

CA 2022 Title 24 Cool Roof Requirements (see [2022 Energy Code](#) for code text)

Effective January 1, 2023

Section		Construction Type	Occupancy Type	Slope	Climate Zone	Minimum 3 year Aged Solar Reflectance	Minimum Thermal Emittance	Minimum Solar Reflectance Index (SRI)	Notes																				
10-113(a)	Mandatory	Product Labeling	All	All	See below	See below	See below	See below	Every roofing product installed in construction to take compliance credit or meet the prescriptive requirements for reflectance and emittance shall have a clearly visible packaging label that lists the emittance and the initial and 3-year aged solar reflectance, or a CRRC Rapid Rating for solar reflectance, tested in accordance with the CRRC-1 Program.																				
10-113(b)	Mandatory	Product Rating	All	All	See below	See below	See below	See below	Every roofing product installed in construction to take compliance credit or meet the prescriptive requirements for reflectance and emittance shall be rated by CRRC.																				
110.8(i)1-4	Mandatory	Insulation, Roofing Products & Radiant Barriers	All	All	See below	See below	See below	See below	Exception 1 to Section 110.8(i): Roofing products that are not certified according to Section 10-113 shall assume the following default aged solar reflectance/thermal emittance values: A. For asphalt shingles: 0.08/0.75 B. For all other roofing products: 0.10/0.75 See code for additional exceptions																				
140.3(a)1Aia	Prescriptive	New Construction	Nonresidential	Low Slope	Zones ALL	0.63	0.75	75	Exception 1 to Section 140.3(a)1Aia: Wood-framed roofs in climate zones 3 and 5 are exempt from the requirements of Section 140.3(a)1Aia if the roof assembly has a U-factor of 0.034 or lower. Exception2 to Section 140.3(a)1Aia: Roof constructions with a weight of at least 25 lb/ft2 over the roof membrane are exempt from the requirements of Section 140.3(a)1Aia. Exception 3 to Section 140.3(a)1Aia: An aged solar reflectance less than 0.63 is allowed provided the maximum roof/ceiling U-factor in Table 140.3 is not exceeded. <i>TABLE 140.3 ROOF/CEILING INSULATION TRADEOFF FOR AGED SOLAR REFLECTANCE – NONRESIDENTIAL BUILDINGS</i>																				
									<table border="1"> <thead> <tr> <th>Aged Solar Reflectance</th> <th>Metal Building Climate Zone 1-16 U-factor</th> <th>Wood framed and Other Climate Zone 6 - 8 U-factor</th> <th>Wood Framed and Other All Other Climate Zones U-factor</th> </tr> </thead> <tbody> <tr> <td>0.62-0.56</td> <td>0.038</td> <td>0.045</td> <td>0.032</td> </tr> <tr> <td>0.55-0.46</td> <td>0.035</td> <td>0.042</td> <td>0.030</td> </tr> <tr> <td>0.45-0.36</td> <td>0.033</td> <td>0.039</td> <td>0.029</td> </tr> <tr> <td>0.35-0.25</td> <td>0.031</td> <td>0.037</td> <td>0.028</td> </tr> </tbody> </table>	Aged Solar Reflectance	Metal Building Climate Zone 1-16 U-factor	Wood framed and Other Climate Zone 6 - 8 U-factor	Wood Framed and Other All Other Climate Zones U-factor	0.62-0.56	0.038	0.045	0.032	0.55-0.46	0.035	0.042	0.030	0.45-0.36	0.033	0.039	0.029	0.35-0.25	0.031	0.037	0.028
Aged Solar Reflectance	Metal Building Climate Zone 1-16 U-factor	Wood framed and Other Climate Zone 6 - 8 U-factor	Wood Framed and Other All Other Climate Zones U-factor																										
0.62-0.56	0.038	0.045	0.032																										
0.55-0.46	0.035	0.042	0.030																										
0.45-0.36	0.033	0.039	0.029																										
0.35-0.25	0.031	0.037	0.028																										
140.3(a)1Aib1	Prescriptive	New Construction	Nonresidential	Steep Slope	Zones 1 & 3	0.20	0.75	16																					
140.3(a)1Aib2	Prescriptive	New Construction	Nonresidential (Guest rooms of hotel and motel buildings)	Steep Slope	Zones 2 & 4–16	0.25	0.80	23																					
140.3(a)1Aia	Prescriptive	New Construction	Nonresidential (Guest rooms of hotel and motel buildings)	Low Slope	Zones 9,10,11,13,14 & 15	0.55	0.75	64	Exception to Section 140.3(a)1Aia: Roof constructions with a weight of at least 25 lb/ft2 over the roof membrane.																				
