TECHNICAL BULLETIN
NO. T-1
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EXTREME PANEL TECHNOLOGIES

SUBJECT: EXTREME SIPS TESTING SUMMARY

Extreme SIPs are Building Code Recognized as complying with national and local building codes that follow the International Code Council's (ICC) series of I Codes, including the International Residential Code (IRC), International Building Code (IBC), and the International Energy Conservation Code (IECC).

To provide the testing and quality control data required by the ICC for I Codes recognition and compliance, Extreme SIPs has conducted numerous tests on Structural Capacity, Fire Duration Performance, Energy/Sound values and ratings, as well as the qualification and quality control of the components and processes used in SIP manufacturing.

This Technical Bulletin provides a summary of Extreme SIPs' testing data and technical information.

STRUCTURAL						
STANDARD	ASTM E72	ICC-ES AC04	ASTM E455	ASTM E695	ASTM E2322	ASTM E2126
TEST TITLE:	STRENGTH TESTS OF PANELS FOR BUILDING CONSTRUCTION	ICC-ES SANDWICH PANEL ACCEPTANCE CRITERIA	ROOF DIAPHRAGM	RESISTANCE TO IMPACT LOADING	CONCENTRATED FLOOR LOAD	CYCLIC (REVERSED) LOAD TEST FOR SHEAR RESISTANCE OF WALLS
ALSO KNOWN AS:	ASTM E1803				IBS SECTION 1607.1	
RESULTS:	- Axial Load - Transverse Load - Racking Shear [1]See Extreme SIPS Load Charts for structural capabilities.	Extreme SIPS meet AC04 requirements [4]See Extreme SIPS ICC-ESR Evaluation Report.	Diaphragm design capacity up to 1,130 plf [1]See Extreme SIPS Load Charts for structural capabilities.	Panel supported on short ends withstood repetitive impacts to the center of 90 ft. lbs., 240 ft. lbs., and 600 ft. lbs. with no deleterious effects.	Meets 2,000 lb. concentrated floor load requirement. Floor panels successfully supported 6,000 lbs. placed on 30"x30" area at various locations on the panel and panel joints.	Shear resistance capacity up to 1,000 plf designs for seismic categories A through F.

[1, 2, 3, 4, 5, 6] SEE LAST PAGE FOR FOOTNOTES.

FIRE					
STANDARD	ASTM E84	UL 1715	ASTM E119	ASTM E119	ASTM E119
TEST TITLE:	SURFACE BURNING CHARACTERISTICS	CORNER ROOM BURN	FIRE TEST OF BUILDING CONSTRUCTION AND MATERIALS	FIRE TEST OF BUILDING CONSTRUCTION AND MATERIALS	FIRE TEST OF BUILDING CONSTRUCTION AND MATERIALS
ALSO KNOWN AS:	UL 723 NFPA 255	FM 4880 NFPA 286	UL 263 NFPA 251	UL 263 NFPA 251	UL 263 NFPA 251
RESULTS:	[3]EPS Core Flame Spread: 20 Smoke Developed: 150-300 - Interior of panel covered with ½" gypsum board - Flame Spread: 10 Smoke Development: 0	PASS Using ½" gypsum board on the interior of the Extreme SIP	20 Min. Fire Resistant wall assembly	[2]60 Min. Fire Resistant wall assemblies	[2,4]60 Min. Fire Resistant Roof/Ceiling Assembly
			½" gypsum board as interior finish	2 layers 5/8" Type X gypsum board as fire side finish. Passed 30 PSI hose stream Double 2X connection and 1 layer 5/8" Type C gypsum board as fire side finish. Passed 30 PSI hose stream	2 layers 5/8" Type X gypsum board as interior finish

COMPONENTS					
COMPONENT	OSB	ADHESIVE	ADHESIVE	EPS CORE	EPS CORE
TEST TITLE:	WOOD-BASED STRUCTURAL PANELS	ADHESIVES FOR STRUCTURAL LAMINATED WOOD PRODUCTS	SANDWICH PANEL ADHESIVES	SPECIFICATION FOR POLYSTYRENE INSULATION	TERMITE EXPOSURE
STANDARD:	DOC PS2-92 APA PR-N610	ASTM D 2559	ICC-ES AC05	ASTM C578 ICC-ES AC10	ICC-ES AC239
RESULTS:	OSB meets Exposure I - 24/16 span rating qualified as facing of structural insulated panels.	Adhesive meets strength requirements of Class 2 Type II adhesive.	Adhesive used in Extreme SIPS manufacture meets ICC-ES Acceptance Criteria for sandwich panel adhesive.	Extreme SIPS EPS core (termite treated) exceeds the minimum values in ASTM C578.	[2, 5] Extreme SIPS EPS core with termite treatment recognized by UL to be in compliance with ICC acceptance criteria 239.

[1, 2, 3, 4, 5, 6] SEE LAST PAGE FOR FOOTNOTES.

ENERGY/SOUND					
STANDARD	ORNL	ASTM C236	ORNL	ASTM E90	ASTM C423
TEST TITLE:	STEADY STATE THERMAL PERFORMANCE OF BUILDING ASSEMBLIES	STEADY STATE THERMAL PERFORMANCE OF BUILDING PANELS BY GUARDED HOT BOX	BLOWER DOOR	SOUND TRANSMISSION CLASS (STC)	SOUND ABSORPTION
ALSO KNOWN AS:	WHOLE WALL R-VALUE	R-VALUE	AIR INFILTRATION		
RESULTS:	- 4 ½" Extreme SIP with ½" gypsum board and plywood siding R = 14.1 - 2x4 and batt insulation with ½" gypsum board and plywood siding R = 9.6 - 2x6 and batt insulation with ½" gypsum board and plywood siding R = 13.7	- 6 ½" Extreme SIP with ½" gypsum board mechanically fastened to the interior of the panel R = 21.2 - Typical 2x6 construction using fiberglass batts tested under same standard R = 17.2	- Controlled room built with 4 ½" Extreme SIP = 9 cfm air leakage - Typical 2x6 construction using fiberglass batts tested under same configuration = 126 cfm air leakage	[8]Achieved STC ratings from STC 28 to STC 59 using various facing assemblies of gypsum, air spaces, fiberglass and isolation cups	- 6½"Extreme SIP Noise Reduction Coefficient = 0.15 - Sound Absorption average = 0.17

FOOTNOTES:

[1]See Extreme SIPS Load Charts for complete details.

[2]See ICC-ES report; contact your Extreme SIPS supplier for a current copy.

[3]See UL certificate for complete details.

[4]For specific Fire Resistance, see ICC-ESR 4524.

[5]See rigid insulation literature for complete details.

[6]See Extreme Technical Bulletins for assembly details.

ABBREVIATIONS:

ASTM = American Society for Testing and Materials

IBS = International Building Code

ICC-ES = International Code Council Evaluation Service

NFPA = National Fire Protection Agency

UL = Underwriters Laboratories Inc.

FM = Factory Mutual

QUALITY ASSURANCE

Extreme SIPs are made to the standards of an industry-leading quality control program monitored by ICC-NTA and recognized by national code agencies.