



INTERTEK REPORT No.: 3082376

REPORT ON WITNESS TESTING

OF

GYP-FAST NAILS

USED IN THE CONSTRUCTION

OF

STEEL STUD WALL PANELS

BASED ON

ASTM E 330-02

STANDARD TEST METHODS FOR STRUCTURAL PERFORMANCE OF EXTERIOR
WINDOWS, DOORS, SKYLIGHTS AND CURTAIN WALLS BY UNIFORM STATIC AIR
PRESSURE

FOR

ITW BUILDEX
1349 WEST BRYN MAWR AVE.
ITASCA, IL 60134

BY

INTERTEK TESTING SERVICES NA, INC.
8431 MURPHY DR.
MIDDLETON, WI 53562

TEST DATES: NOVEMBER 29 & 30
DECEMBER 13, 20 and 21, 2005
REPORT DATE: DECEMBER 26, 2005

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INTRODUCTION

Intertek Testing Services NA Inc., of Middleton, Wisconsin witnessed tests performed at the ITW Buildex plant in Itasca, IL. Rick Armstrong, Technical Projects Manager for Intertek witnessed and participated in the testing. This report gives the results of the evaluation of the provided samples. The test results described in this report are limited to the submitted items.

SPECIMEN DESCRIPTION

The ITW Buildex part number 2743910 Gyp-Fast fastener was used to fasten the various sheathing to the steel stud framing. The nail is 1-1/2" in length, 0.140-inch in diameter and has a 5/16-inch bugle head. The nails were driven with a power driver.

OBJECTIVE

The objective of these tests is to compare the holding ability of the Gyp-Fast power driven nail in various gauges of steel studs using different sheathing materials. The stud gauges used were 20, 16, 14 and 12 gauges with the intention of interpolating the numbers for the 18 gauge steel studs.

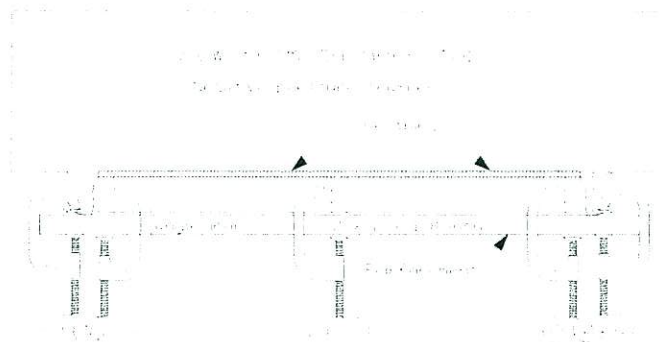
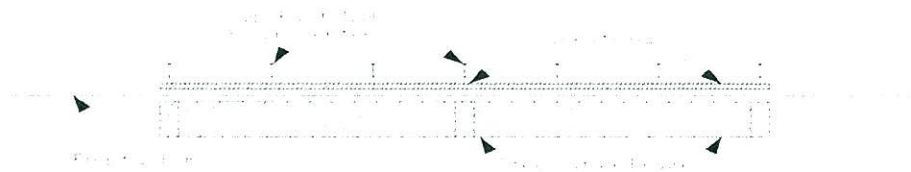
The sheathings used were:

- A) 1/2-inch Georgia Pacific Densglass Gold Type X
- B) 5/8-inch Georgia Pacific Densglass Gold Type X
- C) 1/2-inch USG Fiberock
- D) 1/2-inch USG Sheetrock Brand Firecode Core Type X
- E) 5/8-inch USG Sheetrock Brand Firecode Core Type X

(The A through E designation was used to identify the sheathing on the data pages.)

PROCEDURES

All tests performed used the same basic set-up: A 4-foot by 8-foot wall panel was constructed using steel studs and exterior sheathing. The studs were set at 24-inches on center and the sheathing was fastened vertically with the ITW Buildex Gyp-Fast nail spaced 8-inches on center to the studs and the top and bottom channels. While being built, a sheet of plastic was laid down onto the studs to facilitate loading. The sheet of plastic sealed the chamber from leakage around the panel. These panels were then mounted, sheathing side in, to the test chamber and loaded using static air pressure difference. Loading was such that the nails retaining the sheathing were under tension. Once the panel was mounted into the chamber measures were taken to reduce the amount of deflection in the studs by placing a steel 2 x 2 x 0.1875" angle iron across the wall and clamped to the studs. This steel reinforcement as well as the objective of the testing made taking of deflections moot.