140.3(a)1Aib	Prescriptive	New Construction	Nonresidential (Guest rooms of hotel and motel buildings)	Steep Slope	Zones 2 - 15	0.20	0.75	16																					

Section	Prescriptive	Construction Type	Occupancy Type	Slope	Climate Zone	Minimum 3 year Aged Solar Reflectance	Minimum Thermal Emittance	Minimum Solar Reflectance Index (SRI)	Notes																																																																																																																																																																																																																																																																																																																								
140.3(a)8	Prescriptive	New Construction	Relocatable Public School Buildings Where Manufacturer certifies use in specific climate zone	Low Slope	Zones ALL	0.63	0.75	75																																																																																																																																																																																																																																																																																																																									
140.3(a)8	Prescriptive	New Construction	Relocatable Public School Buildings Where Manufacturer certifies use in all climate zones	Steep Slope	Zones 1 & 3	0.20	0.75	16																																																																																																																																																																																																																																																																																																																									
140.3(a)8	Prescriptive	New Construction	Relocatable Public School Buildings Where Manufacturer certifies use in all climate zones	Steep Slope	Zones 2 & 4–16	0.25	0.80	23	<p>TABLE 140.3-B – PRESCRIPTIVE ENVELOPE CRITERIA FOR NONRESIDENTIAL BUILDINGS (INCLUDING RELOCATABLE PUBLIC SCHOOL BUILDINGS) (WHERE MANUFACTURER CERTIFIES USE ONLY IN SPECIFIC CLIMATE ZONE, NOT INCLUDING HIGH-RISE RESIDENTIAL BUILDINGS AND GUEST ROOMS OF HOTEL/MOTEL BUILDINGS)</p> <table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="16">Climate Zone</th> </tr> <tr> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th> </tr> </thead> <tbody> <tr> <td rowspan="16">Envelope</td> <td rowspan="6">Maximum U-factor</td> <td rowspan="2">Roof/Ceiling</td> <td>Metal Building</td> <td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td><td>0.043</td> </tr> <tr> <td>Wood Framed and Other</td> <td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td><td>0.034</td> </tr> <tr> <td rowspan="4">Wall</td> <td>Metal Building</td> <td>0.113</td><td>0.263</td><td>0.113</td><td>0.063</td><td>0.063</td><td>0.113</td><td>0.113</td><td>0.063</td><td>0.063</td><td>0.063</td><td>0.063</td><td>0.063</td><td>0.063</td><td>0.063</td> </tr> <tr> <td>Metal Framed</td> <td>0.060</td><td>0.055</td><td>0.071</td><td>0.055</td><td>0.055</td><td>0.060</td><td>0.060</td><td>0.055</td><td>0.055</td><td>0.055</td><td>0.055</td><td>0.055</td><td>0.055</td><td>0.055</td> </tr> <tr> <td>Mass Light</td> <td>0.196</td><td>0.170</td><td>0.278</td><td>0.227</td><td>0.440</td><td>0.440</td><td>0.440</td><td>0.440</td><td>0.440</td><td>0.170</td><td>0.170</td><td>0.170</td><td>0.170</td><td>0.170</td> </tr> <tr> <td>Mass Heavy</td> <td>0.253</td><td>0.850</td><td>0.650</td><td>0.650</td><td>0.650</td><td>0.650</td><td>0.650</td><td>0.650</td><td>0.650</td><td>0.184</td><td>0.253</td><td>0.253</td><td>0.184</td><td>0.184</td> </tr> <tr> <td rowspan="2">Other</td> <td>Wood Framed and Other</td> <td>0.095</td><td>0.099</td><td>0.118</td><td>0.099</td><td>0.102</td><td>0.110</td><td>0.110</td><td>0.102</td><td>0.099</td><td>0.099</td><td>0.045</td><td>0.099</td><td>0.099</td><td>0.042</td> </tr> <tr> <td>Reveal Mass</td> <td>0.092</td><td>0.092</td><td>0.208</td><td>0.208</td><td>0.208</td><td>0.208</td><td>0.208</td><td>0.208</td><td>0.208</td><td>0.092</td><td>0.092</td><td>0.092</td><td>0.092</td><td>0.092</td> </tr> <tr> <td rowspan="6">Roofing Products</td> <td rowspan="2">Solar Reflectance</td> <td>Other</td> <td>0.048</td><td>0.039</td><td>0.071</td><td>0.071</td><td>0.071</td><td>0.071</td><td>0.071</td><td>0.071</td><td>0.071</td><td>0.039</td><td>0.071</td><td>0.071</td><td>0.039</td> </tr> <tr> <td>Aged Solar Reflectance</td> <td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td><td>0.63</td> </tr> <tr> <td rowspan="2">Thermal Emittance</td> <td>Other</td> <td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td><td>0.75</td> </tr> <tr> <td>Aged Solar Reflectance</td> <td>0.23</td><td>0.25</td><td>0.20</td><td>0.25</td><td>0.25</td><td>0.25</td><td>0.25</td><td>0.25</td><td>0.25</td><td>0.25</td><td>0.25</td><td>0.25</td><td>0.25</td><td>0.25</td> </tr> <tr> <td rowspan="2">Thermal Emittance</td> <td>Other</td> <td>0.75</td><td>0.80</td><td>0.75</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td> </tr> <tr> <td>Aged Solar Reflectance</td> <td>0.75</td><td>0.80</td><td>0.75</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td><td>0.80</td> </tr> <tr> <td rowspan="2">Air Barrier</td> <td>REQ</td> <td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td><td>REQ</td> </tr> <tr> <td>Non-Swinging</td> <td>0.50</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td><td>1.45</td> </tr> <tr> <td rowspan="2">Exterior Doors, Maximum