

## ENERGY STAR APPROVAL

Sentrigard Metal Roofing Systems has Energy Star approval for every metal roofing product we make when it is produced using bare Galvalume or clear acrylic coated Galvalume. (We use clear acrylic coated Galvalume for all of our “unpainted” Galvalume.) We also have Energy Star approval on many of our standard colors for both our Architectural and our Wood Frame product offerings. Attached are summary pages showing all of our standard colors and several non-standard colors, the initial and aged reflectivity values, and the initial emissivity values. There is no Emissivity requirement in the Energy Star program, but it must be reported. Emissivity is a requirement of several other programs, such as the LEED program. The emissivity values for our Energy Star approved colors have now been tested by the LEED required ASTM E408 test method. (LEED is addressed in Technical Bulletin 726)

The Energy Star program is an EPA program that is promoting highly reflective roofs. The theory is that roofs that reflect most of the solar energy will stay cooler and require less electricity for air conditioning. This, in turn, reduced the amount of electricity that must be produced, which reduces the amount of pollutants discharged into the air at the power plants. This is good for the environment and that's why the EPA is pushing it. Several states are beginning to mandate energy saving construction products, like this one. Notably, California and New York are leading the way. Other states will be following close behind. Architects are also asking about these issues and specifying energy efficient products. This issue and recyclability are becoming more important every day. (Recyclability is addressed in Technical Bulletin 725.)

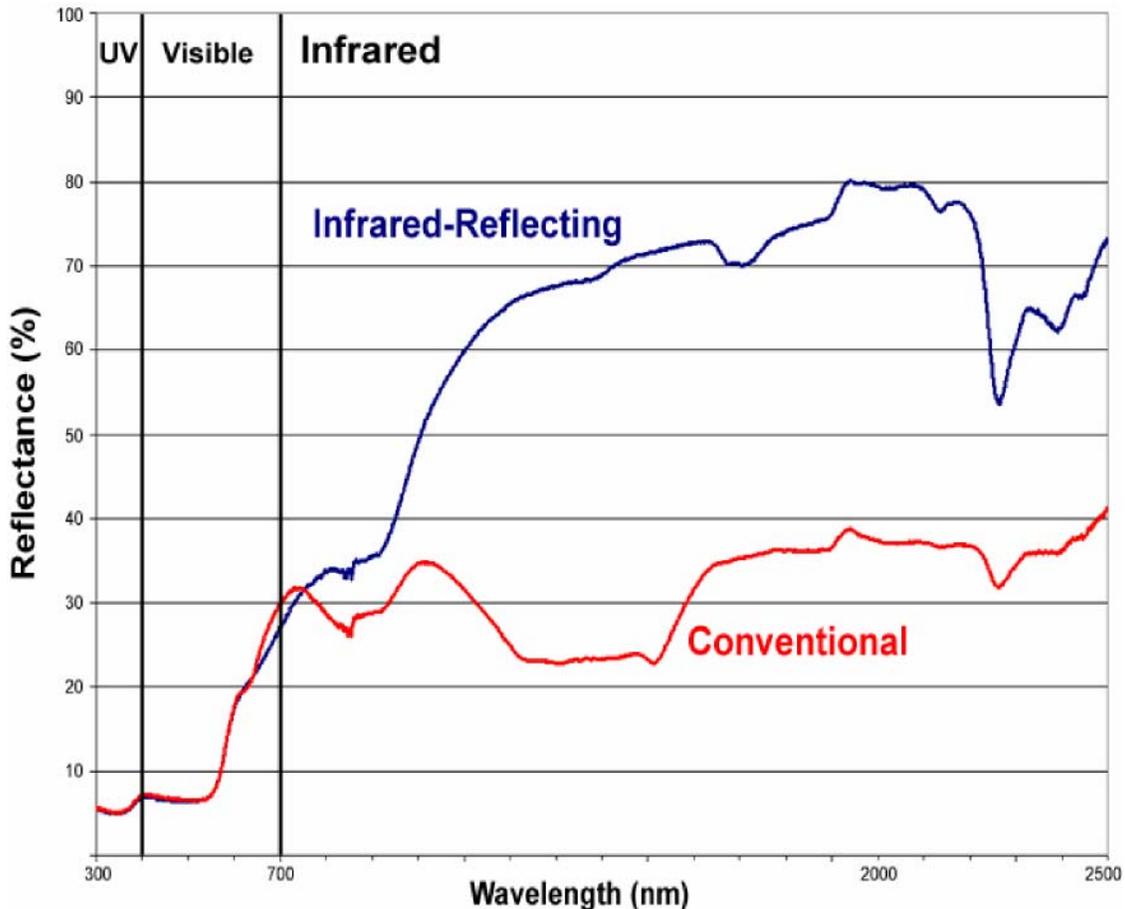
**The IRS home owner energy credit has been extended for 2009 and 2010. That means, homeowners that purchase a Sentrigard Metal Roofing Systems painted, ENERGY STAR certified metal roof from Jan. 1, 2009 through Dec. 31, 2010 will qualify for a tax credit of up to \$1,500. This credit is 30% of the material cost and applies to residential re-roofing projects that use painted metal roofing that meets the Energy Star requirements, up to the \$1,500 credit. The credit does not apply to the installation costs; just the cost of the metal roofing material. Use IRS tax form 5695 for this credit. A copy of Sentrigard Metal Roofing Systems’ “Manufacturer’s Certification Statement” letter should be given to the homeowner for his tax files. It does not need to be submitted with the tax forms but should be kept with his tax records. Please note that even though unpainted Galvalume is Energy Star approved, it is not eligible for the IRS tax credit. The material must be painted to qualify for the credit.**

