



1. Product Name

ACCEL-E® Steel Thermal Efficient Panel (S.T.E.P.) Wall System

2. Manufacturer

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3. Product Description

BASIC USE

The ACCEL-E® Steel Thermal Efficient Panel (S.T.E.P.) is a thermally efficient, high performance building panel that exceeds the latest ASHRAE 90.1 2007 and IECC 2009 requirements. Strong, light in weight and energy efficient, it is composed of two time-tested materials - cold-formed steel and expanded polystyrene (EPS) insulation - uniquely fused together to provide superior strength and thermal performance. The ACCEL-E STEP wall system simplifies framing, cavity insulation and continuous rigid foam sheathing into one installation process, providing savings by reducing on-site labor costs, shortening construction cycles and improving energy efficiency.

COMPOSITION & MATERIALS

The ACCEL-E wall panel is a 4' wide expanded polystyrene (EPS) panel with two embedded studs. The studs have a proprietary design and are formed in an "S" type cross-section comprised of three 1 5/8" flanges and two indepen-

dent webs. EPS is fused through the outer web section to maximize structural and thermal performance. The inner web section, devoid of EPS, provides an open ACCEL-E cavity to allow the use of additional light gauge metal or structural steel framing members, and enables the use of industry standard electrical and mechanical construction practices. The panels interlock at each side with a tongue-and-groove configuration molded into the EPS. No joint treatment is required to join adjacent panels. All steel used in the ACCEL-E S.T.E.P. wall system is galvanized to building industry standards to prevent rust.

SIZES

ACCEL-E S.T.E.P. wall systems are available in the following sizes:

- Standard widths - 4'
- Custom heights - limited only by mode of transportation
- Overall panel thicknesses - 5 1/2", 6" and 8"

See Table 1 for detailed size information.

TYPES

ACCEL-E S.T.E.P. wall systems are available in the following types:

- Exterior stud flange flush with foam
- Exterior stud flange embedded 1/2" in foam (available for 5 1/2" thick panel only, in 1- and 2-family dwellings)

BENEFITS

- Cost effective - Helps reduce onsite labor requirements and shortens construction cycles; results in faster installation, reduced construction defects and callbacks and lowered onsite waste and disposal costs
- Energy efficient - Contributes to lower heating and cooling costs
- Fire rated 1-hour assemblies available - Can be used in IBC Type I and Type II non-combustible construction
- Made from recycled materials and is itself 100% recyclable
- Resists mold, mildew and moisture



Cutaway showing the cross section of the steel stud design in the ACCEL-E wall panel

- May contribute toward LEED® project certification
- GREENGUARD certified

4. Technical Data

APPLICABLE STANDARDS

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)

- ASHRAE 90.1 2007 Energy Standard for Buildings Except Low-Rise Residential Buildings

ASTM International

- ASTM A370 Standard Test Methods and Definitions for Mechanical Testing of Steel Products
- ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM C1363 Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

TABLE 1 ACCEL-E PANEL DIMENSIONS

Panel Product Code	Overall Wall Panel Thickness	Steel Thickness	Overall Wall Panel Width	Panel Height ¹	Weight (psf)	EPS Thickness	Open Cavity Dimension	Mechanical Knockout
5 1/2 - 38	5 1/2"	0.038"	4' 0"	Cut to height	1.06	2 3/4" ²	2 3/4"	3/4" x 4"
6 - 54	6"	0.054"	4' 0"	Cut to height	1.38	3 1/4"	2 3/4"	3/4" x 4"
8 - 38	8"	0.038"	4' 0"	Cut to height	1.45	4 3/8"	3 5/8"	3/4" x 4"
8 - 54	8"	0.054"	4' 0"	Cut to height	1.80	4 3/8"	3 5/8"	1 1/2" x 4"

¹ Panels are factory cut to specified heights, which are limited only by the mode of transport required for delivery.

² EPS can be extended 1/2" past outer stud flange to increase overall EPS thickness for 1- and 2- family dwellings.





ACCEL-E wall panels can reduce labor costs and speed up construction time.

- ASTM D3574 Standard Test Methods for Flexible Cellular Materials-Slab, Bonded, and Molded Urethane Foams
- ASTM E72 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

Steel stud properties (nominal)	Values 38	Values 54
Stud base metal thickness	0.038"	0.054"
Minimum galvanized coating, ASTM A1003	G60	G60
Minimum yield strength	40 ksi	55 ksi
Flange width (all panels)	1 5/8"	1 5/8"
EPS Properties (nominal)		
Density	1.5 pcf	1.5 pcf
R-value per inch thickness	4.3	4.3
Color	Gray	Gray

- ASTM E96/E96M Standard Test Methods for Water Vapor Transmission of Materials
- ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials
- ASTM E283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- ASTM E413 Classification for Rating Sound Insulation
- ASTM E1332 Standard Classification for Determination of Outdoor-Indoor Transmission Class
- ASTM E2235 Standard Test Method for Determination of Decay Rates for Use in

Sound Insulation Test Methods

- National Fire Protection Association (NFPA)
- NFPA 259 Standard Test Method for Potential Heat of Building Materials
 - NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

APPROVALS

- Code Compliance Research Report CCRR - 0121 - Architectural Testing, Inc.
- Florida Product Approval No. 13722
- Southwest Research Institute (SwRI) Listing No. 08179-01-01, No. 08179-01-02, No. 08179-01-03 and No. 08179-01-04

PHYSICAL PROPERTIES, PERFORMANCE

See Tables 2 and 3.