U-factor</td> <td>Non-Swinging</td> <td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td> </tr> <tr> <td>Swinging</td> <td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td><td>0.70</td> </tr> </tbody> </table>		Climate Zone																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Envelope	Maximum U-factor	Roof/Ceiling	Metal Building	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	Wood Framed and Other	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	Wall	Metal Building	0.113	0.263	0.113	0.063	0.063	0.113	0.113	0.063	0.063	0.063	0.063	0.063	0.063	0.063	Metal Framed	0.060	0.055	0.071	0.055	0.055	0.060	0.060	0.055	0.055	0.055	0.055	0.055	0.055	0.055	Mass Light	0.196	0.170	0.278	0.227	0.440	0.440	0.440	0.440	0.440	0.170	0.170	0.170	0.170	0.170	Mass Heavy	0.253	0.850	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.184	0.253	0.253	0.184	0.184	Other	Wood Framed and Other	0.095	0.099	0.118	0.099	0.102	0.110	0.110	0.102	0.099	0.099	0.045	0.099	0.099	0.042	Reveal Mass	0.092	0.092	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.092	0.092	0.092	0.092	0.092	Roofing Products	Solar Reflectance	Other	0.048	0.039	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.039	0.071	0.071	0.039	Aged Solar Reflectance	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	Thermal Emittance	Other	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	Aged Solar Reflectance	0.23	0.25	0.20	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	Thermal Emittance	Other	0.75	0.80	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	Aged Solar Reflectance	0.75	0.80	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	Air Barrier	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	Non-Swinging	0.50	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	Exterior Doors, Maximum U-factor	Non-Swinging	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	Swinging	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	Climate Zone																																																																																																																																																																																																																																																																																																																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																																																																																																																																																																																																																																																																																																																	
Envelope	Maximum U-factor	Roof/Ceiling	Metal Building	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043																																																																																																																																																																																																																																																																																																																	
			Wood Framed and Other	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034																																																																																																																																																																																																																																																																																																																
		Wall	Metal Building	0.113	0.263	0.113	0.063	0.063	0.113	0.113	0.063	0.063	0.063	0.063	0.063	0.063	0.063																																																																																																																																																																																																																																																																																																																
			Metal Framed	0.060	0.055	0.071	0.055	0.055	0.060	0.060	0.055	0.055	0.055	0.055	0.055	0.055	0.055																																																																																																																																																																																																																																																																																																																
			Mass Light	0.196	0.170	0.278	0.227	0.440	0.440	0.440	0.440	0.440	0.170	0.170	0.170	0.170	0.170																																																																																																																																																																																																																																																																																																																
			Mass Heavy	0.253	0.850	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.184	0.253	0.253	0.184	0.184																																																																																																																																																																																																																																																																																																																
	Other	Wood Framed and Other	0.095	0.099	0.118	0.099	0.102	0.110	0.110	0.102	0.099	0.099	0.045	0.099	0.099	0.042																																																																																																																																																																																																																																																																																																																	