In order to qualify for Energy Star approval as a low slope roof product (2:12 pitch or less) the product must have an initial reflectance of 0.65 or higher and a reflectance of 0.50 or higher after 3 years. In order to qualify for Energy Star approval as a steep slope roof product (greater than 2:12 pitch) the product must have an initial reflectance of 0.25 or higher and a reflectance of 0.15 or higher after 3 years. The Galvalume producers ran the extensive series of tests on bare Galvalume to qualify for both the low and steep slope requirements. They have distributed this test report to anyone that wishes to get approval.

Sentrigard Metal Roofing Systems also has approval for many of our standard and special colors, which are shown on the attached lists. Please be aware that even though our Kynar colors

Bone White and Regal White meet the more severe low slope reflectivity requirements, they were aged for 3 years at a 12:12 pitch. The Energy Star program requires they be aged at 2:12 or less. This is just a formality and these colors will certainly meet the aged requirements at 2:12 pitch, but they have not been tested that way so they are technically only Energy Star approved for steep slope use. Most Architects understand that these colors meet the intent of the low slope requirements and will use them for these applications. Our paint vendor is retesting these colors but we are 3 years away from having these aged values.

As you can see from the list, light colors are more reflective than dark colors. Darker colors absorb more solar energy, which heats up the panels and the living space inside the building and causes the air conditioner to work harder. Many Architects, however, prefer dark colored roofs which would have lower reflectivity values and not meet the Energy Star standards. This dilemma can be resolved by orders special paint colors with Infrared Reflective pigments. About half of the energy that strikes the earth is in the infrared range. These special pigments reflect more of the energy in that range while not impacting the visible light range significantly; therefore, not impacting the color we see. (See the chart below.) Both our paint vendors have specially formulated “cool colors” but none of them have been aged for 3 years so none are currently Energy Star approved. These colors are available as special colors.