Once the panel was mounted and sealed to the chamber, an initial load of three inches of water column was placed on the panel to seat it into the chamber. This load was held for 10 seconds before releasing. Additional loading was accomplished in increments of two inches of water column. Each load was held for 10 seconds and released to zero for a period of approximately one-minute. If the panel attained 12" WC, it was then loaded until failure. Pressure readings were taken with a slack tube manometer calibrated for use with manometer oil with a specific gravity of 0.826.

After the initial tests using 20 ga. studs, it was discovered that the studs sent from the supplier were interior strength studs measuring approximately 0.034-inch or less in thickness. These tests are numbered 13 through 24. The correct stud for exterior walls is called a structural 20 ga. stud and measures approximately 0.038-inch thick or slightly greater. Additional tests were done on all sheathing types using the structural gauge steel stud. The following table contains the entire test series data. The 20 ga. studs are differentiated by either "light" or "structural" following the gauge number.

Sheathing:

- A Georgia Pacific 1/2" Densglass Gold Type X**
- B Georgia Pacific 5/8" Densglass Gold Type X**
- C USG 1/2" Fiberock**
- D USG 1/2" Sheetrock brand Firecode Core Type X**
- E USG 5/8" Sheetrock brand Firecode Core Type X**

Test Date:	Stud gauge	Sheathing	Test #	Load at break (in. WC)	Load lbs/ft ²	Average lbs/ft ²
11/29/2005	16	A	1	5.4	28.09	33.98
	16	A	2	7.2	37.45	
	16	A	3	7	36.41	
11/29/2005	16	C	4	18.4	95.70	90.15
	16	C	5	17.2	89.46	
	16	C	6	16.4	85.30	
11/30/2005	16	D	7	6.6	34.33	34.67
	16	D	8	6.6	34.33	
	16	D	9	6.8	35.37	
11/30/2005	16	E	10	11	57.21	58.25
	16	E	11	11	57.21	
	16	E	12	11.6	60.33	
11/30/2005	20 light	B	13	5	26.01	33.63
	20 light	B	14	7	36.41	
12/1/2005	20 light	B	24	7.4	38.49	33.63
11/30/2005	20 light	A	15	5.6	29.13	35.71
	20 light	A	16	7.8	40.57	
	20 light	A	17	7.2	37.45	
12/1/2005	20 light	D	18	7	36.41	26.35
	20 light	D	19	3	15.60	
	20 light	D	20	5.2	27.05	
12/1/2005	20 light	E	21	10	52.01	46.12
	20 light	E	22	8	41.61	
	20 light	E	23	8.6	44.73	

Test Date:	Stud gauge	Sheathing	Test #	Load at break (in. WC)	Load lbs/ft ²	Average lbs/ft ²
12/13/2005	14	B	25	14.8	76.98	71.77
	14	B	26	11.6	60.33	
	14	B	27	15	78.02	
12/13/2005	14	E	28	13.6	70.73	69.00
	14	E	29	12	62.41	
	14	E	30	14.2	73.85	
12/13/2005	14	D	31	8	41.61	40.22
	14	D	32	7.2	37.45	
	14	D	33	8	41.61	
12/13/2005	14	C	34	23.2	120.66	115.12
	14	C	35	22.8	118.58	
	14	C	36	20.4	106.10	
12/13/2005	14	A	37	9.4	48.89	54.09
	14	A	38	10	52.01	
	14	A	39	11.8	61.37	
12/13/2005	12	C	40	16.4	85.30	105.41
	12	C	41	21.2	110.26	
	12	C	42	23.2	120.66	
12/20/2005	12	D	43	7.6	39.53	41.95
	12	D	44	8.6	44.73	
	12	D	45	8	41.61	
12/20/2005	12	E	46	10	52.01	55.13
	12	E	47	11.2	58.25	
	12	E	48	10.6	55.13	
12/20/2005	12	A	49	4	20.80	19.07
	12	A	50	4	20.80	
	12	A	51	3	15.60	
12/20/2005	20 structural	E	52	11.2	58.25	56.86
	20 structural	E	53	10.6	55.13	
	20 structural	E	54	11	57.21	
12/20/2005	12	B	55	15.8	82.18	76.98
	12	B	56	13.2	68.65	
	12	B	57	15.4	80.10	
12/20/2005	20 structural	D	58	7.6	39.53	38.83
	20 structural	D	59	7.2	37.45	
	20 structural	D	60	7.6	39.53	

