



AIR & VAPOR BARRIER

Thick vs. Thin *Glass-Faced Gypsum Sheathing*

Introduction

Fluid-applied membranes have been specified in commercial construction for many years as air barriers, vapor barriers and water-resistive barriers in wall assemblies. Unlike mechanically attached sheets, they provide improved air and water tightness, full adhesion to the substrate, monolithic installation, and sealing around brick ties and fasteners. Their manufacturers specify installation at many different mil thicknesses, which affect many properties of the installed system, including effective substrate coverage and the continuity of the air barrier assembly.

Specifiers of roofing systems and traffic coatings would not classify systems of different thickness as equals. Yet fluid-applied membrane air barriers, whose specified mil thickness varies between 8 mils and 120 mils, are often placed in the same specification and classified as equal. In spite of the emergence of thin mil systems, the most commonly specified dry film thickness of fluid-applied membrane products is 40 mils. This matches the thickness of self-adhering roofing underlayments and self-adhering air/vapor barrier membranes, both of which have a very good track record of providing effective waterproofing in their respective applications.

The Comparison

Carlisle Coatings & Waterproofing Incorporated (CCW) made a side-by-side comparison of two coatings. The objective was to observe the effects that mil thickness has on coverage and continuity when applied to glass-faced gypsum sheathing. Coatings A and B are recommended at drastically different mil thicknesses on gypsum sheathing. The approach taken with Coating A is to provide a minimum 40-mil membrane over all surfaces and details. The approach taken with Coating B is to provide robust details at joints and penetrations, and to cover these and the surfaces with a very thin (8 mil dry) coating. The first, Coating A, has a manufacturer-specified thickness of 60 wet mils. Coating B, the second, has a manufacturer-specified thickness of 10 wet mils.

Coating A

60 wet mils



Coating B

10 wet mils



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Testing

Coating A – The manufacturer specified a minimum coverage of 60 wet mils. The coating was applied horizontally with overlapping passes and then vertically, evenly dispensing a wet mil thickness measuring between 60 and 65 mils.

Coating B – The manufacturer specified a minimum coverage of 10 wet mils. This coating was applied the same way as the first, horizontally with overlapping passes and then vertically. An even coating was achieved with a wet mil thickness measuring 10 mils.

Conclusions

From this test, it was observed that a thin coating application does indeed cover the glass facing; however, surface imperfections such as screw heads and flashing terminations prevent uniform coverage. These areas require additional detailing. Subsequent application of a coating adds the benefit of a monolithic shield, allowing the details to blend into the membrane. A 40-mil dry coating (Coating A) provides this benefit, even over flush-driven screws, self-adhering flashings and caulked joints. Where an 8-mil coating (Coating B) is used, terminations of details remain defined, and additional detailing is needed to seal every screw, brick tie and flashing termination.

Coating A – Assembly

