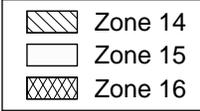
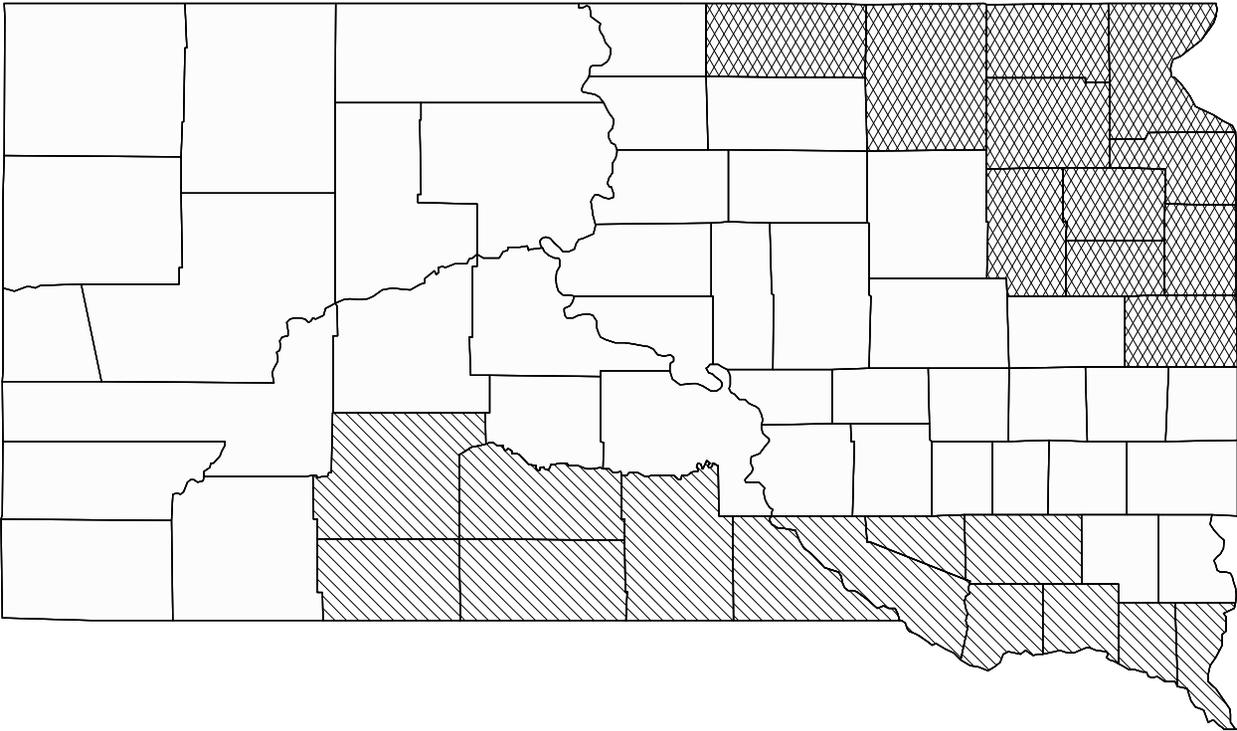


SOUTH DAKOTA

Zone	County	Zone	County	Zone	County	Zone	County	Zone	County	Zone	County	Zone	County	Zone	County		
15	Aurora	15	Brule	14	Clay	16	Deuel	16	Grant	15	Harding	15	Jones	16	Marshall	15	McCook
15	Beadle	15	Buffalo	16	Codington	15	Dewey	14	Gregory	15	Hughes	15	Kingsbury	16	McPherson	15	Lake
14	Bennett	15	Butte	15	Corson	14	Douglas	15	Haakon	14	Hutchinson	15	Lake	15	Meade		
14	Bon Homme	15	Campbell	15	Custer	15	Edmunds	16	Hamlin	15	Hyde	15	Lawrence	14	Mellette		
16	Brookings	14	Charles Mix	15	Davison	15	Fall River	15	Hand	14	Jackson	15	Lincoln	15	Miner		
16	Brown	16	Clark	16	Day	15	Faulk	15	Hanson	15	Jerauld	15	Lyman	15	Minnehaha		