TABLE 3 ACCEL-E PANEL PERFORMANCE PROPERTIES ¹

Panel Product Code	5 1/2 - 38	6 - 54	8 - 38	8 - 54
Sound transmission class (STC) assembly ratings, ASTM E90	51 / 55	TBD	45 / 54 / 57	TBD
Outside inside transmission class (OITC) assembly ratings, ASTM E90	30 / 34 / 37	TBD	31 / 36 / 40	TBD
Rate of air leakage, ASTM E283	< 0.01 cfm/ft ²	< 0.01 cfm/ft ²	< 0.01 cfm/ft ²	< 0.01 cfm/ft ²
Water vapor transmission (20.8 degrees C, 52.2% R.H.), ASTM E96/E96M	0.796 perms	TBD	0.632 perms	0.632 perms
Smoke developed index, ASTM E84	< 450	< 450	< 450	< 450
Flamespread index, ASTM E84	< 25	< 25	< 25	< 25
Allowable bending moment ^{2,3} , ASTM E72	25,750 in-lb	29,040 in-lb	42,780 in-lb	59,820 in-lb
Allowable axial load ^{2,4} , ASTM E72	6,836 lb	12,572 lb	8,502 lb	9,178 lb
Allowable end reaction ² , ASTM E72	706 lb	1,434 lb	722 lb	1400 lb
Ultimate Racking shear (7/16" OSB + 1/2" gypsum), ASTM E72	679 lb/ft	679 lb/ft	751 lb/ft	N/A
Ultimate Racking shear (4", 16 ga, 50 ksi x-brace), ASTM E72 (6", 12 ga, 50 ksi x-brace for 8 - 54), ASTM E72	3,776 lb/brace	3,776 lb/brace	4,304 lb/brace	4,602 lb/brace

¹ See CCRR-0121 for full ACCEL-E panel performance properties

² Safety factors for bending, axial and end reactions are all 1.95, except 2.05 for 5 1/2 axial load

³ Listed allowable moments are for 12 ft height for all panels, except 14 ft for 8 - 54 panel

⁴ Listed allowable axial loads are for 8 ft height





ACCEL-E wall panels frame, insulate and sheath in one easy step.

ENVIRONMENTAL CONSIDERATIONS

- Steel studs in the ACCEL-E S.T.E.P. wall system contain an average of 54% recycled steel and a minimum of 25% recycled steel
- Steel studs and expanded polystyrene are 100% recyclable
- Use of ACCEL-E may contribute toward LEED® project certification under MR Credit 2 and 4, EA PRQ 2 and EA Credit 1, and IEQ Credit 7
- GREENGUARD Indoor Air Quality Certified®
- GREENGUARD Children & SchoolsSM Certified
- Exceeds IECC-2009 International Energy Conservation Code and ASHRAE 90.1

5. Installation

PREPARATORY WORK

Deliver products in manufacturer's original, unopened, undamaged containers with labels intact. Store materials protected from exposure to harmful environmental conditions. Store panels on a solid level surface as close to the installation area as possible. Space blocking under the first panel approximately 1" from each end and then every 4' for support. Cover panels to protect them from dirt and debris.

Verify that site conditions are acceptable for installation. Do not proceed with installation until unacceptable conditions are corrected.

METHODS

Secure the track with anchor bolts and fasteners. Install numbered panels according to project requirements. Secure and brace as needed. Snap in and secure the lock bar at all panel joints. Frame the door, window and other openings with precut framing members. Secure the top track to the head of the wall. Upon final erection of the ACCEL-E wall system, if required by code, install a water-resistive barrier before applying a cladding to the wall system. For complete installation procedures, refer to the SYNTHEON installation manual.

PRECAUTIONS

Secure panels to prevent them from becoming airborne during windy conditions. Wear work gloves to protect hands from cuts and injuries when working with steel and when handling panels. Wear safety goggles at all times when working with panels.

BUILDING CODES

Installation must comply with the requirements of all applicable local, state and federal code jurisdictions.

6. Availability & Cost

AVAILABILITY

The ACCEL-E S.T.E.P. wall system is available throughout the U.S. from a network of sales representatives and distributors.

COST

The ACCEL-E S.T.E.P. wall system is designed specifically to meet the unique requirements of each individual project, and includes pre-cut panels and all associated parts needed for installation. Architectural design and structural engineering assistance is also included. Since project requirements can vary greatly, cost per square foot can vary as well. A good faith estimate is provided to prospective customers at no charge based on initial project plans. A final cost is provided when all project plans are submitted and an engineering review is completed. Because the ACCEL-E S.T.E.P. wall system simplifies framing, cavity insulation and continuous rigid foam sheathing into one installation process, cost savings can be realized through a reduction of on-site labor costs, shorter construction cycles, and greater energy efficiency.

7. Warranty

SYNTHEON warrants that its products shall be free from defects in materials and workmanship at the time of shipment and are manufactured in accordance with company standards. Refer to the ACCEL-E website at www.ACCEL-E.com for complete warranty details.

8. Maintenance

The ACCEL-E S.T.E.P. wall system requires no maintenance and will last for the life of the structure when installed properly in a designed and maintained wall assembly that includes the proper interior and exterior finish.

9. Technical Services

Staff engineers are available to provide preliminary design consulting. Architectural designers provide assistance by completing detailed drawings and material lists. Sealed engineered drawings and calculations are provided. Technical installation specialists can provide onsite training at the beginning of each project.

10. Filing Systems

- SmartBuilding Index (SBI)
- MANU-SPEC®
- Sweets Catalog
- ARCAT Catalog
- Additional product information is available from the manufacturer upon request.