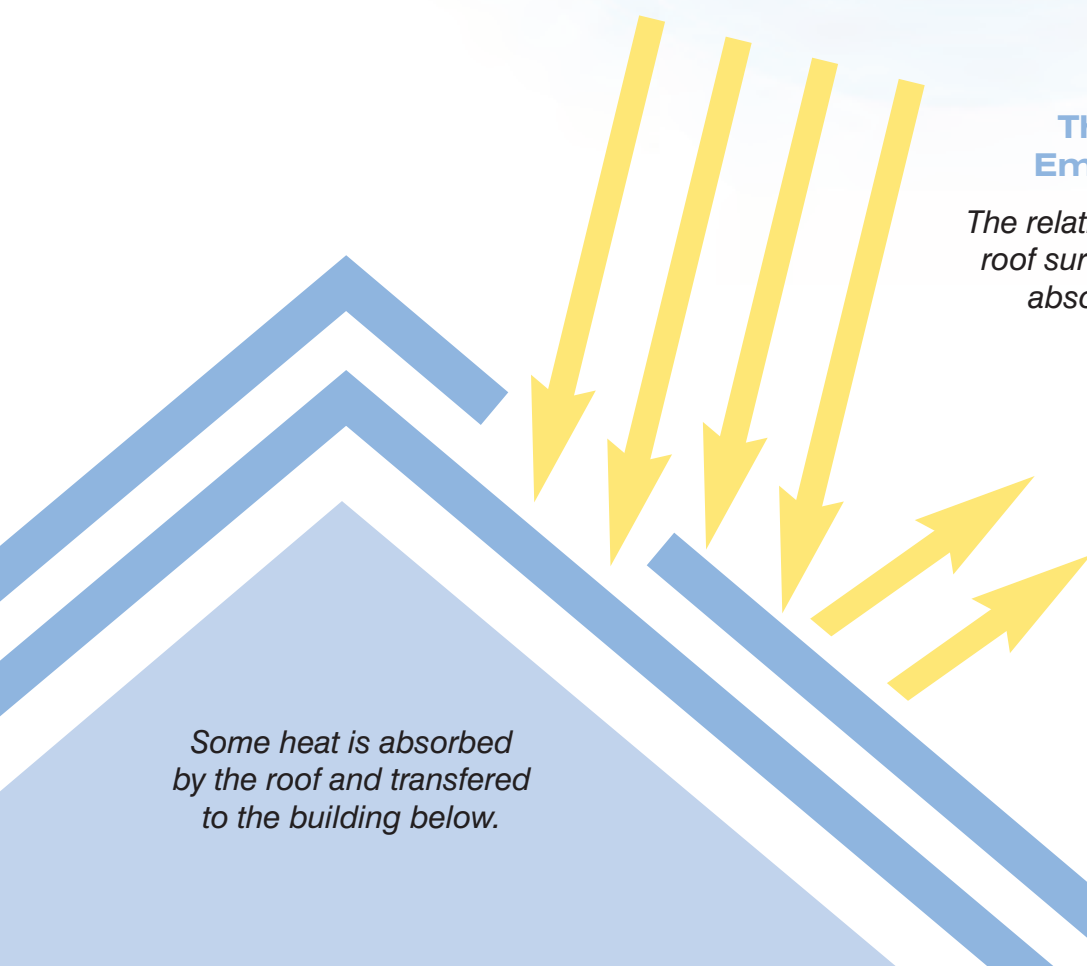


Using cool roof technology is one of the easiest, most cost-effective ways to lower energy consumption.



Thermal Emittance:

The relative ability of the roof surface to radiate absorbed heat.

Solar Reflectance:

The fraction of solar energy that is reflected by the roof.

Some heat is absorbed by the roof and transferred to the building below.

PRODUCT NAME	DESCRIPTION	ASTM REFERENCE
APP Modified Bitumen Cap Sheet		
Flintlastic® GTA CoolStar™	Workhorse granule surfaced cap membrane; offers the strength and UV resistance of APP modified bitumen with the stress resistance of a quality polyester reinforcement- for torch applications	D6222, Grade G, Type I
Flintlastic® GTA-FR CoolStar™	Enjoy the benefits of 'GTA' with fire retardant additives for Class A Fire Ratings	D6222, Grade G, Type I
SBS Modified Bitumen Cap Sheet		
Flintlastic® FR Cap 30 CoolStar™ *	Granule surfaced cap membrane; combines the strength of a heavy duty fiberglass reinforcement and the pliability of SBS modified bitumen with fire retardant additives- for hot asphalt or cold adhesive application	D6163, Grade G, Type I
Flintlastic® FR Cap 30 T CoolStar™ *	Enjoy the benefits of "FR Cap 30" for torch applications	D6163, Grade G, Type I
Flintlastic® GMS CoolStar™	Workhorse granule surfaced cap membrane; highly stress resilient with pliable SBS modified bitumen and polyester reinforcement- for hot asphalt and cold adhesive applications	D6164, Grade G, Type I
Flintlastic® FR-P CoolStar™	Enjoy the benefits of "GMS" with fire retardant additives for Class A Fire Ratings	D6164, Grade G, Type I
Flintlastic® Premium FR-P CoolStar™ *	Enjoy the benefits of "FR-P" with increased modified asphalt per square and a heavier, high-performance, extra-tough, stress resistant polyester reinforcement mat	D6164, Grade G, Type II
Flintlastic® GTS FR CoolStar™ *	One of CertainTeed's most robust granule surfaced cap membranes with 67 pounds of modified asphalt per square; highly stress resilient with pliable SBS modified bitumen and polyester reinforcement- for torch applications	D6164, Grade G, Type II
Self-Adhering SBS Modified Bitumen Cap Sheet		
Flintlastic® SA Cap CoolStar™	Granule surfaced self-adhering cap membrane; highly stress resilient with pliable SBS modified bitumen and polyester reinforcement	D6164 Grade G, Type I
Flintlastic® SA Cap FR CoolStar™ *	Granule surfaced, fire retardant self-adhering cap membrane; combines the strength of a heavy duty fiberglass reinforcement and the pliability of SBS modified bitumen	D6163, Grade G, Type I UL 2218, Class 4

CoolStar touch-up granules are available in 5-gallon buckets for use on asphalt bleed-out areas.

* Minimum order quantities may apply



ASK ABOUT ALL OF OUR OTHER CERTAINTEED® PRODUCTS AND SYSTEMS:

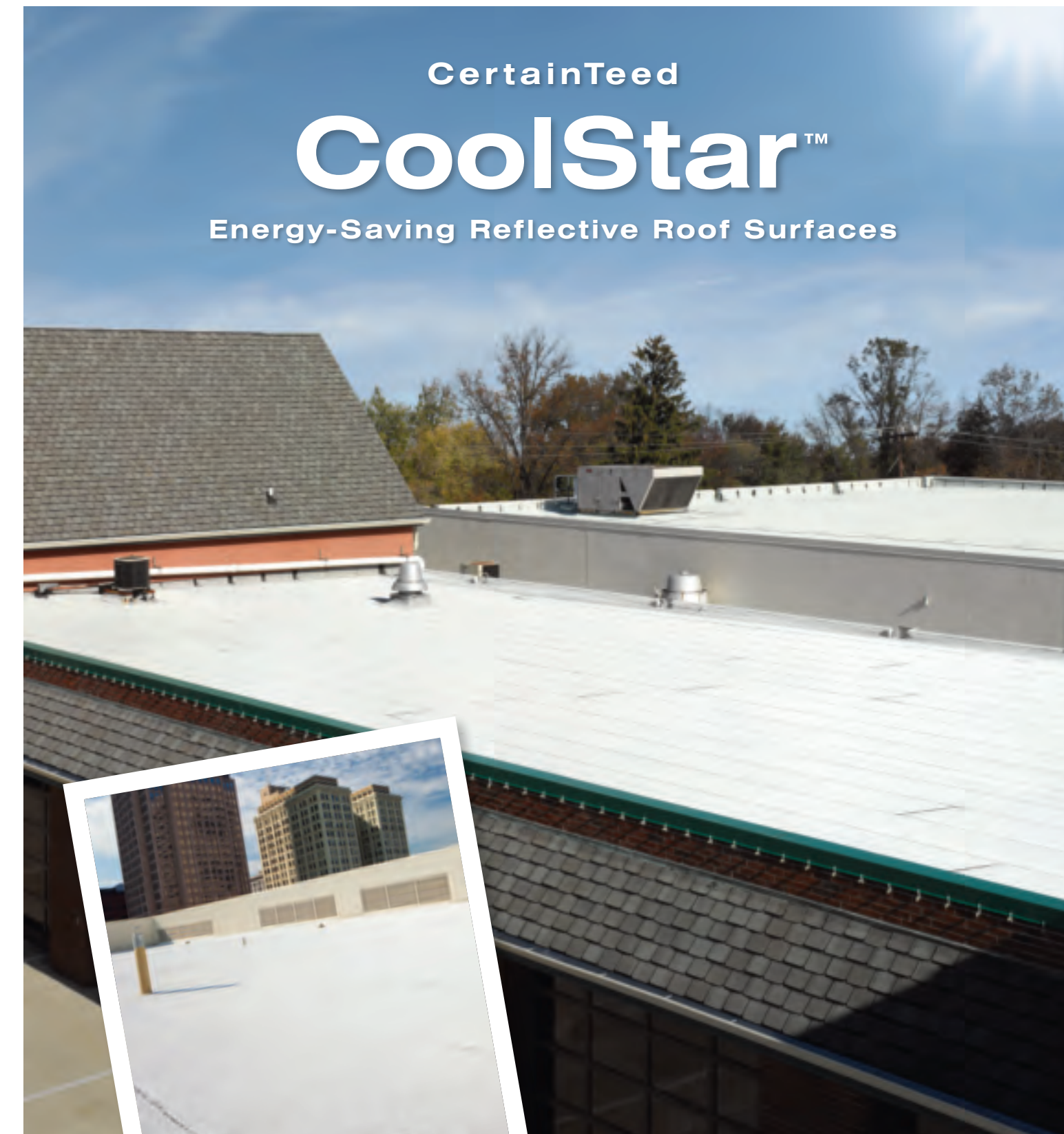
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CertainTeed
CoolStar™
Energy-Saving Reflective Roof Surfaces





White roofs reflect the sun's heat. Black roofs soak it in.

That's the key advantage offered by a brilliant white CoolStar roof surface. In fact, reflective roof products lower roof surface temperatures dramatically.

CoolStar Granules

CertainTeed's proprietary CoolStar granules utilize naturally occurring rock that has been stable for millions of years. This type of roofing granule has been used for over a century with proven success on traditional residential shingles and low-slope membranes. The base mineral granules are 100% opaque to UV radiation and, therefore, will protect the asphalt coating on the roofing membrane, thus maintaining granule coverage.

CertainTeed's CoolStar granules are surfaced with a highly reflective ceramic coating to achieve high solar reflectance. This ceramic coating has the same chemistry as that used for traditional roofing granules that have been used successfully for over a century, demonstrating excellent durability.

Works with a range of roof systems.

- Built-up roofing (BUR)
- SBS modified bitumen
- APP modified bitumen
- Self-adhering modified bitumen

ENERGY STAR®

CoolStar roofing products meet or exceed ENERGY STAR standards for reflectivity. To meet ENERGY STAR standards, a low slope roofing surface must have a solar reflectivity of .65 (meaning it reflects 65% of the radiation away from the surface and absorbs 35%). In general, an ENERGY STAR labeled product can help reduce energy costs by at least 30%.

What makes a roof "cool?"

Living spaces within a home stay cooler when the roof surface reflects the sun's solar radiation during summer days. The ability of a surface to reflect solar radiation is called "solar reflectance." Solar radiation that is not reflected is absorbed by the roof and will result in an increase of roof temperature. A light-colored roof with high solar reflectance rejects more solar heat back into the sky than a dark-colored roof. Not all of the incoming solar radiation can be reflected by the roof surface, especially with colored surfaces since the color you see is a direct result of absorption of certain portions of the solar light spectrum.

Another way your hot roof surface can efficiently cool itself is by "emitting" thermal radiation. This property is called "thermal emittance" - the higher the thermal emittance, the more the surface can transfer absorbed heat to the atmosphere. Unlike metal roofing, asphalt-based roofing materials typically have high thermal emittance, which enable their surfaces to cool themselves faster.