		Reveal Mass	0.092	0.092	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.092	0.092	0.092	0.092	0.092																																																																																																																																																																																																																																																																																																																	
	Roofing Products	Solar Reflectance	Other	0.048	0.039	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.039	0.071	0.071	0.039																																																																																																																																																																																																																																																																																																																	
			Aged Solar Reflectance	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63																																																																																																																																																																																																																																																																																																																
		Thermal Emittance	Other	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75																																																																																																																																																																																																																																																																																																																
			Aged Solar Reflectance	0.23	0.25	0.20	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25																																																																																																																																																																																																																																																																																																																
		Thermal Emittance	Other	0.75	0.80	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80																																																																																																																																																																																																																																																																																																																
			Aged Solar Reflectance	0.75	0.80	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80																																																																																																																																																																																																																																																																																																																
	Air Barrier	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ																																																																																																																																																																																																																																																																																																																	
		Non-Swinging	0.50	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45																																																																																																																																																																																																																																																																																																																	
Exterior Doors, Maximum U-factor	Non-Swinging	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70																																																																																																																																																																																																																																																																																																																		
	Swinging	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70																																																																																																																																																																																																																																																																																																																		
141.0(a)1	Prescriptive	Additions, Alterations & Repairs	Nonresidential and hotel/motel occupancies	All	See code	See code	See code	See code	See code for exceptions																																																																																																																																																																																																																																																																																																																								
141.0(b)1.A	Mandatory	Additions, Alterations & Repairs	Nonresidential, hotel/motel, or relocatable public school buildings	All	See code	See code	See code	See code	See code for exceptions																																																																																																																																																																																																																																																																																																																								
