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FIRESTANCE PROFESSIONAL SERVICES LTD.

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International Materials Inc.
2045 Placentia Avenue
Costa Mesa, CA
92627 USA

Attention: Carleton Elliott

Re: Effect of the addition of Sure-Board® to Fire Resistance Rated Wall Assembly Designs

This letter is to address the effect of the addition of International Materials Inc. **Sure-Board® Series 200 and 200W** to fire rated wall assembly designs fire resistance rated from one to four hours.

Sure-Board® Series 200/200W Structural Panel is designed to add shear stability to wall assemblies, and is composed of a substrate square-edged panel laminated to a sheet steel with water soluble adhesive. The substrate panels for Series 200W may be 1/8-1/2 inch thick medium-density fiberboard (MDF) or magnesium oxide (MgO) board, and for Series 200 may be 1/2-3/4 inch thick fire rated gypsum wallboard or cement board, depending on the application. The sheet steel is No. 22 gauge complying with ASTM A653 SS Grade 33, with a minimum G40 hot dipped galvanized coating conforming to ASTM 924. The panel lengths vary but panel width is typically 48 inches. The product is Listed by Intertek Testing Services, the City of Los Angeles, IAPMO, ICC Evaluation Services Inc., California DSA, New York City (MEA), State of Florida, and Miami-Dade County.

For Series 200, the steel sheet is applied directly to fire rated 1/2", 5/8" or 3/4" Type X or proprietary gypsum wallboard. It replaces the first layer of fire rated gypsum wallboard when more than one layer is used on both sides of the wall assembly, or replaces the single layer of equivalent fire rated gypsum wallboard of a fire rated wall design. It can be installed on one side or both sides of a wall assembly. For Series 200W the sheet steel is applied to MDF, MgO, or cement board, it is used in addition to the gypsum wallboard or 7/8" thick cement plaster of the fire rated wall assembly, and attached directly to the studs before the wallboard is applied. It is usually applied to one side of the wall assembly.

In assessing the technical question of determining the effect of Series 200/200W on wall fire resistance, refer to Intertek Report 3197053 COQ-004 EEV dated May 3, 2010 states the following;

The primary function of the Sure-Board® steel sheets is to provide shear stability to the wall assembly, and hence improve the structural performance. In buildings required to be of non-combustible construction, Sure-Board® Series 200 is used, in buildings of combustible construction, Sure-Board® Series 200 or 200W may be used. The Series 200 steel sheet is supplied adhered to Type X or Type C gypsum wallboard or cement based sheathing for ease of application. The gypsum wallboard screws used to fasten the wallboard also fasten the steel sheets to the studs. Hence once the product is installed, the adhesive between the board and the gypsum is

no longer needed. Our test program revealed that the presence of the Series 200 and 200W steel sheet products improved fire resistance of the wall assembly. The steel tended to even out the unexposed side temperatures, and the wall assemblies tested passed the hose stream tests after the full fire exposure rating period, which is unusual for conventional gypsum wallboard assemblies. The steel sheets provided a solid barrier, and hence prevented the passage of a stream of water through the assemblies. The MDF of the 200W improved the fire resistance of the wall assemblies, as is expected according to the "Ten Rules of Fire Resistance Rating" by T.Z. Harmathy, which states that adding materials to an assembly will add fire resistance. The steel sheets also add lateral stability to reduce the ability for the studs to buckle under load, hence improving the load bearing characteristics. For these reasons, the addition of Sure-Board® products described should not reduce the fire resistance of the assemblies described in the Gypsum Association Fire Resistance Design Manual.

Conclusion

Firestance Professional Services Ltd. is in complete agreement with the above assessment provided by Intertek of the performance of International Materials Inc. Sure-Board® Series 200/200W structural panels, based on review of the fire test reports. The Sure-Board® Series 200 can be used in place of a layer of equivalent Type X gypsum wallboard in any gypsum wallboard assembly and not reduce the fire resistance rating of the assembly. The Sure-Board® Series 200W or Series 200 can be added to any fire rated wood framed wall assembly and will not reduce the fire rating of the assembly.

Signature

Report Prepared By;

Mike van Geyn

Mike van Geyn, A.Sc.T.

Principal

Firestance Professional Services Ltd.

Appendix

Referenced Documents

- The International Building Code (IBC) 2012
- The California Building Code (CBC) 2012
- The National Building Code of Canada (NBC) 2015
- ASTM E2032 “Standard Guide for Extension of Data from Fire Endurance Tests”
- ASTM E-119-08a “Standard Methods for Fire Tests of Building Construction and Materials”
- NFPA 251-2006 “Standard Methods of Tests of Fire Endurance of Building Materials”
- ANSI/UL 263 “Fire Tests of Building Construction and Materials”
- T.Z. Harmathy “Ten Rules of Fire Resistance Rating” Fire Tech., 1. P93 (1965)
- Intertek Test Report Number WHI 495 1687 dated 8/19/2002
- Intertek Test Report Number WHI 495 PSV 1590 dated 8/19/2002
- Intertek Test Report Number 3056688(a) and 3056688(b) dated May 2006
- Intertek Test Report Number 3101556-001 and 002 dated November 30, 2006
- Intertek Test Report Number 3197053COQ-004 EEV dated May 3, 2010
- City of Los Angeles Research Report RR 25576 (CSI # 06050) Wood Walls

Firestance Professional Services Ltd. – Qualifications and Experience

Mike van Geyn, A.Sc.T. , Principal, Firestance Professional Services Ltd. - My qualifications include professional registration as an Applied Science Technologist, Mechanical Engineering Discipline. My experience consists of thirty years of conformity assessment, product certification, and fire testing experience acquired when working with Intertek Testing Services, a large International testing agency. For twenty years I was the manager of the fire laboratory, and in this position personally conducted hundreds of wall assembly, firestop assembly and fire door test fire tests. I worked on dozens of manufactured wood product floor/ceiling assembly and wall assembly testing and certification projects, and was the agency expert on fire resistance of manufactured wood products. The National Fire Protection Research Foundation Fire Door Fire Test Project was awarded to my laboratory in 1994. I am personally familiar with the testing conducted for International Materials Inc., having conducted and witnessed all of the tests performed in the Coquitlam, BC laboratory during my tenure. To stay current, I participate in standards writing committees including the ASTM E-05 fire testing technical committee.