



April 4, 2011

Memo

TO: Gulf Crossings

FM: Tony Scott

RE: Contego Fire Barrier on Solid Core Doors.

I have some information for you specific to your project where you will be upgrading the standard doors in your project to fire rated doors. This Engineering Memorandum sets forth our recommendations and assists in the development of an analysis of our data to support code approval for your application. This is important because Contego, as the manufacturer of the product, has expansive insight into the performance of our coatings on various substrates. This can be valuable since it is impossible to have all of the possible data on every available substrate.

You are trying to protect the doors shown in your documentation for 1.5 hours. The materials used in your assemblies meet or exceed the fire endurance of any of the materials we have tested in the links sent earlier.

APPLICATIONS ON WOOD

- Our ASTM-E-119 test on 2x4 decking, which is approximately as thick as your door, shows 1:45 duration.
- Our ASTM E-84 (UL 723) data on Douglas Fir with only one coat (10 mils dft) shows zero flame spread and limited smoke production over the duration of the test. When compared to the same test on highly flammable spray polyurethane foam, which was extended to 25 minutes, the substrate was fully protected and flame spread and smoke production flatlined shortly after the initiation of the test. This indicates that such a test would and could have continued indefinitely.
- Also, our latest UL-723 from Underwriters Laboratories shows a zero flame spread and zero smoke production overall. UL engineers indicated they have never seen this level of performance from an intumescent on wood, much less a manufactured wood.
- Our NFPA 286 room burn also indicates long-term survivability on a wood substrate with zero contribution to a room fire. Our combustibility in that test approximates concrete.
- Our UBC 26.3 shows excellent thermal resistance on OSB with the cold side temperature never exceeding an average of 190°F until eventually declining and continuing to decline throughout the balance of the test period. Results on your materials would logically exceed this kind of performance since your substrate is thicker and not highly enriched with resin as are all of the specimens of OSB and plywood we tested.
- Our UBC-26.2 thermal data illustrated long-term survivability considering the obvious limitation on thermal transfer on OSB, which is substantially more vulnerable than the materials you are using. Keep in mind that these tests were focused on thermal transfer. At no point was the wood substrate ignited or even charred. We have not yet been able to generate burn through conditions for substrates as thin as ½", even when made of flammable substrates such as OSB.
- Review the toxicology and adhesion data forwarded to you earlier.
- Important data from a recent test is attached. It shows that the use of an exterior grade acrylic enamel increases fire resistance and thermal transfer by an additional 25% – 32%

The laboratories used in our testing program are all independent, certified, audited, and internationally accredited. Please refer to our web site to download copies of our complete test results. Our data exists in the form of UL and ASTM approved test protocols.

Your doors are thicker than the material used in our testing. Accordingly, I recommend that you apply a coating of 20 mils (dft) on all surfaces of the door and then top coat with two coats of acrylic enamel. While this is overkill, it certainly covers your needs and should resolve any doubts about the ability of your assembly to meet your requirement. Given these performance characteristics, Contego International is willing to certify the performance of our coating on your assembly for 2 hours in accordance with ASTM-E119 / UL-263 time/temperature curves.

Contego has other advantages in that it is not toxic nor it is a carcinogenic material. Materials treated with Contego are noncombustible at or exceeding standards applied to any other material. Hopefully, this will help you manage your current needs since they may be time sensitive.

Sincerely yours,

**ELECTRONICALLY TRANSMITTED
SIGNATURE ON FILE**

Tony Scott
Executive Vice President,
Strategic Development
TS/fg