141.0(b)2Bi	Prescriptive	Re-Roofing (Replacements, recovering or recoating)	Nonresidential	Low Slope	Zones ALL	0.63	0.75	75	<p>Roofs with more than 50 percent of the roof area or more than 2,000 square feet of roof, whichever is less, is being altered the requirements of i below apply:</p> <p>i. Roofing Products shall comply with requirements in Section 140.3(a)1A:</p> <p>EXCEPTION 1 to Section 141.0(b)2Bi: An aged solar reflectance less than 0.63 is allowed for low sloped roofs provided the maximum roof/ceiling U-factor in TABLE 141.0-B is not exceeded.</p> <p>EXCEPTION 2 to Sections 141.0(b)2Bi: Roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels are not required to meet the minimum requirements for solar reflectance, thermal emittance, or SRI.</p> <p>EXCEPTION 3 to Sections 141.0(b)2Bi: Roof constructions with a weight of at least 25 lb/ft² are not required to meet the minimum requirements for solar reflectance, thermal emittance, or SRI.</p>																																																																																																																																																																																																																																																																																																																								

Section		Construction Type	Occupancy Type	Slope	Climate Zone	Minimum 3 year Aged Solar Reflectance	Minimum Thermal Emittance	Minimum Solar Reflectance Index (SRI)	Notes																											
									<p><i>Table 141.0-B Roof/Ceiling Insulation Tradeoff for Low-Sloped Aged Solar Reflectance</i></p> <table border="1"> <thead> <tr> <th>Aged Solar Reflectance</th> <th>Climate Zones 6, 7, & 8 U-factor</th> <th>All Other Climate Zones U-factor</th> </tr> </thead> <tbody> <tr> <td>0.62-0.60</td> <td>0.043</td> <td>0.035</td> </tr> <tr> <td>0.59-0.55</td> <td>0.041</td> <td>0.034</td> </tr> <tr> <td>0.54-0.50</td> <td>0.038</td> <td>0.031</td> </tr> <tr> <td>0.49-0.45</td> <td>0.034</td> <td>0.029</td> </tr> <tr> <td>0.44-0.40</td> <td>0.032</td> <td>0.028</td> </tr> <tr> <td>0.39-0.35</td> <td>0.029</td> <td>0.026</td> </tr> <tr> <td>0.34-0.30</td> <td>0.028</td> <td>0.025</td> </tr> <tr> <td>0.29-0.25</td> <td>0.026</td> <td>0.024</td> </tr> </tbody> </table>	Aged Solar Reflectance	Climate Zones 6, 7, & 8 U-factor	All Other Climate Zones U-factor	0.62-0.60	0.043	0.035	0.59-0.55	0.041	0.034	0.54-0.50	0.038	0.031	0.49-0.45	0.034	0.029	0.44-0.40	0.032	0.028	0.39-0.35	0.029	0.026	0.34-0.30	0.028	0.025	0.29-0.25	0.026	0.024
Aged Solar Reflectance	Climate Zones 6, 7, & 8 U-factor	All Other Climate Zones U-factor																																		
0.62-0.60	0.043	0.035																																		
0.59-0.55	0.041	0.034																																		
0.54-0.50	0.038	0.031																																		
0.49-0.45	0.034	0.029																																		
0.44-0.40	0.032	0.028																																		
0.39-0.35	0.029	0.026																																		
0.34-0.30	0.028	0.025																																		
0.29-0.25	0.026	0.024																																		
150.1(c)11A	Prescriptive	New Construction	Single-family Residential	Steep Slope	Zones 10-15	0.20	0.75	16	EXCEPTION 1 to Section 150.1(c)11: Building integrated photovoltaic panels and building integrated solar thermal panels are exempt from the minimum requirements for aged solar reflectance and thermal emittance or SRI. EXCEPTION 2 to Section 150.1(c)11: Roof constructions with a weight of at least 25 lb/ft ² are exempt from the minimum requirements for aged solar reflectance and thermal emittance, or SRI.																											
150.1(c)11B	Prescriptive	New Construction	Single-family Residential	Low Slope	Zones 13 and 15	0.63	0.75	75	EXCEPTION 1 to Section 150.1(c)11: Building integrated photovoltaic panels and building integrated solar thermal panels are exempt from the minimum requirements for aged solar reflectance and thermal emittance or SRI. EXCEPTION 2 to Section 150.1(c)11: Roof constructions with a weight of at least 25 lb/ft ² are exempt from the minimum requirements for aged solar reflectance and thermal emittance, or SRI.																											
150.2(b)1li	Prescriptive	Re-Roofing (Replacements, recovering or re-coating)	Single-family residential (New roofing products)	Steep Slope	Zones 4, 8 -15	0.20	0.75	16	EXCEPTION 1 to Section 150.2(b)1li: The following shall be considered equivalent to Subsection i: a. Buildings with ceiling assemblies with a U-factor lower than or equal to 0.025 or that are insulated with at least R-38 ceiling insulation; or b. Buildings with a radiant barrier in the attic, where the radiant barrier is not installed directly above spaced sheathing, meeting the requirements of Section 150.1(c)2; or c. In Climate Zones 2, 4, 9, 10, 12 and 14, buildings that have no ducts in the attic; or d. Buildings with R-2 or greater continuous insulation above or below the roof deck. EXCEPTION 2 to Section 150.2(b)1li: Roof area covered by building integrated photovoltaic panels or building integrated solar thermal panels is not required to meet minimum requirements for aged solar reflectance, thermal emittance or SRI. EXCEPTION 3 to Section 150.2(b)1li: Roof constructions with a weight of at least 25 lb/ft ² are exempt from minimum requirements for aged solar reflectance and thermal emittance, or SRI.																											

