



Testing & Listing
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Field Labeling

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GL 108311

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FIRE TEST REPORT: In-Ceiling Speaker Back Box, BB6C, in a Wood Joist, O.S.B. Floor and Gypsum Wallboard Floor/Ceiling Assembly

CLIENT: B&W Group Ltd.
Dale Road, Worthing
West Sussex BN11 2BH
United Kingdom

MODEL, NAME & NUMBER: BB6C Back Box

STANDARDS TESTED TO: ASTM E-119 Floor/Ceiling, NFPA 251,
Small Scale Test

REPORT NO: GL 108311

REPORT DATE: 11/18/11

TEST DATE: November 4, 2011

TEST RESULTS: 1 Hour Fire Rating.

REPORT PREPARED BY: GUARDIAN FIRE TESTING LABORATORIES, INC.
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Abstract

This report describes the results when a B&W Group in-ceiling speaker back box Model BB6C achieved a 1 hour fire rating. It was tested in a wood floor joist, 3/4" O.S.B. floor and 5/8" type SCX gypsum wallboard assembly. There was no load on the assembly. The back box is the only item being tested in the assembly.

The test criterion was: the length of time the back box assembly would endure before a flame-through would appear on the unexposed surface, or the unexposed surface temperatures exceeded 250°F plus ambient temperature.

The test standards used were: ASTM E-119 and NFPA 251.

The test was terminated at 61 minutes. There was no unexposed surface burn-through.

The highest unexposed surface temperature above the back box area was 131°F, with an allowable limit of 314°F.

The back box was exposed directly to the furnace heat through an 8" diameter opening in the gypsum wallboard, directly beneath the center of the back box. The floor Joists and the O.S.B. board directly adjacent to the back box were not scorched.

The rubber grommet in the cable porthole did not ignite.

1. **General**

- 1.1 Units of measurement used in this test are English: inches, feet and Fahrenheit.
- 1.2 The testing was conducted by Guardian Fire Testing Laboratories personnel at Guardian's Fire Testing Laboratory at 480 Hinman Ave., Buffalo, NY. The assembly was constructed by Guardian personnel.
- 1.3 Guardian is an ISO 17025-2005 accredited fire testing laboratory.

2. **Performance**

This report presents the results of the floor/closed ceiling assembly fire test conducted according to ASTM E-119. This report contains a description of the material evaluated, procedures used and the test results. The results listed apply only to the specimens tested, in the manner tested.

2.1 **Construction**

The test assembly was constructed using the following materials, which were purchased at Home Depot:

- a. floor joist-- 2" x 10" nominal, 1-1/2" x 9-1/4" actual, white pine joists purchased in 8 foot lengths;
- b. floor--3/4" oriented strand board, tongue and groove, 4 feet by 4 feet;
- c. All plywood underlay on top of the o.s.b;
- d. Model BB6C Back Box was installed in the joist cavity nailed to the bottom of the joists with 1 1/4" roofing nails;
- e. 2 layers of 5/8" type SCX gypsum wallboard was screwed with 2" screws and 8d coated sinker nails;
- f. an 8" diameter hole was cut in the wallboard center under the back box;
- g. The back box has a cable porthole with a rubber grommet in it and is protected with the ceramic fiber insulation inside the box.

2.2 **Assembling**

- 2.2a Joists were spaced 16" on center and nailed to the rim header with 10d common nails.
- 2.2b The o.s.b. was placed on top of the joists, and it was nailed with 6d coated nails spaced 8" on center. The test assembly was 4 feet x 4 feet.
- 2.2c The 1/4" underlay plywood was nailed to the o.s.b with 6" sinker nails.
- 2.2d 5/8" type SCX gypsum wallboard was screwed and nail fastened to the 2 x 10 joists. The coating was allowed to dry for 6 days at 60 F temperature.
- 2.2e A 1/4" bead of fire caulk was applied to the bottom of the vertical section of the box.

