



ICC-ES Listing Report ESL-1453

Reissued August 2024

This listing is subject to renewal August 2025.

CSI: DIVISION: 03 00 00—CONCRETE
Section: 03 37 00—Specialty Placed Concrete

Product Certification System:

The ICC-ES product-certification system includes evaluating reports of tests of standard manufactured product, prepared by accredited testing laboratories and provided by the listee, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the listee's quality system.

Products: SCHNELL HOME SANDWICH PANELS

Listee: SCHNELL SPA™

Evaluation: The Schnell Home sandwich panels consist of a three-dimensional welded-wire reinforcement incorporating parallel cross wires welded to the welded-wire reinforcement (WWR) on each side of the expanded polystyrene (EPS) foam insulation core. Once the Schnell Home sandwich panels are secured at the specified positions and locations, one layer (or one wythe) of normalweight concrete, cementitious structural mortar or shotcrete (concrete facing) is applied to both sides of the EPS core with the concrete facing covering the WWR by a minimum one-inch (25.4 mm) thick concrete cover for wall panels and 1.5 and 2 inches for floor and roof panels as specified. The panels are structurally designed with two wythes of concrete facings acting compositely with the WWR and the parallel (transverse) cross wires. Figures 1 and 2 describe panel variations. These panels were evaluated as part of a full wall assembly described below and tested in accordance with the following standards:

- ASTM E119 (-2018B, 2016, -2012A and 2008A), Standard Test Methods for Fire Tests of Building Construction and Materials, ASTM International.

Assembly: The wall assembly consists of the following components.

- **Expanded Polystyrene (EPS) Foam:** The insulation EPS core is Type I modified EPS foam that complies with ASTM C578, and that has a minimum density of 0.90 pound per cubic foot (14.4 kg/m³) and a flame-spread index less than or equal to 25 and a smoke-developed rating of 450 or less when tested in accordance with ASTM E84 at a 6-inch (152 mm) thickness as manufactured by Insulfoam™ LLC ([ESR-1788](#)). The EPS core can be shaped as required and the overall thickness may vary according to the structural and architectural design requirements. The EPS core thickness is limited 6.3 inches (160 mm).

- **Reinforcement:** The welded wire reinforcement (WWR) and parallel cross wires used in Schnell Home sandwich panels are manufactured from galvanized or bright plain wires which comply with ASTM A1064. The steel wires used in fabricating the WWR in both concrete facings are positioned at 3.15-inch (80 mm) intervals between the longitudinal wires and at 2.95-inch (75 mm) intervals between the transverse wires, so that the typical mesh grid size is 3.15 inches by 2.95 inches (80 mm by 75 mm). The diameter of the wires in WWR and the diameter of the parallel cross-wires are 9 gage [0.118-inch diameter (3 mm)]. Typical dimensions of reinforcement in the Schnell Home sandwich panels are indicated in Figure 2. WWR and cross wires yield strength, f_y shall be limited to 56 ksi in all calculations to determine structural capacities.

- **Concrete/Mortar:** Concrete must be normal-weight concrete, complying with IBC Chapter 19, having a maximum aggregate size of $\frac{5}{8}$ inch (16 mm), a minimum slump of 2 inches (51 mm), and a minimum compressive strength of 2,500 psi (17.2 MPa) at 28 days. When cementitious structural mortar is specified, the aggregate size must not exceed $\frac{3}{8}$ -inch (9.5 mm) and the minimum compressive strength must be 2,500 psi (17.2 MPa) at 28 days. Both concrete and structural mortar can be applied manually or sprayed. For

the bottom side (soffit) of floor and roof slabs, mortar is applied pneumatically using different methods including shotcrete or by using pressurized plastering equipment.

■ **Shotcrete Concrete/Mortar Applications:** Shotcrete, if specified by the engineer-of-record, must have a minimum specified compressive strength of 2,500 psi (17.2 MPa) and comply with IBC Chapter 19. Shotcrete must be normal-weight concrete; aggregate size must not exceed $\frac{3}{8}$ -inch (9.5 mm) and the aggregate must conform to Gradation No. 1 in Table 2.1 of ACI 506R-90.

Findings:

The Schnell Home sandwich panels used in walls, constructed with 3.15-inch-thick (80 mm) EPS core and $1\frac{3}{4}$ -inch-thick (44.5 mm) normal-weight concrete/mortar with a compressive strength of 6000 psi (41.4 MPa) on each face, with a total wall thickness of 6.75 inches (170 mm), a height of 10 feet (3.05 m), and subjected to a superimposed axial compression load of 8,969 plf (130.9 kN/m), have a one-hour fire resistance rating based on testing in accordance with ASTM E119. The applicable section of the following code editions is as follows:

- 2021, 2018, 2015 and 2012 *International Building Code*®
Applicable Section: 703
- 2021, 2018, 2015 and 2012 *International Residential Code*®
Applicable Section: R302

Identification:

1. The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-3429) and/or the listing report number (ESL-1453) along with the name, registered trademark, or registered logo of the report holder (Schnell Spa™) must be included in the product label.
2. In addition, for field identification, all packages of the delivered Schnell Home sandwich panels covered by this listing report must bear a product label. The face/edge of the EPS insulated core on each Schnell™ Home panel must be identified in accordance with [ESR-1788](#).
3. The report holder's contact information is the following:

SCHNELL SPA
VIA SANDRO RUPOLI 2, ZONA INDUSTRIALE SAN LIBERIO
COLLI AL METAURO
PESARO URBINO 61036
ITALY
+39 0721 878711
www.schnell.it

Installation: The product must be installed in accordance with the Schnell Spa's published installation instructions and applicable codes.