Section		Construction Type	Occupancy Type	Slope	Climate Zone	Minimum 3 year Aged Solar Reflectance	Minimum Thermal Emittance	Minimum Solar Reflectance Index (SRI)	Notes																		
150.2(b)11ii(a)	Prescriptive	Re-Roofing (Replacements, recovering or re-coating)	Single-family residential (New roofing products)	Low Slope	Zones 4, 6-15	0.63	0.75	75	<p>EXCEPTION 1 to Section 150.2(b)11iia: The aged solar reflectance can be met by using insulation at the roof deck specified in Table 150.2-B</p> <table border="1"> <caption>TABLE 150.2-B AGED SOLAR REFLECTANCE INSULATION TRADE OFF TABLE</caption> <thead> <tr> <th>Minimum Aged Solar Reflectance</th> <th>Roof Deck Continuous Insulation R-value (Climate Zones 6-7)</th> <th>Roof Deck Continuous Insulation R-value (Climate Zones 2, 4, & 8-15)</th> </tr> </thead> <tbody> <tr> <td>0.60</td> <td>2</td> <td>16</td> </tr> <tr> <td>0.55</td> <td>4</td> <td>18</td> </tr> <tr> <td>0.50</td> <td>6</td> <td>20</td> </tr> <tr> <td>0.45</td> <td>8</td> <td>22</td> </tr> <tr> <td>No Requirement</td> <td>10</td> <td>24</td> </tr> </tbody> </table> <p>EXCEPTION 2 to Section 150.2(b)11iia: Roof area covered by building integrated photovoltaic panels or building integrated solar thermal panels is not required to meet the minimum requirements for aged solar reflectance, thermal emittance or SRI.</p> <p>EXCEPTION 3 to Section 150.2(b)11iia: Roof constructions with a weight of at least 25 lb/ft² are exempt from the minimum requirements for aged solar reflectance and thermal emittance, or SRI.</p>	Minimum Aged Solar Reflectance	Roof Deck Continuous Insulation R-value (Climate Zones 6-7)	Roof Deck Continuous Insulation R-value (Climate Zones 2, 4, & 8-15)	0.60	2	16	0.55	4	18	0.50	6	20	0.45	8	22	No Requirement	10	24
Minimum Aged Solar Reflectance	Roof Deck Continuous Insulation R-value (Climate Zones 6-7)	Roof Deck Continuous Insulation R-value (Climate Zones 2, 4, & 8-15)																									
0.60	2	16																									
0.55	4	18																									
0.50	6	20																									
0.45	8	22																									
No Requirement	10	24																									
170.2	Prescriptive	New Construction	Multifamily Buildings (Subchapter 11)	Low Slope (Options B & C)	Zones 13 & 15	0.63	0.75	75	<p>EXCEPTION 1 to Section 170.2(a)1A: Building integrated photovoltaic panels and building integrated solar Thermal panels are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.</p> <p>EXCEPTION 2 to Section 170.2(a)1A: Roof constructions with a weight of at least 25 lb/ft² are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.</p>																		
170.2	Prescriptive	New Construction	Multifamily Buildings (Subchapter 11)	Low Slope (Option D)	Zones 9-10 & 12-15	0.63	0.75	75	<p>EXCEPTION 1 to Section 170.2(a)1A: Building integrated photovoltaic panels and building integrated solar Thermal panels are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.</p> <p>EXCEPTION 2 to Section 170.2(a)1A: Roof constructions with a weight of at least 25 lb/ft² are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.</p>																		
170.2	Prescriptive	New Construction	Multifamily Buildings (Subchapter 11)	Steep Slope (Options B & C)	Zones 10-15	0.20	0.75	16	<p>EXCEPTION 1 to Section 170.2(a)1A: Building integrated photovoltaic panels and building integrated solar Thermal panels are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.</p> <p>EXCEPTION 2 to Section 170.2(a)1A: Roof constructions with a weight of at least 25 lb/ft² are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.</p>																		
170.2	Prescriptive	New Construction	Multifamily Buildings (Subchapter 11)	Steep Slope (Option D)	Zones ALL	0.20	0.75	16	<p>EXCEPTION 1 to Section 170.2(a)1A: Building integrated photovoltaic panels and building integrated solar Thermal panels are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.</p> <p>EXCEPTION 2 to Section 170.2(a)1A: Roof constructions with a weight of at least 25 lb/ft² are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.</p>																		

Section		Construction Type	Occupancy Type	Slope	Climate Zone	Minimum 3 year Aged Solar Reflectance	Minimum Thermal Emittance	Minimum Solar Reflectance Index (SRI)	Notes																		
180.1(a)1A	Prescriptive	Additions (Greater than 700 sf)	Multifamily Buildings (Subchapter 12)	Steep and Low Slope	Shall meet requirements of Section 170.2(a)	Shall meet requirements of Section 170.2(a)	Shall meet requirements of Section 170.2(a)	Shall meet requirements of Section 170.2(a)	EXCEPTION 1 to Section 170.2(a)1A: Building integrated photovoltaic panels and building integrated solar thermal panels are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI. EXCEPTION 2 to Section 170.2(a)1A: Roof constructions with a weight of at least 25 lb/ft ² are exempt from the minimum requirements for solar reflectance and thermal emittance or SRI.																		