Prescriptive Packages - Zone 14

1993 Model Energy Code for Single-Family Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency ⁹
	Glazing Area Percent ¹	Glazing U-Value ²	Ceiling R-Value ³	Wall R-Value ⁴	Floor R-Value ⁵	Basement Wall R-Value ⁶	Slab Perimeter R-Value ⁷	Crawl Space Wall R-Value ⁸	
1	12%	0.45	R-38	R-19	R-26	R-12	--	R-28	Normal
2	12%	0.35	R-38	R-19	R-19	R-9	R-4	R-13	Normal
3	15%	0.40	R-38	R-19	R-30	R-14	--	--	Normal
4	15%	0.35	R-38	R-19	R-26	R-11	R-13	R-22	Normal
5	15%	0.35	R-49	R-19	R-21	R-10	R-8	R-18	Normal
6	18%	0.35	R-38	R-20	R-30	R-14	--	--	Normal
7	18%	0.35	R-49	R-19	R-30	R-13	--	--	Normal
8	12%	0.70	R-38	R-19	R-19	R-9	R-4	R-22	High Heating
9	12%	0.50	R-30	R-13	R-19	R-9	R-3	R-19	High Heating
10	15%	0.45	R-38	R-15	R-19	R-8	R-2	R-15	High Heating
11	15%	0.40	R-30	R-13	R-19	R-8	R-3	R-17	High Heating
12	18%	0.50	R-38	R-19	R-21	R-10	R-6	R-28	High Heating
13	18%	0.35	R-30	R-13	R-19	R-9	R-3	R-18	High Heating
14	22%	0.40	R-38	R-19	R-19	R-9	R-4	R-22	High Heating
15	12%	0.60	R-38	R-15	R-19	R-9	R-3	R-20	High Heat/Cool
16	15%	0.60	R-38	R-19	R-21	R-10	R-5	R-28	High Heat/Cool
17	15%	0.45	R-30	R-13	R-21	R-10	R-5	R-26	High Heat/Cool
18	18%	0.50	R-38	R-19	R-21	R-10	R-5	R-26	High Heat/Cool
19	18%	0.40	R-30	R-15	R-19	R-9	R-4	R-22	High Heat/Cool
20	22%	0.45	R-49	R-19	R-26	R-11	R-7	--	High Heat/Cool

-- Hyphens (--) indicate that the package which contains the hyphens cannot be used with the indicated foundation type (slab or crawl space).

Prescriptive Packages - Zone 15

1993 Model Energy Code for Single-Family Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency ⁹
	Glazing Area Percent ¹	Glazing U-Value ²	Ceiling R-Value ³	Wall R-Value ⁴	Floor R-Value ⁵	Basement Wall R-Value ⁶	Slab Perimeter R-Value ⁷	Crawl Space Wall R-Value ⁸	
1	12%	0.45	R-38	R-19	R-26	R-13	--	R-30	Normal
2	12%	0.35	R-38	R-19	R-19	R-9	R-5	R-14	Normal
3	15%	0.40	R-38	R-19	R-30	R-15	--	--	Normal
4	15%	0.35	R-38	R-19	R-26	R-12	R-18	R-24	Normal
5	18%	0.35	R-38	R-21	R-30	R-15	--	--	Normal
6	12%	0.55	R-38	R-15	R-19	R-8	R-2	R-15	High Heating
7	15%	0.55	R-38	R-19	R-19	R-9	R-3	R-18	High Heating
8	18%	0.50	R-38	R-19	R-21	R-11	R-7	R-28	High Heating
9	22%	0.45	R-38	R-19	R-30	R-13	R-18	--	High Heating
10	22%	0.40	R-49	R-19	R-19	R-9	R-3	R-17	High Heating
11	12%	0.60	R-38	R-15	R-19	R-9	R-4	R-20	High Heat/Cool
12	15%	0.60	R-38	R-19	R-21	R-11	R-7	R-30	High Heat/Cool
13	15%	0.50	R-49	R-15	R-19	R-9	R-3	R-18	High Heat/Cool
14	18%	0.50	R-49	R-15	R-30	R-13	R-16	--	High Heat/Cool
15	22%	0.45	R-38	R-19	R-26	R-13	R-14	--	High Heat/Cool

-- Hyphens (--) indicate that the package which contains the hyphens cannot be used with the indicated foundation type (slab or crawl space).

