



# Shedding Some Light On Energy Codes

<p><b>Why Roofing, Why NOW, Why So Many Different Requirements?</b></p>	<p><b>Conserving Energy Isn't News...</b> For over 30 years the need to conserve energy has impacted the way we live.</p> <ul style="list-style-type: none"> <li>• The gas crisis in the 70's changed the way we made cars.</li> <li>• Brownouts and blackouts forced change in the way air conditioners, refrigerators, dishwashers and light bulbs are made.</li> <li>• <i>Why Roofing...</i> It's our turn. Driven by local power authorities, the need to stretch capacity, to reduce urban heat islands (why cities are usually hotter than rural areas) and the growing acceptance of innately reflective single ply technologies, we have the ability to begin to really participate in energy conservation.</li> </ul>																																												
<p><b>Reflectivity, Emissivity and SRI?</b></p>	<p>Technical definitions for those who require it and bare bones reference to help the rest of us "get it"...</p> <p><b>Reflectance...</b>  <i>ASTM Definition...</i> the percentage of incident light reflected back from an image area where zero percent reflectance is black.  <i>Laymen's Terms...</i>Light energy reflected back into the atmosphere.</p> <p><b>Emissivity...</b>  <i>ASTM Definition...</i> The ratio of the radiation given off by the surface of a body to the radiation given off by a perfect black body at the same temperature.  <i>Laymen's Terms...</i> The higher the emissivity, the less heat energy a material will retain.</p> <p><b>SRI (Solar Reflectivity Index)</b>  <i>Laymen's Terms...</i> Solar Reflectance Index, SRI, is a relative number for a specific material that quantifies what the temperature of that material will be when exposed to sunlight, relative to a black surface which has an SRI of 0 and a white surface which has an SRI of 1.0. SRI is measured according to ASTM Standard E1980, using both the solar reflectance of the material and its emittance. SRI values closer to 1.0 are cooler roofing materials.</p>																																												
<p><b>Who's Who...</b></p>	<p><b>They Sound More Like Grammy Nominees Than Code Requirements...</b> CRRC, ENERGY STAR, Title 24, Chicago Energy Efficient Rating System, LEED Credits. Who's who and what do they require.</p> <table border="1" data-bbox="264 785 1523 1749"> <thead> <tr> <th data-bbox="264 785 451 863"><b>Code Body/ Required Compliance Date</b></th> <th colspan="3" data-bbox="459 785 938 863"><b>Minimum Reflectivity/Emissivity Initial and Aged</b></th> <th data-bbox="946 785 1141 863"><b>Test Method</b></th> <th data-bbox="1149 785 1352 863"><b>Specific Packaging Requirements</b></th> <th data-bbox="1360 785 1523 863"><b>Do We Meet Requirements?</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="264 867 451 1010"><b>Cool Roof Ratings Council (CRRC) Conformance optional</b></td> <td colspan="3" data-bbox="459 867 938 1010">CRRC records and reports information; they do not have performance requirements for emissivity or reflectivity. 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Also see SRI	Steep Slope < 5 lbs (Asphalt Shingles)	Aged Reflectance Min. 0.20 and Initial Emittance Min. 0.75 or Aged SRI Min. 16		Steep Slope ≥ 5 lbs (TruSlate)	Aged Reflectance Min. 0.15 and Initial Emittance Min. 0.75 or Aged SRI Min. 10		<b>ENERGY STAR Conformance Optional</b>	Low Slope ≤ 2:12	Initial Reflectance Min. 0.65 and Aged Reflectance Min 0.50		ASTM C1371, C1549, E903, E1918, CRRC-1 Tested by EPA recognized lab and certified by EPA recognized Certification Body	<b>Optional</b> Official logo use.	<b>Yes</b> See chart for listed products.	Steep Slope > 2:12	Initial Reflectance Min. 0.25 and Aged Reflectance Min. 0.15		<b>LEED (Leadership in Energy &amp; Environmental Design) Conformance Optional</b>	Option 1 75% of the roof surface has a min. 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<p><b>Clarity and Uniformity Come With Time...</b></p>		<p>For more information on energy code requirements call, 1- 800-Roof- 411. Please see the LEED playbook on gaf.com for further information.</p>																																											

