisfy code compliance.

In the testing procedure, alternative thermal barriers have always been tested as assemblies, in a methodical manner in which A (SPF) + B (Alternative Thermal Barrier) = C (Assembly). Although A, the SPF, and C, the Assembly, are always defined, B, the coating, has not been held to a burden of proof of quality assurance or manufacturing consistency via third party listings or inspections. Not surprisingly, this has caused quality control – and more importantly – safety



issues. And this issue fed the fire of confusion, as it were, with the use of intumescent in the shopping plaza. Was the assumption really that if one intumescent coating had been approved for use as an alternative thermal barrier, hadn't they all? And if so, why weren't the coatings that were used as alternative thermal barriers being tested and held to the same high standards as the SPF? Further, why didn't they have to meet the same code compliance? It is a matter of life or death.

“Foam companies have had to test and report on every batch of product for years, but the coatings companies were not held to the same standards,” Wolfe says. “And in this industry, standards mean more than product components, this is about life safety.”

In the event of a fire, these intumescent coatings are designed to char, providing a thermal barrier between the flammable SPF and the fire. As they char, the intumescent coatings are designed to provide building occupants with the ability to escape. When lives are on the line, quality control and standardization are more than industry jargon.

Concerned, and faced with an intumescent coating ban, Wolfe worked with the International Code Council's Evaluation Service (ICC-ES) to ensure that the testing criteria for intumescent coatings and the testing criteria for SPF match. Moreover, the products tested must be the products used in the application.

“There was such confusion around acceptance, some people thought

that simply passing one product meant that the rest of the product line passed as well – even though those products were untested,”

Wolfe explains. “Again, in a burning building, when seconds matter and lives are on the line, I don't want to trust my family to an untested coating. Who would?”

After a series of tests, hearings, explorations, and exhaustive fire testing, the ICC-ES unanimously voted to implement AC456 and modify AC377, the code that establishes the requirements for spray-applied polyurethane foam plastic insulation.

The new ICC-ES code, AC456, establishes a criteria for Coatings over SPF ensuring that the product tested is the same product that is used on the jobsite. Further, effective October 2017, all testing that has not been performed in accordance with AC85 Section 3.1 will be removed from ALL SPF evaluation reports.

AC85 Section 3.1 reads:

“Test specimens of products subject to third-party quality control inspections as a requirement of the code or ICC-ES acceptance criteria shall be sampled at the manufacturing site by the accredited testing laboratory or by an IAS-accredited inspection agency. The sampled product shall be truly representative of the standard manufactured product for which recognition is being sought. In lieu of sampling at the manufacturing site, sampling at a warehouse or distribution center is permitted, provided the testing laboratory or accredited inspection agency samples the materials and correlates the sampled materials with the product specifications.”

According to the new code, any coating that was tested as an alternative thermal barrier, but NOT tested under the specified conditions, MUST BE retested in order to be certified to code. This is a significant development in terms of public safety and the acceptance of coatings as an alternative form of thermal barrier.

“AC456 put the onus on the coatings company,” Wolfe says. “They now must act and report like foam companies.” This also keeps intumescent coatings in the SPF industry, “and helps avoid call backs,” Wolfe continues.

PROVISIONS IN THE CODE AND SPF-INDUSTRY BENEFITS

In addition to legitimizing intumescent coatings as a verifiable, repeatable, and measurable alternative thermal barrier, the new Code has other benefits for the SPF industry.

- Manufacturers must maintain a third-party quality assurance and follow-up inspection program.
- The testing must be performed by an ISO/IEC 17025 accredited facility.
- The intumescent coating must include an evaluation report.
- The intumescent coating shipments must include inspection marks.
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- Intumescent coating manufacturers can now list SPF manufacturers on their reports.
- The Code standardizes how fire protective coating application rates, as well as thickness measurements, are to be reported.

The need for third-party-listed quality assurance will allow for a more streamlined acceptance and approval process. This provides independent documentation to the Authorities Having Jurisdiction (AHJs), as well as to the end users, verifying that the fire protective coating manufacturing procedures provide a product consistent to that product which was tested.

Product certification provides a tangible measure of assurance to inspectors and AHJs

that the product meets applicable regulatory requirements. Further, Certification

Marks are recognized by AHJs including building code officials, fire marshals, and inspectors across North America.

With AC456 in place, the insurance company that was responsible for insuring the shopping plaza will now have a means for recognizing that the intumescent coatings meet the same standards and quality assurance testing as the SPF. Further, the state fire marshal should have no qualms in approving the intumescent coating as an alternative thermal barrier.



“In a burning building, when seconds matter and lives are on the line, I don’t want to trust my family to an untested coating. Who would?”

Gary Wolfe, IFTI



CERTIFIED APPLICATION

With the creation of AC456, and the modification of AC377, the rules of code compliance for alternative thermal barriers have changed. Anyone who applies coatings over SPF as an alternative thermal barrier must be ready to adapt to the new testing program. Becoming a certified applicator shows extensive due-diligence, training, and education. Not only a matter of compliance, it also shows how important safety is to your company. After all, it could be your spray-applied alternative thermal barrier that prevents a flashover inferno. Isn't that worth applying correctly?

The future of intumescent coatings in the spray polyurethane foam industry now has a clearly defined path with the implementation of AC456 and the adaptation of AC377. The Full Acceptance Criteria is available from the International Code Council at ICCSafe.org.