

INSULATION INSTALLATION

CEC-CF2R-ENV-03-E (Revised 01/20)

CALIFORNIA ENERGY COMMISSION



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Medium and light density SPF manufacturers claim various R -values per inch. In California the maximum R -value that can be claimed for ccSPF is an R-value of 5.8 per inch, and for ocSPF is an R-value of 3.6 per inch, unless documentation is provided showing that the product and/or manufacturer has a current ICC Evaluation Service Report (ESR) that shows compliance with Acceptance Criteria for Spray-Applied Foam Plastic Insulation (AC377).

NOTE: The Energy Standards Section 110.7 requires that "all joints, penetrations and other openings in the building envelope that are potential sources of air leakage shall be caulked, gasketed, weather stripped, or otherwise sealed to limit infiltration and exfiltration". In areas where spray foam (SPF) insulation is used, the SPF can be considered the air barrier. Other than rigid board insulation, all other forms of insulation are not considered as an air barrier.

Type of Insulation Being Installed (select all that apply):	<input type="checkbox"/> Roof/Ceiling Insulation	<input type="checkbox"/> Wall Insulation	<input type="checkbox"/> Mass Insulation
	<input type="checkbox"/> Raised Floor Insulation	<input type="checkbox"/> Slab Floor/Perimeter Insulation	

A. Roof/Ceiling Insulation

This section does not apply to this project.

B. Wall Insulation

This section does not apply to this project.

C. Mass Insulation

This section does not apply to this project.

D. Raised Floor Insulation

This section does not apply to this project.

E. Slab Floor/Perimeter Insulation (see Section F. for Insulation Requirements for Heated Slabs)

This section does not apply to this project.

F. Heated Slab Insulation

01	All heated slabs shall be insulated as required by Section 110.8(g). Footings must meet required insulation levels.
02	Insulation shall be installed from the top of the slab, down 16 inches or to the frost line, whichever is greater. Climate zones 1-15 requires R-5, climate zone 16 requires R-10.
03	Alternatively, vertical insulation from top of slab at inside edge of outside wall down to the top of the horizontal insulation. Horizontal insulation from the outside edge of the vertical insulation extending 4 feet toward the center of the slab in a direction normal to the outside of the building in plain view. Climate zones 1-15 require R-5, and climate zone 16 requires R-10 vertical and R-7 horizontal.

The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.

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G. Minimum Mandatory Measures

01	Insulation - 110.8(a): All installed insulation is certified and listed with the Department of Consumer Affairs, "Standards for Insulating Material."
02	Insulation - 110.8(b): Urea formaldehyde foam insulation is protected by 4 mil polyethylene vapor retarder.
03	Insulation - 110.8(c): Flame spread and smoke density requirements of CBC are met.
04	Raised Floor - 150.0(d): All raised wood-frame floor have a minimum R-19 insulation or equivalent U-factor.
05	Slab Floor/Perimeter - 150.0(f): Water absorption rate for the insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch, and perimeter insulation is protected from physical damage and UV light deterioration.
06	Above Grade Exterior Wall - 150.0(c)1 & 150.0(c)6: All 2x4 wood-frame walls have a minimum R-13 insulation or equivalent U-factor not exceeding U-0.102.
07	Above Grade Exterior Wall 150.0(c)2 & 150.0(c)6: All 2x6 wood-frame walls have a minimum R-20 insulation or equivalent U-factor not exceeding U-0.071.
08	Ceiling/Rafter Roof - 150.0(a)1: All wood-framed ceilings have a minimum R-22 insulation or equivalent U-factor.
09	Vapor Retarder – 150.0(g)1: In Climate Zones 1 through 16, the earth floor of unvented crawl space shall be covered with a Class I or Class II vapor retarder, This requirement shall also apply to controlled ventilation crawl space for buildings complying with the Exception to Section 150.0(d).
10	Vapor Retarder – 150.0(g)2: In Climate Zones 14 and 16, a Class I or Class II vapor retarder shall be installed on the conditioned space side of all insulation in all exterior walls, vented attics and unvented attics with air-permeable insulation.
11	<p>Heated Slabs - 110.8(g): All heated slabs shall be insulated as required.</p> <ul style="list-style-type: none"> ▪ Insulation shall be installed from the top of the slab, down 16 inches or to the frost line, whichever is greater. Climate zones 1-15 require R-5, and climate zone 16 requires R-10. ▪ Alternatively, vertical insulation from top of slab at inside edge of outside wall down to the top of the horizontal insulation. Horizontal insulation from the outside edge of the vertical insulation extending 4 feet toward the center of the slab in a direction normal to the outside of the building in plain view. Climate zones 1-15 require R-5, and climate zone 16 requires R-10 vertical and R-7 horizontal.

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H. Installed Insulation

01	Installed insulation R-values are the same or greater than listed on the CF1R.
02	No gaps or voids between the insulation and framing.
03	No gaps between the sides or ends of batt insulation.
04	Loose-fill insulation must be installed to the minimum installed weight per square foot (density) of the manufacturer's cut sheet for the proposed R-value.
05	Batt insulation is not compressed (no stuffing of the insulation into the cavity) and is installed to its full thickness.
06	Insulation is cut around obstructions such as electrical boxes.
07	Batt insulation is delaminated around all plumbing and electrical lines in ceilings, walls, and floors.
08	Band joists are insulated to the same R-value as the wall.
09	In all narrow cavities the insulation shall be cut to fit or filled with expanding foam.
10	Insulation was installed per manufacturer instructions.