## Energy Ratings for GAF Commercial Products

Product	Initial Reflectivity	3 Yr. Reflectivity	Initial Emissivity	3 Yr. Emissivity	Initial SRI Index	Aged SRI Index	Low Slope	Steep Slope	CRRC Product ID #	Title 24	LEED Credit	Energy Star	Florida Power & Light Company	Miami 21
EverGuard® EGFB (white)	0.85	0.62	0.86	0.84	107	74	X	X	0676-0004	Yes	Yes	Yes	Yes	Yes
EverGuard® Energy Gray TPO	0.72	0.67	0.87	0.90	88	81	X	X	0676-0045	Yes	Yes	Pending	Not Eligible	Yes
EverGuard® Energy Tan TPO	0.72	0.66	0.89	0.89	88	80	X	X	0676-0039	Yes	Yes	Yes	Not Eligible	Yes
EverGuard® Freedom™ TPO (gray)	0.4	0.42	0.89	0.86	45	47	X	X	0676-0038	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible
EverGuard® Freedom™ TPO (tan)	0.65	0.59	0.9	0.84	79	71	X	X	0676-0037	Yes	Yes	Yes	Not Eligible	Yes
EverGuard® Freedom™ TPO (white)	0.76	0.68	0.9	0.83	94	83	X	X	0676-0013	Yes	Yes	Yes	Yes	Yes
EverGuard® PVC (white)	0.87	0.61	0.95	0.86	111	75	X	X	0676-0040	Yes	Yes	Yes	Yes	Yes
EverGuard® TPO (gray)	0.4	0.42	0.89	0.86	45	47	X	X	0676-0003	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible
EverGuard® TPO (tan)	0.65	0.59	0.9	0.84	79	71	X	X	0676-0002	Yes	Yes	Yes	Not Eligible	Yes
EverGuard® TPO (white)	0.76	0.68	0.9	0.83	94	83	X	X	0676-0001	Yes	Yes	Yes	Yes	Yes
EverGuard® TPO FB Ultra (gray)	0.4	0.42	0.89	0.86	45	47	X	X	0676-0029	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible
EverGuard® TPO FB Ultra (tan)	0.65	0.59	0.9	0.84	79	71	X	X	0676-0028	Yes	Yes	Yes	Not Eligible	Yes
EverGuard® TPO FB Ultra (white)	0.76	0.68	0.9	0.83	94	83	X	X	0676-0027	Yes	Yes	Yes	Yes	Yes
EverGuard® TPO Hartford Green	0.29	0.28	0.88	0.90	30	28	X	X	0676-0048	Not Eligible	Not Eligible	Pending	Not Eligible	Not Eligible
EverGuard® TPO Regal Blue	0.26	0.25	0.88	0.90	26	24	X	X	0676-0047	Not Eligible	Not Eligible	Pending	Not Eligible	Not Eligible
EverGuard® TPO Regal Red	0.33	0.32	0.86	0.91	34	33	X	X	0676-0046	Not Eligible	Not Eligible	Pending	Not Eligible	Not Eligible
EverGuard® Extreme TPO (white)	0.84	0.65*	0.84	Pending	105	77	X	X	0676-0088	Yes	Yes	Pending	Yes	Yes
GAFGLAS® EnergyCap™ BUR Mineral Surfaced Cap Sheet (white)	0.8	0.63	0.9	0.87	100	76	X	--	0676-0021	Yes	Yes	Yes	Yes	Yes
Ruberoid® EnergyCap™ 30 FR (white)	0.8	0.63	0.84	0.84	99	75	X	--	0676-0017	Yes	Yes	Yes	Yes	Yes
Ruberoid® EnergyCap™ SBS Heat-Weld Plus FR (white)	0.75	0.60	0.82	0.80	91	70	X	--	0676-0026	Yes	Yes	Yes	Yes	Yes
Ruberoid® EnergyCap™ Torch Granule FR (white)	0.84	0.7	0.81	0.82	104	84	X	--	0676-0025	Yes	Yes	Yes	Yes	Yes
Ruberoid® EnergyCap™ Torch Plus FR (white)	0.8	0.62	0.84	0.84	99	73	X	--	0676-0019	Yes	Yes	Yes	Yes	Yes
Ruberoid® EnergyCap™ Mop FR (white)	0.74	0.57*	0.84	Pending	90	66	X	--	0676-0086	Yes	Yes	Pending	Yes	Yes
TOPCOAT® MATRIX™ 322 (white)	0.87	0.67*	0.87	Pending	110	81	X	X	0676-0010	Not Eligible	Yes	Yes	Yes	Yes
TOPCOAT® Elastomeric Roofing Membrane (white)	0.85	0.68	0.9	0.88	107	83	X	X	0676-0006	Yes	Yes	Yes	Yes	Yes
TOPCOAT® EnergyCote™ Elastomeric Coating (white)	0.91	0.78	0.87	0.89	115	97	X	--	0676-0023	Yes	Yes	Yes	Yes	Yes
TOPCOAT® EPDM Coating (white)	0.86	0.7	0.88	0.87	108	85	X	X	0676-0009	Not Eligible	Yes	Yes	Yes	Yes
TOPCOAT® FireShield® MB (white)	0.72	0.69	0.91	0.9	89	85	X	X	0676-0015	Not Eligible	Yes	Yes	Not Eligible	Yes
TOPCOAT® FireShield® MB w/ #10 Aggregate (white)	0.79	0.61*	0.88	Pending	98	73	X	--	Pending	Not Eligible	Yes	Pending	Not Eligible	Yes
TOPCOAT® FireShield® SB (white)	0.81	0.71	0.9	0.89	101	87	X	X	0676-0014	Not Eligible	Yes	Yes	Yes	Yes
TOPCOAT® FireShield® EPDM (white)	0.75	0.67	0.9	0.91	93	82	X	X	Pending	Not Eligible	Yes	Yes	Yes	Yes
TOPCOAT® MB Plus (white)	0.83	0.74	0.88	0.85	104	91	X	X	0676-0008	Not Eligible	Yes	Yes	Yes	Yes
TOPCOAT® Surface Seal SB (white)	0.84	0.59	0.9	0.87	106	71	X	X	0676-0007	Yes	Yes	Yes	Yes	Yes

**Note:** Thermal emittance and solar reflectance values shown on this table are values obtained for CRRC ratings. Other values for reflectance or emittance may vary based on test requirements.

Title 24 is based on new requirements effective January 1, 2010. Aged SRI (Title 24) is calculated using Aged Reflectivity and Initial Emissivity.

\*Calculated value per Title 24 requirements when aged values have not been attained.

This is just a brief list of GAF commercial products for a full listing of both residential and commercial product please visit <http://www.gaf.com/Roofing/Commercial-Roofing/Green-Roof-Central/Green-Roof-Central.asp>.