180.2(b)1Ai	Prescriptive	Alterations (More than 50% of roof area or more than 2,000 sf of roof, whichever is less, being altered)	Multifamily Buildings (Subchapter 12)	Low Slope	Zones 2, 4, 6-15	0.63	0.75	75	EXCEPTION to Section 180.2(b)1Ai: The aged solar reflectance requirement can be met by using insulation at the roof deck specified in Table 180.2-A. <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Table 180.2-A Roof/Ceiling Insulation Tradeoff for Low-Sloped Aged Solar Reflectance</caption> <thead> <tr> <th>Minimum Aged Solar Reflectance</th> <th>Roof Deck Continuous Insulation R-value (Climate Zones 6-7)</th> <th>Roof Deck Continuous Insulation R-value (Climate Zones 2, 4, 8-15)</th> </tr> </thead> <tbody> <tr> <td>0.60</td> <td>2</td> <td>16</td> </tr> <tr> <td>0.55</td> <td>4</td> <td>18</td> </tr> <tr> <td>0.50</td> <td>6</td> <td>20</td> </tr> <tr> <td>0.45</td> <td>8</td> <td>22</td> </tr> <tr> <td>No requirement</td> <td>10</td> <td>24</td> </tr> </tbody> </table>	Minimum Aged Solar Reflectance	Roof Deck Continuous Insulation R-value (Climate Zones 6-7)	Roof Deck Continuous Insulation R-value (Climate Zones 2, 4, 8-15)	0.60	2	16	0.55	4	18	0.50	6	20	0.45	8	22	No requirement	10	24
Minimum Aged Solar Reflectance	Roof Deck Continuous Insulation R-value (Climate Zones 6-7)	Roof Deck Continuous Insulation R-value (Climate Zones 2, 4, 8-15)																									
0.60	2	16																									
0.55	4	18																									
0.50	6	20																									
0.45	8	22																									
No requirement	10	24																									
180.2(b)1Aii	Prescriptive	Alterations (More than 50% of roof area or more than 2,000 sf of roof, whichever is less, being altered)	Multifamily Buildings (Subchapter 12)	Steep Slope	Zones 4, 8-15	0.20	0.75	16	EXCEPTION to Section 180.2(b)1Aii: The following shall be considered equivalent to Subsection ii: a. Buildings with ceiling assemblies with a U-factor lower than or equal to 0.025 or that are insulated with at least R-38 ceiling insulation in an attic; or b. Buildings with a radiant barrier in the attic, where the radiant barrier is not installed directly above spaced sheathing, meeting the requirements of Section 170.2(a)1C; or c. Buildings that have no ducts in the attic in Climate Zones 2, 4, 9, 10, 12 and 14; or d. Buildings with R-2 or greater continuous insulation above or below the roof deck. EXCEPTION 1 to Sections 180.2(b)1Ai and ii: Roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels is not required to meet the minimum requirements for solar reflectance, thermal emittance or SRI. EXCEPTION 2 to Sections 180.2(b)1Ai and ii: Roof constructions with a weight of at least 25 lb/ft ² are not required to meet the minimum requirements for solar reflectance, thermal emittance or SRI.																		