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I. Wall Insulation

01	When allowed by the manufacturer, low expanding foam shall be used to fill gaps and voids around windows and doors. If not, the cavity must be airtight and filled completely with insulation. Batt insulation must be cut to width. No stuffing allowed.
02	Install wall insulation before installing tubs, showers, and fireplaces.
03	Electric panels on walls separating conditioned and unconditioned space are sealed and insulated behind the panel with rigid insulation or expanding foam.
04	All walls of interior closets vented to the outside for HVAC or water heating equipment have the same R-value and air barrier as the exterior walls and ceiling. Doors are insulated and weather stripped.
05	Ducting is not allowed in exterior walls unless it is insulated to R-6 or greater, and the insulation and ducting are not crushed. Ducting is not allowed in 2x4 wall assemblies.
06	Corner channels, wall intersections, and double sided shear walls are insulated to the required R-value before enclosing the wall.
07	Insulation that does not fill the cavity is placed against the exterior air barrier.
08	Band joists are insulated to the same R-value as the walls.
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J. Ceiling/Roof Insulation

01	Insulation extends to the outside edge of the exterior top plates and is flush against any ventilation dams/baffles.
02	Insulation is in direct contact with ceiling, so there are no gaps between the ceiling and the insulation.
03	For chimneys and flues, the insulation is in contact with the sheet metal collar.
04	Can lights are covered with insulation to the same depth as required by the CF1R for ceiling insulation. If not, an area weighted calculation is required to be turned in with this compliance document (CF1R-ENV-02-E).
05	Walkways and mechanical platforms are insulated to the same R-value as required for the ceiling. If not, an area weighted calculation is required to be turned in with this compliance documents (CF1R-ENV-02-E).
06	Insulate soffits by adding an air barrier and covering with insulation, or insulate the entire soffit including floor and walls.
07	Knee walls and skylight shafts are insulated to the wall R-value and in full contact with the interior air barrier. If framing on these surfaces is laid flat batt insulation is cut to fit around the framing. Batt insulation is not allowed to be draped over the framing.
08	Attic access doors are insulated to the same R-value as the ceiling. The insulation is permanently attached using adhesive or mechanical fasteners.
09	Attic access must be surrounded with a dam at least the same depth as the insulation to prevent loss of ceiling insulation.
10	Batt insulation is cut to fit around cross bracings and truss webs in the attic.
The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.	

K. Raised Floor Insulation

01	Insulation is in full contact with subfloor.
02	Insulation hangers are spaced at 18 inches or less; insulation hangers must not compress insulation.
03	If netting or mesh is used, the cavity under the floor is filled and in contact with the subfloor.
04	If the basement is conditioned, the walls adjacent to the crawlspace must meet minimum wall R-value requirements. This includes framed stem walls, and vertical concrete retaining walls.
05	If access to the crawl space is from the conditioned area, the raised floor must have an airtight insulated access hatch.
The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.	

L. Floor Above Garage Insulation

01	Insulation must be in full contact with the subfloor if the air barrier is at the band joist at the garage/house wall.
02	Insulation hangers spaced at 18 inches or less; insulation hangers must not compress insulation.
03	If netting or mesh is used, the cavity under the floor is filled and in contact with the subfloor.
04	If the air barrier is at the perimeter of the garage, below the conditioned subfloor, the insulation is placed on the garage ceiling. The perimeter of the subfloor is also insulated.
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M. Cantilevered Floor Insulation

01	Insulation is in full contact with the cantilevered subfloor. Insulation hangers are spaced at 18 inches or less; insulation hangers do not compress insulation.
02	If netting or mesh is used, the cavity under the floor is filled and in contact with the subfloor.
03	Sealed blocking is installed between joists where a wall rim joist would be located in the absence of a cantilever. Insulation is placed on both sides of this block.

The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.

N. Attached Porch Roof Insulation

01	The exterior insulated wall at the intersection with the porch roof is fully insulated above, below, and behind the roof line.
02	Where truss framing is used, airtight blocking is installed at the top and bottom of each wall/roof section and insulated.

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Installation documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Documentation Author Company Name:	Date Signed:
Address:	CEA/HERS Certification Identification (If applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

- The information provided on this Certificate of Installation is true and correct.
- I am either: a) a responsible person eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction, or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Installation, and attest to the declarations in this statement, or b) I am an authorized representative of the responsible person and attest to the declarations in this statement on the responsible person's behalf.
- The constructed or installed features, materials, components or manufactured devices (the installation) identified on this Certificate of Installation conforms to all applicable codes and regulations and the installation conforms to the requirements given on the Certificate of Compliance, plans, and specifications approved by the enforcement agency.
- I will ensure that a registered copy of this Certificate of Installation shall be posted or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a registered copy of this Certificate of Installation is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Builder/Installer Name:	Responsible Builder/Installer Signature:	
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)	Position With Company (Title):	
Address:	CSLB License:	
City/State/Zip:	Phone:	Date Signed: