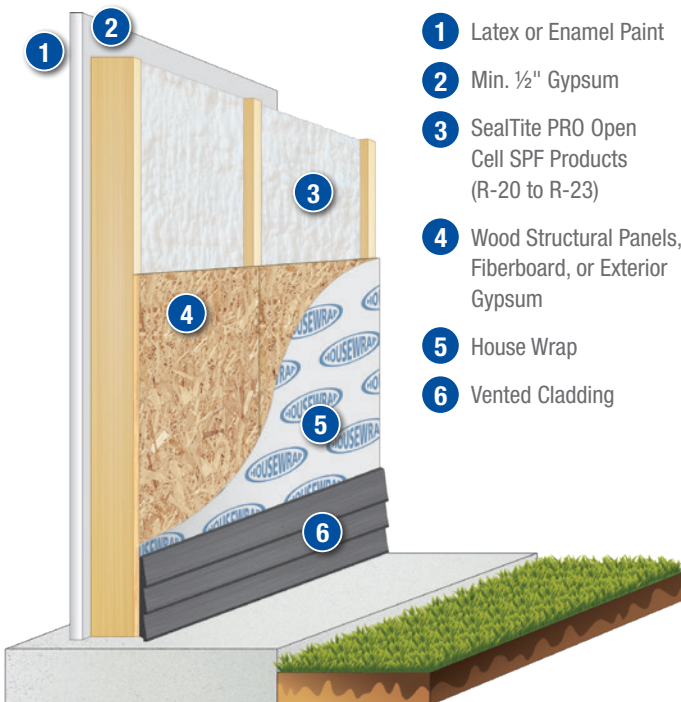


CARLISLE SPRAY FOAM INSULATION'S OC-Z⁵ WALL

Carlisle Spray Foam Insulation's OC-Z⁵ wall introduces the high performance and cost effectiveness of open cell spray foam insulation to Climate Zone 5.

When it comes to the design of wood-framed wall assemblies in residential construction, building codes consider both the thermal performance of the wall system and methods to control condensation. In climate zones 1-4, where condensation is not a concern, builders and homeowners prefer open cell spray foam insulation for its thermal performance, air sealing properties, and cost effectiveness.



However, satisfying prescriptive code requirements in higher climate zones typically requires the use of closed cell spray foam insulation – or the additional step and cost of installing Class I or II vapor retarders like sheet polyethylene to the interior side of the framed walls.

In specific wall designs, SealTite™ PRO Open Cell Spray Foam Insulation products may be used in Climate Zone 5 to meet or exceed the 2018 International Residential Code (IRC) requirements without the use of an additional Class I or II vapor retarder.

THERMAL ENVELOPE PERFORMANCE



With an R-20 using standard SealTite PRO open cell products or an R-23 with SealTite PRO No Trim 21, you can meet or exceed code-prescribed insulation values. The air-impermeable nature of SealTite PRO open cell spray foam insulation also eliminates air leaks and helps keep pollution and allergens out of the home.

COST EFFECTIVENESS



Compared to closed cell spray foam or the addition of exterior rigid board insulation, SealTite PRO open cell spray foam insulation products provide a cost- and value-optimized solution built on standard 2" x 6" framing.

DESIGN FLEXIBILITY



The OC-Z⁵ wall utilizes common residential vented cladding types including vinyl siding, brick, or fiber cement board to accommodate almost any exterior elevation or architectural design.

LABOR SAVINGS



Carlisle Spray Foam Insulation OC-Z⁵ wall eliminates the need to attach sheet polyethylene directly to the interior side of the framed walls, saving hours of labor and hundreds of dollars.

CLIMATE ZONE 5 WALL ASSEMBLY

WHY IT WORKS

During the heating season in cold climates, interior moisture migrates outwards from the indoors to the outdoors. Condensation can occur in the wall assembly when this warm, moist air encounters the cold exterior sheathing.

In cold climates, an effective water vapor management strategy limits the amount of vapor diffusion into the wall and provides a mechanism for the wall to dry out, should any water vapor accumulate in the cavity. To limit vapor diffusion, the IRC recommends the use of a Class 1 or Class 2 vapor barrier on the interior to prevent water vapor from entering the wall assembly or the use of exterior continuous insulation to reduce the vapor drive potential. The wall assembly should also include a moderate to high vapor permeable path for water vapor to escape for proper drying.

In Climate Zone 5 (and Marine 4) and above, the IRC requires a Class 1 or Class 2 vapor retarder on the interior side of most above-grade framed walls if no continuous insulation is used. However, specifically for Climate Zone 5 (Marine 4), the IRC allows for a Class 3 vapor retarder (latex or enamel paint) to be used, if it is combined with vented cladding. This wall design prevents moisture and condensation issues because it encourages drying towards the inside and outside simultaneously. The use of air-impermeable open cell spray foam insulation adds an additional layer of moisture protection by effectively eliminating moisture migration caused by air leakage through gaps in the wall assembly.

DESIGN CONSIDERATIONS

The OC-Z⁵ wall depends on vented or ventilated cladding options to achieve sufficient airflow behind the cladding. Typical conforming cladding types include vinyl lap siding, brick veneer (with min. 1" airspace), fiber cement board, or wood lap siding. Cladding options such as stucco, adhered masonry veneer, or insulated vinyl siding may not be used without a Class 1 or Class 2 vapor retarder.

CLIMATE ZONE	IRC INTERIOR VAPOR RETARDER REQUIREMENTS
	Class I or Class II required; Class III permitted with:
MARINE 4	Vented cladding (over wood structural panels, fiberboard, or gypsum) or continuous insulation (≥ R-2.5 over 2 x 4 wall or ≥ R-3.75 over 2 x 6 wall)
5	Vented cladding (over wood structural panels, fiberboard, or gypsum) or continuous insulation (≥ R-5 over 2 x 4 wall or ≥ R-7.5 over 2 x 6 wall)
6	Vented cladding (over fiberboard or gypsum) or continuous insulation (≥ R-7.5 over 2 x 4 wall or ≥ R-11.25 over 2 x 6 wall)
7 AND 8	Continuous insulation (≥ R-10 over 2 x 4 wall or ≥ R-15 over 2 x 6 wall)

Table 1: Adapted from 2018 IRC Table R702.7.1