3. **Fire Endurance Test**

- 3.1 The ASTM E-119 horizontal furnace was used for the fire endurance test.
- 3.2 Nine unexposed side thermocouples were used: 5 at the center and 1/3 points and 4 at the Back Box area.
- 3.3 The test unit was placed on the top surface of the horizontal furnace.
- 3.4 The furnace was ignited, and the temperature curve was followed
- 3.5 The furnace was shut off at 61 minutes.
- 3.6 The unit was left attached to the furnace to cool down.
- 3.7 Test observations are attached to this report.
- 3.8 Visual records, test photos are attached to this report.
- 3.9 Furnace temperatures are attached.

4. Conclusion

The B&W Group BB6C back box met the criteria of the fire test standard for a 1 hour fire endurance rating.

The BB6C Back Box protected the OSB sub flooring and adjacent floor joist from igniting in the 1 hour period with the 8 inch diameter hole in the gypsum wallboard centered below it.

The fire caulk did not get hot enough to intumesce.

The rubber grommet in the cable porthole did not ignite.

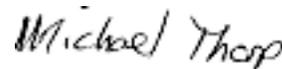
This BB6C Back Box is eligible for listing and labeling if desired by the client.

Test performed and reported by:



R. Joseph Pearson
Fire Testing Engineer

Test Witnessed By:



Michael Thorp
Laboratory Technician

Uncertainty Measurement in Guardian's fire testing is less than 1% as per ASTM E 2536-06.

This test is accredited and meets the requirements of ISO/IEC 17025 as verified by ANSI/ASQ National Accreditation Board/ACLASS. Refer to certificate and scope of accreditation Report AT1247.

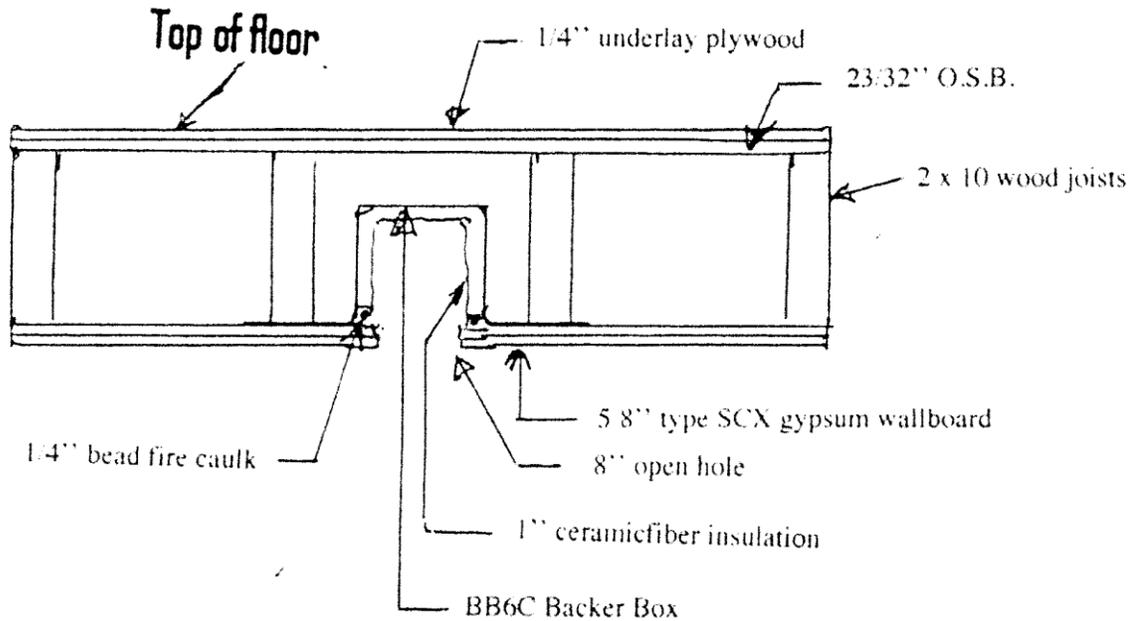
Guardian also is accredited as an Inspection Agency per ISO 17020 through ANSI/ASQ National Accreditation Board/ACLASS, Report 1547.