Test Date:	Stud gauge	Sheathing	Test #	Load at break (in. WC)	Load lbs/ft ²	Average lbs/ft ²
	20 structural	C	62	16.4	85.30	
	20 structural	C	63	18.4	95.70	88.76
12/21/2005	20 structural	B	64	12.4	64.49	
	20 structural	B	65	15.4	80.10	
	20 structural	B	66	13	67.61	70.73
12/21/2005	20 structural	A	67	10.2	53.05	
	20 structural	A	68	11.6	60.33	
	20 structural	A	69	10	52.01	55.13

Data Sorted by Sheathing

Sheathing A Georgia Pacific 1/2" Densglass Gold Type X

Test Date:	Stud gauge	Sheathing	Test #	Load at break (in. WC)	Load lbs/ft ²	Average lbs/ft ²
11/29/05	16	A	1	5.4	28.09	
	16	A	2	7.2	37.45	
	16	A	3	7	36.41	33.98
12/13/05	14	A	37	9.4	48.89	
	14	A	38	10	52.01	
	14	A	39	11.8	61.37	54.09
12/20/05	12	A	49	4	20.80	
	12	A	50	4	20.80	
	12	A	51	3	15.60	19.07
12/21/05	20 structural	A	67	10.2	53.05	
	20 structural	A	68	11.6	60.33	
	20 structural	A	69	10	52.01	55.13
Average					40.57	
Stdev.					15.54	

Sheathing B Georgia Pacific 5/8" Densglass Gold Type X

Test Date:	Stud gauge	Sheathing	Test #	Load at break (in. WC)	Load lbs/ft ²	Average lbs/ft ²
12/13/05	14	B	25	14.8	76.98	71.77
	14	B	26	11.6	60.33	
	14	B	27	15	78.02	
12/20/05	12	B	55	15.8	82.18	76.98
	12	B	56	13.2	68.65	
	12	B	57	15.4	80.10	
12/21/05	20 structural	B	64	12.4	64.49	70.73
	20 structural	B	65	15.4	80.10	
	20 structural	B	66	13	67.61	
Average					73.16	
Stdev.					7.95603	

Sheathing C USG 1/2" Fiberock

Test Date:	Stud gauge	Sheathing	Test #	Load at break (in. WC)	Load lbs/ft ²	Average lbs/ft ²
11/29/05	16	C	4	18.4	95.70	90.15
	16	C	5	17.2	89.46	
	16	C	6	16.4	85.30	
12/13/05	14	C	34	23.2	120.66	115.12
	14	C	35	22.8	118.58	
	14	C	36	20.4	106.10	
12/13/05	12	C	40	16.4	85.30	105.41
	12	C	41	21.2	110.26	
	12	C	42	23.2	120.66	
12/21/05	20 structural	C	61	16.4	85.30	88.76
	20 structural	C	62	16.4	85.30	
	20 structural	C	63	18.4	95.70	
Average					99.86	
Stdev.					14.63	

Sheathing D USG 1/2" Sheetrock brand Firecode Core Type X

Test Date:	Stud gauge	Sheathing	Test #	Load at break (in. WC)	Load lbs/ft ²	Average lbs/ft ²
11/30/05	16	D	7	6.6	34.33	34.67
	16	D	8	6.6	34.33	
	16	D	9	6.8	35.37	
12/13/05	14	D	31	8	41.61	40.22
	14	D	32	7.2	37.45	
	14	D	33	8	41.61	
12/20/05	12	D	43	7.6	39.53	41.95
	12	D	44	8.6	44.73	
	12	D	45	8	41.61	
12/20/05	20 structural	D	58	7.6	39.53	38.83
	20 structural	D	59	7.2	37.45	
	20 structural	D	60	7.6	39.53	
Average					38.92	
Stdev.					3.24	

Sheathing E USG 5/8" Sheetrock brand Firecode Core Type X

Test Date:	Stud gauge	Sheathing	Test #	Load at break (in. WC)	Load lbs/ft ²	Average lbs/ft ²
11/30/05	16	E	10	11	57.21	58.25
	16	E	11	11	57.21	
	16	E	12	11.6	60.33	
12/13/05	14	E	28	13.6	70.73	69.00
	14	E	29	12	62.41	
	14	E	30	14.2	73.85	
12/20/05	12	E	46	10	52.01	55.13
	12	E	47	11.2	58.25	
	12	E	48	10.6	55.13	
12/20/05	20 structural	E	52	11.2	58.25	56.86
	20 structural	E	53	10.6	55.13	
	20 structural	E	54	11	57.21	
Average					59.81	
Stdev.					6.42	