Prescriptive Packages - Zone 16

1993 Model Energy Code for Single-Family Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency ⁹
	Glazing Area Percent ¹	Glazing U-Value ²	Ceiling R-Value ³	Wall R-Value ⁴	Floor R-Value ⁵	Basement Wall R-Value ⁶	Slab Perimeter R-Value ⁷	Crawl Space Wall R-Value ⁸	
1	12%	0.45	R-38	R-19	R-26	R-22	--	R-30	Normal
2	12%	0.35	R-38	R-19	R-19	R-14	R-6	R-14	Normal
3	15%	0.40	R-38	R-19	R-30	R-28	--	--	Normal
4	15%	0.35	R-38	R-19	R-26	R-19	R-19	R-24	Normal
5	18%	0.35	R-49	R-19	R-30	R-26	--	--	Normal
6	12%	0.70	R-38	R-15	R-30	R-26	R-17	--	High Heating
7	15%	0.60	R-38	R-19	R-21	R-18	R-6	R-28	High Heating
8	18%	0.50	R-38	R-19	R-21	R-17	R-5	R-24	High Heating
9	22%	0.40	R-38	R-15	R-26	R-24	R-13	--	High Heating
10	22%	0.35	R-49	R-15	R-19	R-13	R-2	R-15	High Heating
11	12%	0.65	R-49	R-15	R-19	R-16	R-4	R-22	High Heat/Cool
12	12%	0.60	R-38	R-15	R-19	R-15	R-3	R-18	High Heat/Cool
13	15%	0.65	R-38	R-19	R-26	R-24	R-14	--	High Heat/Cool
14	15%	0.50	R-38	R-15	R-19	R-15	R-4	R-20	High Heat/Cool
15	18%	0.50	R-38	R-19	R-19	R-16	R-5	R-24	High Heat/Cool
16	22%	0.45	R-49	R-19	R-26	R-19	R-7	--	High Heat/Cool
17	22%	0.40	R-38	R-19	R-19	R-14	R-3	R-18	High Heat/Cool

-- Hyphens (--) indicate that the package which contains the hyphens cannot be used with the indicated foundation type (slab or crawl space).

Prescriptive Packages - Zone 14

1993 Model Energy Code for Multifamily Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency ⁹
	Glazing Area Percent ¹	Glazing U-Value ²	Ceiling R-Value ³	Wall R-Value ⁴	Floor R-Value ⁵	Basement Wall R-Value ⁶	Slab Perimeter R-Value ⁷	Crawl Space Wall R-Value ⁸	
1	15%	0.50	R-38	R-13	R-11	R-5	R-0	R-6	Normal
2	15%	0.55	R-30	R-14	R-13	R-7	R-2	R-8	Normal
3	20%	0.50	R-38	R-13	R-19	R-10	R-7	R-17	Normal
4	20%	0.45	R-30	R-14	R-15	R-8	R-2	R-10	Normal
5	25%	0.45	R-49	R-18	R-15	R-8	R-3	R-11	Normal
6	25%	0.40	R-30	R-14	R-19	R-9	R-6	R-15	Normal
7	30%	0.35	R-38	R-13	R-19	R-9	R-6	R-15	Normal
8	15%	0.75	R-26	R-11	R-11	R-5	R-0	R-6	High Heating
9	15%	0.70	R-19	R-11	R-11	R-5	R-0	R-7	High Heating
10	20%	0.65	R-30	R-13	R-11	R-6	R-2	R-8	High Heating
11	20%	0.60	R-26	R-11	R-11	R-6	R-0	R-7	High Heating
12	20%	0.55	R-19	R-11	R-11	R-5	R-0	R-7	High Heating
13	25%	0.60	R-38	R-11	R-19	R-10	R-5	R-26	High Heating
14	25%	0.55	R-30	R-13	R-13	R-6	R-2	R-9	High Heating
15	25%	0.50	R-19	R-15	R-11	R-6	R-0	R-8	High Heating
16	30%	0.55	R-38	R-19	R-15	R-8	R-2	R-14	High Heating
17	30%	0.45	R-30	R-13	R-11	R-5	R-0	R-7	High Heating