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The laboratory's test report does not constitute or imply product certification, approval or endorsement by this laboratory.

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TEST DRAWING: A CEILING/FLOOR ASSEMBLY WITH SOUND BACKER BOX



Note: The USG 5/8" Type SCX gypsum wallboard was manufactured in Oakfield, NY, using mined gypsum rock. This is a high performing, fire rated, gypsum wallboard product.

Furnace Temperatures °F

Thermocouples

Minutes/seconds	1	2	3	4	5
0	61	56	57	58	58
5	64	859	816	1063	875
10	66	1232	1071	1264	1154
15	66	1347	1199	1335	1308
20	67	1331	1293	1415	1442
25	66	1371	1338	1466	1482
30	68	1403	1381	1511	1520
35	69	1404	1404	1501	1527
40	69	1454	1434	1524	1559
45	67	1455	1454	1528	1568
50	70	1463	1466	1545	1591
55	69	1476	1498	1553	1602
59:30	69	1486	1481	1557	1592
60	70	1485	1491	1556	1588

Gas off- 61 minutes
Data recorded as per ASTM E-119-10b
Data recorder calibrated 7/13/2011

Test observations:

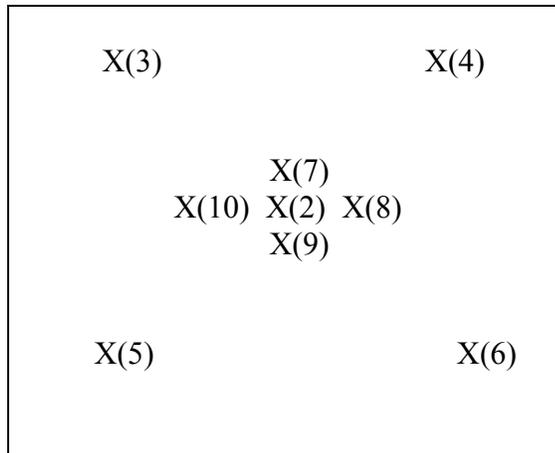
No notable surface changes occurred during the entire test period.

It was possible to place a bare hand, periodically, on the unexposed surface of the test sample.

**B&W Group Back Box, BB6C
Unexposed Surface Temperatures °F**

	Thermocouples										Average Temp.
Min	1	2	3	4	5	6	7	8	9	10	Avg 2-10
0	59	57	57	58	57	58	57	56	55	56	57
5	60	62	60	61	64	67	60	61	63	61	62
10	62	68	63	64	71	74	64	66	70	66	67
15	62	71	65	66	75	79	65	70	75	70	71
20	63	72	68	69	80	84	68	74	79	74	75
25	63	82	73	73	85	90	71	78	82	78	79
30	64	96	80	81	93	98	79	90	91	89	89
35	64	104	84	85	98	104	83	95	95	94	94
40	65	112	88	88	103	108	86	100	100	99	98
45	65	117	90	91	106	111	89	104	102	103	101
50	65	118	91	92	106	112	90	105	103	104	102
55	64	125	95	95	110	115	94	109	107	108	106
59:31	65	130	98	98	113	118	97	114	111	113	110
60	64	131	98	98	113	118	98	114	111	113	110

Data recorded as per ASTM E-119-10b
Data recorder calibrated 7/13/2011
T/C Schematic. The X denotes T/C locations.



BB6C Back Box
As Received

Floor Joists & 3/4" OSB
Flooring On End



3/4" OSB Sub-floor



1/4" plywood underlay on sub-floor



Corner of Assembly



Back Box Installed showing overhead clearance



8" Diameter Opening In Wallboard @ Center of Box



Test Start: Gas On



15:00: no change on unexposed side



30:00: no change on unexposed



45:00: no emissions



46:00: no change on unexposed side



58:00: no change on unexposed side; less than 160°F touchable

60:00: no change on exposed side



Unexposed surface after 1 hour test



Back Box insulation
still intact



Joists & sub floor not charred after 1 hour test



Grommet From Cable Hole Not Burned



Back Box Removed—No char on floor assembly