ARCHITECTURAL KYNAR COLORS

9/29/09

Color	Color Number	Initial Total Solar Reflectivity	3 Yr. Exposed Solar Reflectivity	Initial Emissivity	Energy Star	SRI
APOTHECARY BLUE	V32	0.26	0.26	0.85	YES	24
BANNER RED	V93	0.42	0.41	0.84	YES	45*
BONE WHITE	V03	0.65	0.65	0.86	YES	78 **
BRIGHT COPPER	V25	0.49	0.47	0.85	YES	55 *
BRIGHT SILVER	V26	0.60	0.60	0.77	YES	68 *
BURGUNDY	V24	0.25	0.23	0.85	YES	23
CHARCOAL GRAY	V06	0.10	No Data	0.86		4
COLONIAL RED	V07	0.23	0.23	0.85		20
DARK BRONZE	V09	0.07	0.07	0.88		1
CLASSIC GREEN	V08	0.12	0.13	0.85		6
HARTFORD GREEN	V10	0.10	0.09	0.86		4
HEMLOCK GREEN	V11	0.21	0.20	0.86		18
MANSARD BROWN	V27	0.08	0.08	0.88		3
MATTE BLACK	V12	0.06	0.06	0.87		0
MEDIUM BRONZE	V29	0.10	No Data	0.87		5
MUSKET GRAY	V30	0.15	0.15	0.85		10
OLD TOWN GRAY	V13	0.25	0.25	0.86	YES	24
PATINA GREEN	V14	0.29	0.28	0.87	YES	29*
PEWTER	V40	0.24	No Data	0.81		20
REGAL BLUE	V15	0.16	0.16	0.86		12
REGAL WHITE	V38	0.68	0.67	0.86	YES	82 **
SANDSTONE	V17	0.54	0.53	0.86	YES	63 *
SEAL BROWN	V18	0.12	No Data	0.88		8
SIERRA TAN	V70	0.38	0.39	0.9	YES	42 *
SLATE BLUE	V19	0.21	0.22	0.86		18
SLATE GRAY	V20	0.21	0.22	0.87		19
STONE WHITE	V31	0.62	0.61	0.90	YES	75 *
SURREY BEIGE	V21	0.40	0.39	0.86	YES	43 *
TEAL	V22	0.18	0.14	0.86		14
TERRA COTTA	V23	0.39	0.38	0.84	YES	41 *
TURQUOISE	V28	0.20	No Data	0.86		17
SOLAR WHITE	WeatherX	0.70	0.70	0.85	CRRC approved	85 **
REGAL WHITE	Fluropon L/S	0.70	0.70	0.85	CRRC approved	85 **
BONE WHITE	Fluropon	0.70	0.69	0.84	CRRC approved	85 **
SOLAR WHITE	Fluropon L/S	0.70	0.68	0.85	CRRC approved	85 **
GALVALUME UNPAINTED		0.78	0.58	0.06	YES	75 *
GALVALUME / CLEAR		0.68	0.55	0.14	YES	58 *

Note: Reflectivity tested by ASTM C1 549 and Emissivity measured by ASTM C1 371.

\* Indicates color meets the steep slope requirement of SRI of 29 or higher

\*\* Indicates color meets the steep slope requirement of SRI of 29 or higher and the low slope requirement of SRI of 78 or higher.