Prescriptive Packages - Zone 15

1993 Model Energy Code for Multifamily Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency ⁹
	Glazing Area Percent ¹	Glazing U-Value ²	Ceiling R-Value ³	Wall R-Value ⁴	Floor R-Value ⁵	Basement Wall R-Value ⁶	Slab Perimeter R-Value ⁷	Crawl Space Wall R-Value ⁸	
1	12%	0.45	R-30	R-13	R-19	R-11	R-9	R-18	Normal
2	12%	0.55	R-38	R-18	R-15	R-8	R-3	R-11	Normal
3	15%	0.45	R-49	R-14	R-21	R-11	R-12	R-20	Normal
4	15%	0.40	R-38	R-13	R-19	R-11	R-9	R-18	Normal
5	20%	0.40	R-49	R-18	R-19	R-10	R-9	R-17	Normal
6	20%	0.35	R-38	R-19	R-15	R-8	R-2	R-10	Normal
7	25%	0.35	R-49	R-20	R-21	R-12	R-15	R-22	Normal
8	25%	0.30	R-49	R-18	R-15	R-8	R-3	R-11	Normal
9	30%	0.30	R-49	R-23	R-19	R-11	R-9	R-18	Normal
10	12%	0.75	R-30	R-13	R-13	R-8	R-2	R-11	High Heating
11	12%	0.65	R-38	R-11	R-11	R-6	R-0	R-7	High Heating
12	15%	0.60	R-38	R-13	R-13	R-6	R-2	R-9	High Heating
13	15%	0.50	R-30	R-11	R-11	R-6	R-0	R-7	High Heating
14	15%	0.45	R-19	R-13	R-11	R-5	R-0	R-6	High Heating
15	20%	0.60	R-49	R-19	R-15	R-8	R-2	R-14	High Heating
16	20%	0.50	R-38	R-13	R-15	R-8	R-2	R-13	High Heating
17	25%	0.50	R-49	R-16	R-19	R-11	R-6	R-28	High Heating
18	25%	0.40	R-38	R-13	R-13	R-7	R-2	R-10	High Heating
19	30%	0.40	R-49	R-19	R-13	R-7	R-2	R-11	High Heating
20	30%	0.35	R-38	R-16	R-11	R-6	R-2	R-7	High Heating

Prescriptive Packages - Zone 16

1993 Model Energy Code for Multifamily Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency ⁹
	Glazing Area Percent ¹	Glazing U-Value ²	Ceiling R-Value ³	Wall R-Value ⁴	Floor R-Value ⁵	Basement Wall R-Value ⁶	Slab Perimeter R-Value ⁷	Crawl Space Wall R-Value ⁸	
1	12%	0.55	R-38	R-18	R-15	R-12	R-3	R-11	Normal
2	12%	0.45	R-30	R-13	R-19	R-17	R-10	R-18	Normal
3	15%	0.45	R-38	R-18	R-15	R-12	R-3	R-11	Normal
4	15%	0.35	R-38	R-13	R-15	R-12	R-3	R-11	Normal
5	20%	0.40	R-49	R-18	R-19	R-17	R-9	R-17	Normal
6	20%	0.35	R-38	R-19	R-15	R-12	R-3	R-10	Normal
7	25%	0.35	R-49	R-20	R-21	R-19	R-16	R-22	Normal
8	25%	0.30	R-49	R-18	R-15	R-12	R-3	R-11	Normal
9	30%	0.30	R-49	R-20	R-21	R-20	R-17	R-24	Normal
10	30%	0.30	R-49	R-23	R-19	R-17	R-10	R-18	Normal
11	12%	0.75	R-30	R-13	R-13	R-11	R-2	R-11	High Heating
12	12%	0.65	R-38	R-11	R-11	R-8	R-0	R-7	High Heating
13	15%	0.70	R-38	R-19	R-11	R-9	R-2	R-8	High Heating
14	15%	0.65	R-30	R-14	R-15	R-12	R-2	R-13	High Heating
15	15%	0.45	R-19	R-13	R-11	R-7	R-0	R-6	High Heating
16	20%	0.60	R-38	R-19	R-15	R-14	R-3	R-16	High Heating
17	20%	0.50	R-30	R-11	R-19	R-18	R-6	R-26	High Heating
18	25%	0.50	R-49	R-19	R-15	R-14	R-2	R-15	High Heating
19	25%	0.40	R-38	R-13	R-13	R-10	R-2	R-10	High Heating
20	30%	0.40	R-38	R-16	R-15	R-14	R-2	R-15	High Heating
21	30%	0.40	R-49	R-17	R-13	R-11	R-2	R-11	High Heating

FOOTNOTES:

