



Technical Bulletin

5.4.1.3
May 2002

Fastening Finish Materials to the Arxx Web



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Substantiating Data for Direct Fastening to Arxx Walls

Canadian Code Evaluation:

Section **9.27.** of the National Building Code of Canada (NBC) prescribes the requirements for exterior cladding materials and the methods of fastening those materials to the exterior of a building. More specifically, Table **9.27.5.4.** (forming part of Sentence **9.27.5.4.(1).**) prescribes the minimum size and spacing of fasteners to be used for the application of various types of finishes to wood framing. Additionally, Section **9.29.** of the NBC prescribes the requirements for interior finish materials. More specifically, Subsection **9.29.5.** outlines the requirements for Gypsum Wall Board (GWB) finishes to wood framing.

In 1996, Arxx™ Building Products, contracted Bodycote Ortech (then known simply as ORTECH) to compare the pullout resistance of typical fasteners in wood framing members with various other fasteners in the Arxx webs. The results of that testing revealed that the typical fastener used for attaching cladding materials to wood frame walls provided an ultimate pullout resistance of 79 – 108 pounds. By comparison, the typical fasteners used for the application of the same finish materials to Arxx walls via the web provided an ultimate pullout resistance of 219 – 335 pounds. The complete test report is available on request. The testing demonstrates that typical fasteners in Arxx webs provide a level of performance at least equivalent to that expected from the worst case scenario of fasteners in wood framing.

Looking at Clause **3.1.5.11.(3).(d)** we find that the EPS foamed plastic insulation used in the exterior walls of a building required to be of non-combustible construction must be protected from adjacent space in the building by a thermal barrier that, when tested in accordance with CAN/ULC S101 does not develop an average temperature rise of more than 140°C or a maximum temperature rise of 180°C at any point on its unexposed side (i.e. not exposed to the fire) within 10 minutes. In response to this requirement, Arxx has received a letter from Underwriters Laboratories of Canada (ULC) demonstrating that gypsum wallboard secured directly to the webs of the Arxx forms successfully met the requirements of CAN/ULC S101 as tested and as required by the NBC. A copy of the letter is available on request. We also find from Sentence **3.1.5.11.(4).** that the interior walls are permitted to use Arxx forms provided they are protected in accordance with **3.1.5.11.(2).** or **3.1.5.11.(4).(a),(b),(c), or (d).**

Finally, Clauses **9.10.16.10.(1).(b).** and **3.1.4.2.(1).(c).** of the NBC allow the use of any thermal barrier that meets the requirements of **3.1.5.11.(2).(e).** to be used as a protective cover for foamed plastic insulation in buildings required to be of either combustible or non-combustible construction. Clause **3.1.5.11.(2).(e).** of the NBC requires that the thermal barrier must be tested in accordance with CAN4-S124 and meet the requirements of Classification B. In 1996, Arxx contracted Bodycote Ortech (then known simply as ORTECH) to complete testing of GWB fastened directly to the webs in the Arxx wall in accordance with CAN4-S124. The testing resulted in data exceeding the requirements of Classification A. Copies of the test report are available on request. Incidentally, Clause **3.1.4.2.(1).(a).** also allows the use of any interior finish described in Subsections **9.29.4.** to **9.29.9.** which includes GWB.

Questions regarding any of the above information or requests for test reports should be directed to the Technical Services Department at Arxx Building Products by calling (800) 293-3210 or by faxing (905) 373-8301.

Test Results:

The following Table 1 is part of the 'Bodycote Ortech' testing document* conclusions for 'Fastener Withdrawal Evaluation for Arxx Building Products' -

5.0 Conclusions:

The following table is based on the results of 'ambient' temperature testing for 'pull-out' and 'shear' forces from Standard 6" (160 mm) Core Arxx™ Wallsystem Forms. (Forces listed in descending value of average 'Pull-Out').

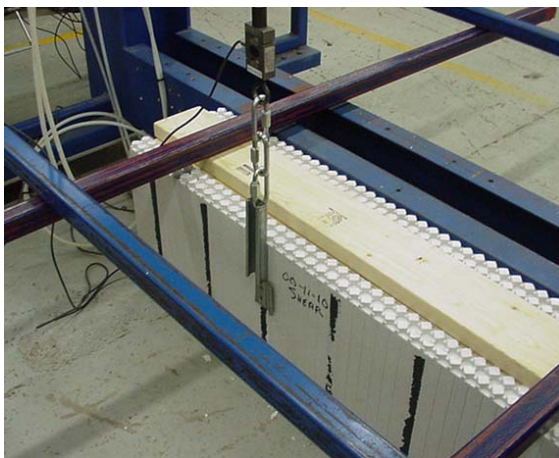
Table 1

Fastener Description	Pull Out Results				Shear Results			
	Med.	Avg.	Max.	Min.	Med.	Avg.	Max.	Min.
#10 x 1 ½" 'Pan Head' Self-Tapping Screw	288	305	640	200	514	516	770	390
#10 x 1 ¼" 'Hex head' Sheet Metal screw	285	290	362	230	460	447	505	326
#8 x 1 ½" 'Pan Head' Self-Tapping Screw	258	284	550	175	427	428	454	398
#10 x 1 ¼" 'Pk. Hd' Self-Tapping Screw	275	276	315	220	544	555	681	458
#6 x 1 ½" 'Pan Head' Self-Tapping Screw	233	260	510	175	344	358	521	292
#10 x 1 ¼" 'Bugle Head' 'Hi-Lo' Screw	262	249	296	183	489	487	525	446
#6 x 1 ¼" 'Bugle Hd.' Drywall Screw (15 tpi)	212	210	240	179	352	349	422	264

See picture of test screws on next page.

* Full copy of this test report is available upon request.

Bodycote Ortech Test Set-Up for Arxx



Shear Test



Pull-Out Test

Test Screws per Table 1 :