ARCHITECTURAL NON-STANDARD KYNAR COLORS  
VALSPAR'S SR COOL ROOF COLORS  
9/29/09

COLOR	Valspar formulation Number	Initial Total Solar Reflectivity	3 Yr. Exposed Solar Reflectivity	Initial Emissivity	Energy Star Approved	SRI
ARTIC WHITE SR	431A704	0.56	0.55	0.84	YES	65 *
BONE WHITE SR	431A893	0.72	0.70	0.84	YES	87 **
REGAL WHITE SR	431R976	0.70	0.68	0.84	YES	85 **
ASH GRAY SR	432R313	0.39	0.39	0.85	YES	42 *
SLATE GRAY SR	432R315	0.40	0.39	0.86	YES	43 *
CHARCOAL GRAY SR	432R521	0.27	0.26	0.85	YES	26
BROWNSTONE SR	433A735	0.38	0.38	0.85	YES	40 *
SANDSTONE SR	433B272	0.51	0.50	0.85	YES	58 *
ALMOND SR	433B330	0.57	0.56	0.86	YES	67 *
SIERRA GOLD SR	433B364	0.47	0.46	0.86	YES	53 *
BRICK RED SR	434A764	0.29	0.29	0.87	YES	29 *
TERRA COTTA SR	434A847	0.35	0.35	0.87	YES	37 *
REGAL RED SR	434A986	0.42	0.41	0.84	YES	45 *
ARCADIA GREEN SR	435R600	0.34	0.33	0.88	YES	36 *
FOREST GREEN SR	435R603	0.27	0.26	0.85	YES	26
HUNTER GREEN SR	435RZ601	0.29	No Data	0.85		28
PACIFIC BLUE SR	436B307	0.26	0.25	0.85	YES	24
ALPINE BLUE SR	436R413	0.32	0.31	0.85	YES	32 *
SEAL BROWN SR	437R640	0.31	0.31	0.87	YES	32 *
MANSARD BROWN SR	437R645	0.30	0.29	0.85	YES	30*
DARK BRONZE SR	437R842	0.29	0.29	0.84	YES	28
COPPER PENNY SR	439RZ063	0.42	0.42	0.83	YES	46 *
CHAMPAGNE SR	439Z739M	0.50	No Data	0.78		54 *
BRIGHT SILVER SR	439ZZ221M	0.60	0.60	0.77	YES	68 *

Note: Reflectivity tested by ASTM C 1549 and Emissivity measured by ASTM C 1371.

\* Indicates color meets the steep slope requirement of SRI of 29 or higher

\*\* Indicates color meets the steep slope requirement of SRI of 29 or higher and the low slope requirement of SRI of 78 or higher.



ENDURACOTE  
WOODFRAME COLORS  
9/29/09

COLOR	Color Number	Initial Total Solar Reflectivity	3 Yr. Exposed Solar Reflectivity	Initial Emissivity	Energy Star Approved	SRI
BRIGHT WHITE	824	0.60	0.60	0.85	YES	71*
EVERGREEN	875	0.27	0.26	0.86	YES	26
CHARCOAL	851	0.18	No Data	0.90		16
CLASSIC BURGUNDY	853	0.19	No Data	0.88		17
TAN	855	0.38	0.39!	0.90	YES	42*
COCOA BROWN	856	0.20	No Data	0.90		19
DARK BROWN	859	0.16	No Data	0.90		14
HICKORY MOSS	870	0.36	0.32!	0.89	YES	39*
BLACK	880	0.14	No Data	0.90		11
IVORY	883	0.62	0.56!	0.89	YES	75*
CARIBBEAN BLUE	881	0.27	0.25!	0.90	YES	28
LIGHTSTONE	887	0.51	0.48!	0.90	YES	60*
LIGHT GRAY	889	0.31	0.31	0.87	YES	32*
PATINA GREEN	893	0.38	0.38!	0.90	YES	42*
BRICK RED	898	0.31	0.28!	0.90	YES	33*
WHITE	899	0.54	0.53!	0.89	YES	64*
BRIGHT RED	845	0.32	0.31	0.86	YES	33*
ANTIQUÉ BRONZE	854	0.20	No Data	0.89		18
GALLERY BLUE	826	0.12	No Data	0.90		9
HARTFORD GREEN	821	0.09	No Data	0.91		6
ASH GRAY	848	0.46	0.37!	0.91	YES	53*
WHITE	299	0.58	0.57!	0.89	YES	69*
POLAR WHITE	860	0.63	0.65!	0.89	YES	76*
GALVALUME UNPAINTED		0.78	0.58	0.06	YES	75*
GALVALUME/ CLEAR		0.68	0.55	0.14	YES	58*

! Aged values approved based on 3 year aged values of Super Alurite equivalent colors. Emissivity measured by ASTM C 1371.

\* Indicates color meets the steep slope requirement of SRI of 29 or higher

\*\* Indicates color meets the steep slope requirement of SRI of 29 or higher and the low slope requirement of SRI of 78 or higher.