- ¹ Glazing area is the ratio of the area of the glazing assemblies (including sliding-glass doors, skylights, and basement windows but excluding opaque doors) to the gross wall area, expressed as a percentage. Up to 1% of the total glazing area may be excluded from the U-value requirement. For example, 3 ft² of decorative glass may be excluded from a building design with 300 ft² of glazing area.
- ² Glazing U-values should be tested and documented by the manufacturer in accordance with the National Fenestration Rating Council (NFRC) test procedure, taken from the glazing U-value table in Appendix B, or derived from an alternate test procedure or table accepted by your local jurisdiction. Center-of-glass U-values cannot be used.
- ³ The ceiling R-values do not assume a raised or oversized truss construction. If the insulation achieves the full insulation thickness over the exterior walls, R-30 insulation may be substituted for R-38 insulation and R-38 insulation may be substituted for R-49 insulation. Ceiling R-values represent the sum of cavity insulation plus insulating sheathing (if used). For ventilated ceilings, insulating sheathing must be placed between the conditioned space and the ventilated portion of the roof.
- ⁴ Wall R-values represent the sum of the wall cavity insulation plus insulating sheathing (if used). Do not include exterior siding, structural sheathing, and interior drywall. For example, an R-19 requirement could be met *EITHER* by R-19 cavity insulation *OR* R-13 cavity insulation plus R-6 insulating sheathing. Wall requirements apply to wood-frame or mass (concrete, masonry, log) wall constructions, but do not apply to metal-frame construction. Metal-frame wall equivalent R-values can be found in Appendix C.
- ⁵ The floor requirements apply to floors over unconditioned spaces (such as unconditioned crawlspaces, basements, or garages). Floors over outside air must meet the ceiling requirements.
- ⁶ Walls of conditioned basements below uninsulated floors must be insulated from the top of the basement wall to a depth of 10 ft below ground level or to the level of the basement floor, whichever is less. The entire opaque portion of basement walls with an average depth less than 50% below grade must meet the same R-value requirement as above-grade walls. Conditioned basement windows and sliding glass doors must be included with the other glazing. Basement doors must meet the door U-value requirement described in Note b.
- ⁷ The R-value requirements are for unheated slabs. Add an additional R-2 for heated slabs, except in Zone 1 which does not require slab insulation. For packages with a slab insulation requirement, the insulation must extend a total linear distance of at least 24 in. in Zones 2-12 and 48 in. in Zones 13-17. The insulation must extend
1) down from the top of the slab, or
2) down from the top of the slab to the bottom of the slab and then horizontally underneath the slab, or
3) down from the top of the slab to the bottom of the slab and then horizontally away from the slab, with pavement or at least 10 in. of soil covering the horizontal insulation.
- ⁸ The crawl space wall R-value requirements are for walls of unventilated crawl spaces. The crawl space wall insulation must extend from the top of the wall (including the sill plate) to at least 12 in. below the outside finished grade. If the distance from the outside finished grade to the top of the footing is less than 12 in., the insulation must extend a total vertical plus horizontal distance of 24 in. from the outside finished grade.
- ⁹ *High Heating* means a furnace AFUE of 90% or more, or a heat pump HSPF of 7.8 or more. *High Cooling* means a SEER of 12 or more. *High Heat/Cool* means both heating and cooling equipment must meet these minimum efficiencies. If you plan to install more than one piece of heating equipment or more than one piece of cooling equipment, the equipment with the lowest efficiency must meet or exceed the efficiency required by the selected package. The following California counties do not qualify for the cooling equipment credit: Alameda, Contra Costa, Los Angeles, Marin, Monterey, Napa, Orange, San Benito, San Diego, San Francisco, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Solano, Sonoma, and Ventura.

NOTES:

- a) Glazing areas and U-values are maximum acceptable levels. Insulation R-values are minimum acceptable levels. R-value requirements are for insulation only and do not include structural components.
- b) Opaque doors in the building envelope must have a U-value no greater than 0.35. Door U-values must be based on manufacturer data, taken from the door U-value table in Appendix B, or derived from an alternate test procedure or table accepted by your jurisdiction. If a door contains glass and an aggregate U-value rating for that door is not available, include the glass area of the door with your windows and use the opaque door U-value to determine compliance of the door. One door may be excluded from this requirement (i.e., may have a U-value greater than 0.35).
- c) If a ceiling, wall, floor, basement wall, slab-edge, or crawl space wall component includes two or more areas with different insulation levels, the component complies if the area-weighted average R-value is greater than or equal to the R-value requirement for that component. Glazing or door components comply if the area-weighted average U-value of all windows or doors is less than or equal to the U-value requirement (0.35 for doors). Use the *R-Value/U-Value Weighted Average Worksheet* for these computations.