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## PAC Green Info: Cool Roof Rating Council

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The Cool Roof Rating Council (CRRC) is an independent, non-profit organization that maintains a third-party rating system for radiative properties of roof surfacing materials. Simply stated, it assists in the evaluation of roof products to determine their solar reflectance and thermal emittance characteristics. Many cool roof programs, codes and standards refer to the CRRC directory of rated roof products. It is important to note that the CRRC does not define a cool roof or establish minimum criteria for a product's solar reflectance or thermal emittance. A cool roof reflects and emits the sun's energy back to atmosphere instead of transferring it in the form of heat into a building, adding greatly to the energy efficiency of the building.

"Coolness" is measured by two properties; solar reflectance and thermal emittance. Both properties are measured from 0 to 1 and the higher the value, the "cooler" the roof. Cool Roofs provide the following benefits:

Cooling energy savings and global warming mitigation

Reduction in urban heat island effect and smog formation

Improved occupant thermal comfort

Compliance with codes and green building programs

### CRRC Actions and Initiatives

The CRRC is working toward becoming an ANSI Accredited organization.

Two technical issues that impact metal roofing are being addressed with the help of the Cool Metal Roofing Coalition. One issue relates to the question of whether the solar reflectance measured on a flat sample is representative of a formed or profiled metal roof panel. Some in the CRRC had suggested that for example a standing seam metal roof should report 10% lower solar reflectance than the reflectance value measured on a flat sample.

However, data collected by a task group from the Cool Metal Roofing Coalition using solar reflectance measurements on full-sized profiled metal roof panels and flat samples revealed no statistically significant difference. The measurements were conducted using ASTM E1918 method, which is recommended by CRRC for profiled or variegated roof products. For the categories of standing seam, modular/metal shingle, and agricultural panels, the Coalition recommended to the CRRC that their procedure for measuring solar reflectance, which allows for flat samples, be unchanged. The CRRC agreed, and modified their Product Rating Program Manual to read:

*"Profiled Metal Roofing Products: Profiled metal roofing products shall be rated using flat samples of the same color and material. Ratings for these samples may be applied to standing seam, agricultural panel, and modular/metal shingle profile types.*

*Exceptions: All other profile types of any solar reflectance shall be rated using profiled test samples and the solar reflectance shall be measured using ASTM E1918.”*

The other technical issue is related to a proposed change to the ASTM E1549 method for measuring solar reflectance. Scientists at Lawrence Berkeley National Laboratory reported that they discovered a discrepancy between solar reflectance values measured by the Devices and Services (D&S) portable reflectometer used for ASTM method C1549 and the E903 procedure. Their conclusion was that a detector inside the D&S device was not functioning properly and as a result the reported values for cool roof surfaces were artificially higher than they should be.

The CRRC Technical Committee has been discussing and debating whether the data on which the LBNL recommendation is based are valid and statistically significant enough to change the procedure and/or equipment hardware. The topic will also be debated within the ASTM E44 Committee. The change to the hardware is costly to the industry but more importantly a change downward to the labeled solar reflectance values of many listed products could jeopardize the ENERGY STAR labeling status and compliance with certain cool roof codes and initiatives if the new values are reduced by 4-5 points, as LBNL is suggesting.