Conditions of Listing:

1. Additional attributes and their applications can be found in the ICC-ES evaluation report [ESR-3429](#).
2. The listing report addresses only conformance with the standard noted above.
3. Approval of the product's use is the sole responsibility of the local code official.
4. The listing report applies only to the products tested and as submitted for review by ICC-ES.
5. The Schnell Home sandwich panels are manufactured under a quality control program with inspections by ICC-ES.
6. The Assembly Section, when the wall assembly uses Schnell Home sandwich panels, does meet the requirements for the one-hour fire-resistance-rated test, based on testing as described in the Findings.

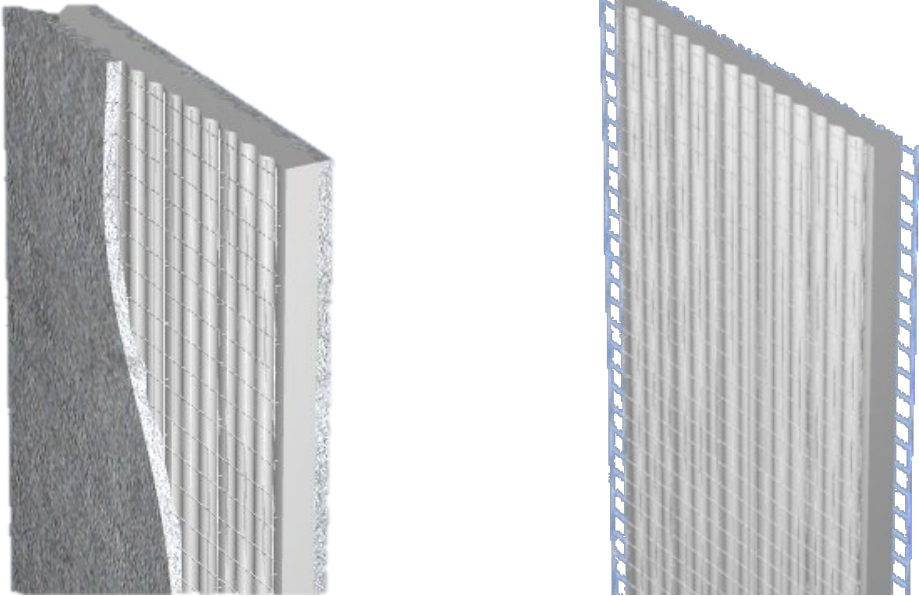
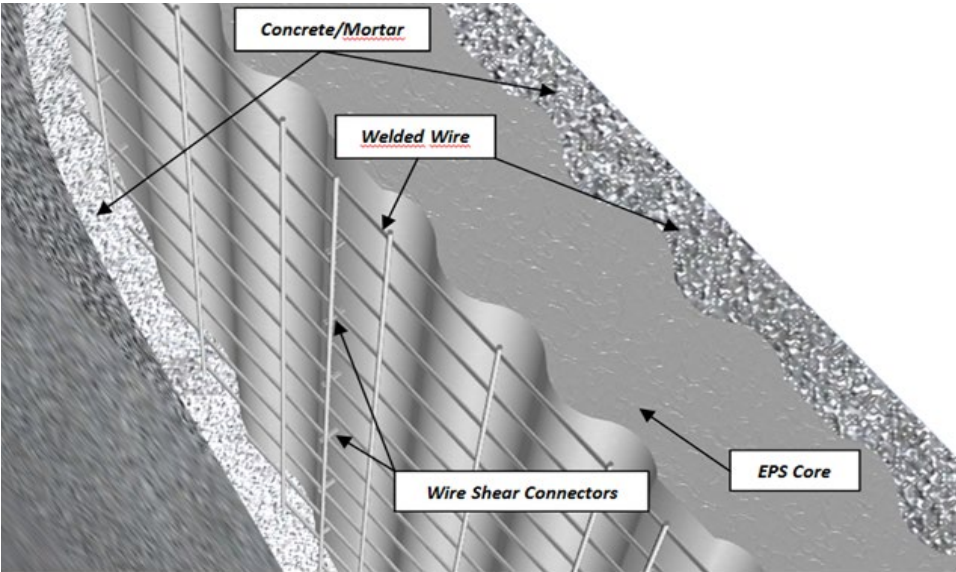


FIGURE 1—SCHNELL HOME SANDWICH PANELS

