



## BASF HP+™ Wall System - FR Series

DD No. 1704-03

### BASF Corporation

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#### 1. General Notes:

- 1.1. BASF HP+™ Wall System - FR Series, utilizes WALLTITE® HP+ closed cell spray polyurethane foam in 24" o.c. stud cavities with 5/8" GP Densglass sheathing for use in buildings constructed in accordance with the *IRC* for light-frame steel construction and the *IBC* for Type V light-frame construction.
- 1.2. BASF HP+™ Wall System - FR Series, is used to provide:
  - 1.2.1. Lateral load resistance (wind and seismic).
  - 1.2.2. Transverse load resistance (positive and negative wind pressure).
  - 1.2.3. Resistance to uplift and gravity loads in single top plate applications.

#### 2. Conditions of Use

- 2.1. BASF HP+™ Wall System - FR Series, shall only be used with WALLTITE® HP+
- 2.2. When not used as wall bracing, walls shall be braced by other materials in accordance with the applicable code.
- 2.3. Shear, axial and transverse loads shall not exceed those shown in the table below.
- 2.4. All panel edges shall be supported by wall framing or solid blocking a minimum of 2" (51 mm) nominal thickness in the least dimension.
- 2.5. Refer to the quality assurance (QC) procedures and installation manual for construction means and methods support.
- 2.6. Contact BASF for additional information regarding means and methods

#### 3. Fire Performance

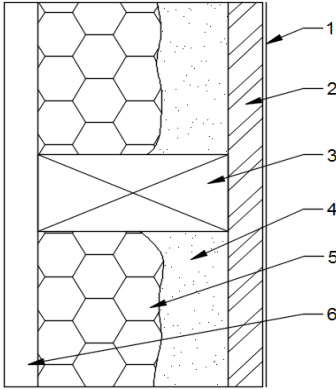
- 3.1. BASF HP+™ Wall System - FR Series has been tested and approved for use in a one-hour fire rated assembly. For complete construction details, See [UL Directory, Design No. V306](#).
- 3.2. BASF HP+™ Wall System - FR Series has been tested and approved for use in a *NFPA 285* assembly. For complete construction details, See [UL Directory, Design No. FWFO.EWS0025](#).

When provided, the seal on this design drawing indicates acceptance of professional engineering responsibility solely for the component(s) depicted. The design assumptions, loading conditions, suitability and use of this component for any particular building is the responsibility of the building designer or owner of the components, per *ANSI/TPI 1*. The responsibilities and duties of the component designer, component design engineer and component manufacturer shall be in accordance with the latest edition of *ANSI/TPI 1* Chapter 2 unless otherwise defined by a contract agreed upon by the parties involved.

## DrJ Design Detail

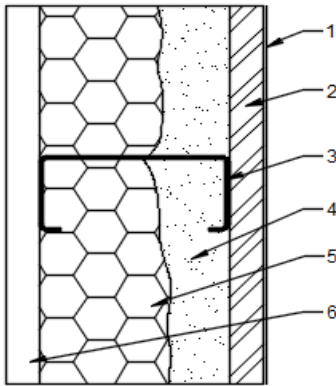
### 4. Installation

- 4.1. BASF HP+™ Wall System - FR Series, shall be installed in accordance with the manufacturer's published installation instructions and this design detail. In the event of conflict between the manufacturer's installation instructions and this Design Detail, the more restrictive shall govern.
- 4.2. BASF HP+™ Wall System - FR Series, shall be installed in a workmanlike manner subject to industry-accepted tolerances. WALLTITE® HP+ spray foam applicator must be BASF Quality Assurance Training Program certified.



#### Wood Stud Assembly

- 1 Water Resistant Barrier
- 2 5/8" Type X exterior gypsum panels fastened with 1-5/8" Type S screws at 8" o.c. at panel edges and 8" at intermediate framing members
- 3 Minimum 2x4 wood framed wall with studs spaced 24" o.c., single or double top plate
- 4 3/4", 1", or 1-1/2" BASF Walltite® Closed Cell Spray Foam
- 5 Cavity insulation, as required
- 6 Interior Gypsum wall board fastened with #6 type W or S screws 1 1/4" long spaced 16" o.c. at panel edges and in the field



#### Steel Stud Assembly

- 1 Water Resistant Barrier
- 2 5/8" Fire-Rated exterior gypsum panels fastened with 1-5/8" Type S screws at 8" o.c. at panel edges and 8" at intermediate framing members
- 3 Minimum 33 mil, 2x4 nominal size steel wall with studs spaced 24" o.c., single top plate
- 4 3/4", 1", or 1-1/2" BASF Walltite® Closed Cell Spray Foam
- 5 Cavity insulation, as required
- 6 Interior Gypsum wall board fastened with #6 type W or S screws 1 1/4" long spaced 16" o.c. at panel edges and in the field.