The solar reflectance and thermal emittance of a surface are called its "radiative properties" because they describe its ability to reflect and emit thermal radiation. "Cool roofs" have significantly greater radiative property values as compared to standard roofs.

What are the benefits of having a cool roof?

Cool roofs are one of several strategies building owners can use to increase occupant comfort, conserve energy and reduce their energy costs. A cool roof is a roofing system that delivers higher solar reflectance than standard roofing products. Cool roofs absorb less of the sun's energy, which translates into lower solar heat gain and a lower roof temperature.

In urban areas, replacing dark colored surfaces with more reflective surfaces helps mitigate the "heat island effect," a phenomenon that makes urban areas significantly warmer than surrounding rural areas because of large expanses of dark surfaces (pavements, roofs). Increased temperatures contribute to photochemical reactions that lead to the formation of smog. Installing cool roofs contributes toward increased urban air quality.

When is a cool roof required?

Some state and municipal building codes contain cool roofing requirements. CertainTeed recommends contacting your local building official to understand the specific requirements before starting a new building, reroofing or recover project.

Areas with cool roof rebates



For details on programs in your area, visit www.dsireusa.org.

Even if a particular state or local municipality doesn't require a cool roof, some power companies may offer rebates for qualified roofing products. Additionally, voluntary green building rating programs including LEED® and Green Globes® give credit toward building certification for installing a cool roof product meeting the minimum SRI (solar reflectance index) threshold.

All CoolStar membranes are qualified by ENERGY STAR®, and comply with a number of green building rating requirements for cool roofing. Initial and aged solar reflectance, thermal emittance and SRI values for CoolStar products are listed at www.energystar.gov and www.coolroofs.org.

How to choose a cool roof?

An easy way to judge the "coolness" of a roof is to compare its surface temperature on a sunny afternoon to that of a reference black roof and a reference white roof. The "solar reflectance index" (SRI) assigns a coolness of 0 to a reference black roof and a coolness of 100 to a reference white roof. Most roofing materials have an SRI of between 0 and 100, though values can be below 0 (hotter than reference black) or above 100 (cooler than reference white). Again, the higher the SRI, the cooler the surface will be.

Climate is an important consideration when considering the benefits of a cool roof. A cool roof could potentially lead to a slightly increased need for heating energy in winter because a cooler roof would transfer less heat to the building interior. On balance, however, more energy is typically required for cooling in the summer than heating in the winter. Therefore, cool roofs can often be the right choice in areas where the number of cooling days is higher than heating days. Overall energy savings can also be affected by the insulation level of the building enclosure and on the efficiency of the heating system.

Moisture management is a key aspect of any roof assembly, especially for reflective roofs as water dissipation is less efficient beneath cooler surfaces. Closing roof and ceiling penetrations that could allow moisture transmission to the interior, properly ventilating attics, and installing air- and vapor-barriers are effective strategies to limit moisture damage.

Just as for other building assemblies, proper roof design and installation are key to ensuring durability and long-term performance. CertainTeed Technical Services can assist in the selection of appropriate roofing systems to optimize your future energy savings and meet local building codes.

Do reflective roofs remain cool over time?

CertainTeed's CoolStar membranes are engineered to deliver long-term performance without significant fading or color change. They utilize bright white ceramic-coated roofing granules while other products require factory- or field-applied liquid coatings. These coatings are not designed to last more than 7 to 10 years and must be recoated 1 to 2 times during the roof's lifespan to maintain an effective level of solar reflectance.

Over time, soiling of the roof occurs, decreasing its solar reflectance, especially on low sloped roofs where ponding water is common. Most of the dirt pick-up happens within the first 3 years after installation. To attain ENERGY STAR qualification, a roof product must reflect more than 50% of solar radiation after 3 years of natural weathering, the purpose of which is to ensure appreciable energy usage reduction continues.

An important benefit of modified bitumen cap sheets is that its granules tend to be "self-cleaning" when sufficient positive surface drainage occurs, helping to keep the roof covering clean and reflective. In areas where rainfall is infrequent, CertainTeed recommends hosing off the roof as part of a routine maintenance program to regain its higher solar reflectance.



CertainTeed
SAINT-GOBAIN
Commercial Roofing