## DrJ Design Detail

BASF HP+™ Wall System - FR Series. – Design Values									
Assembly		Lateral					Transverse <sup>4</sup>		
		Wind	Seismic <sup>5</sup>				Positive & Negative Pressure <sup>7</sup>	Components & Cladding Basic Wind Speed (Vult)	
		Allowable Unit Shear <sup>1</sup>	Allowable Unit Shear <sup>6</sup>	Apparent Shear Stiffness, G <sub>a</sub>	Response Modification Factor, R <sup>2</sup>	System Overstrength Factor, Ω <sub>0</sub>			Deflection Amplification Coefficient, C <sub>d</sub> <sup>3</sup>
		(plf)	(plf)	(kips/in.)	---	---			---
Wood	GWB & 3/4" WALLTITE® HP+	400	280	16	-	-	-	-	
	GWB & 1" WALLTITE® HP+	400	280	16	-	-	-	-	
	GWB & 1-1/2" WALLTITE® HP+	470	0	16	6.5	3	4	115 220	
Steel	GWB & 3/4" WALLTITE® HP+	400	275	13	-	-	-	-	
	GWB & 1" WALLTITE® HP+	400	275	13	-	-	-	-	
	GWB & 1-1/2" WALLTITE® HP+	465	0	13	6.5	3	4	-	

1. Maximum fastener size and spacing are as shown on the assembly information above with a minimum panel edge distance of 3/8". Sheathing shall have joints butted at framing members and a single row of fasteners must be applied to each panel edge into the stud below.  
 2. Response modification coefficient, R, for use throughout ASCE 7. Note R reduces forces to a strength level, not an allowable stress level.  
 3. Deflection amplification factor C<sub>d</sub>, for use with ASCE 7 Section 12.8.6, 12.8.7, and 12.9.2.  
 4. The ASD allowable uniform load capacities shown are the ultimate average pressure divided by an ASD reduction factor of 1.6 Allowable wind speeds are based on the following: Mean roof height 30', Exposure B, 10 sq. ft. effective wind area, corner zone 5.  
 5. Building heights limited to 65 feet in accordance with ASCE 7, Table 12.2-1 in Seismic Design Categories D, E and F.  
 6. Allowable unit shear capacity is based on a safety factor of 2.5, in accordance with ASCE 7-10 Chapter 12.  
 7. Negative wind pressure per Technical Guide: DensGlass® Sheathing published by Georgia-Pacific Gypsum, LLC.

### 5. Prescriptive IRC Bracing Applications – Equivalency Factors

- 5.1. BASF HP+™ Wall System - FR Series may be used to brace walls of buildings as an alternative to the Continuous Wall Bracing provisions of [IRC Section R602.10.4](#), when installed in accordance with this Design Detail.
- 5.2. Required braced wall panel lengths for BASF HP+™ Wall System - FR Series shall be as determined by [IRC Table R602.10.3\(1\)](#) and [R602.10.3\(3\)](#)<sup>1</sup>, including all footnotes. Bracing lengths in these tables for Method CS-WSP shall be multiplied by the equivalency factor listed in [Table 2](#).

Wall Assembly <sup>3</sup>		Interior Gypsum Sheathing (16:16)	Maximum Stud Spacing (in.)	Fastener <sup>1</sup>	Fastener Spacing	Wind
						SPF Framing
						BASF HP+™ Wall System - FR Series Tested Equivalency Factors to IRC CS-WSP <sup>2</sup>
Wood	GWB & 3/4" WALLTITE® HP+	Yes	24" o.c.	1-5/8" Type S Screws	8:8	0.85
	GWB & 1" WALLTITE® HP+					0.85
	GWB & 1-1/2" WALLTITE® HP+					0.72

For SI: 1" = 25.4 mm  
 1. Fastener heads shall be installed flush to the surface of the sheathing.  
 2. Multiply the bracing lengths in [IRC Table R602.10.1.2\(1\)](#) and [R602.10.1.2\(3\)](#) Method CS-WSP (continuous sheathing) as applicable, including all footnotes, by the factors shown here, to establish the required bracing length.  
 3. Valid for single or double top plate HP+™ Wall System - FR Series installations.

**Table 2:** BASF HP+™ Wall System - FR Series Braced Wall Line Length Equivalency Factors

<sup>1</sup> 2009 IRC Table R602.10.1.2(1) and R602.10.1.2(2)