



CRRC WALL RATING PROGRAM COMMITTEE

February 11, 2021
Conference Call



ANTITRUST STATEMENT

Although the Cool Roof Rating Council is a broad-based 501 (c) 3 organization, it does include numerous competitors in the roofing and wall industries and thus care must be taken to scrupulously abide by federal and state antitrust laws. As you know, the CRRC has in effect Antitrust Compliance Guidelines. Members should remember that antitrust compliance is important at all times whether at formed meetings such as this or in social settings. At this and other CRRC meetings, participants should not discuss sensitive issues including pricing, profitability, payment terms, and allocating markets or customers or anything else recommended against in the Antitrust Guidelines.



AGENDA

Topic	Time Allotment (min)
Welcome, Antitrust reading and roll call	5
Approval of Minutes	5
Board Updates	10
Logo Survey Results and Discussion	20
Technical Updates	20
Wall Rating Program “Index”	15
Marketing Updates	10
Program Fees	15
2021 Meeting Schedule	10
Wrap-Up and Next Steps	5



APPROVAL OF MINUTES

- Corrections or other feedback?
- Motion to approve the minutes as presented?



BOARD UPDATES

- Board of Directors met Jan. 29
 - Determined to operate the Wall Program within the existing CRRC organization
 - Asks the WRPC to consider specific costs to form an LLC within CRRC or to form a separate non-profit organization to operate the program



LOGO SURVEY RESULTS AND DISCUSSION



LOGO DEVELOPMENT

- Revised version of the CRRC mark needed for use in the Wall Rating Program
 - Founding Member Logo
 - Rated Product Label
 - Official Program Documents
- Important to maintain CRRC brand recognition



Current Logo



LOGO DEVELOPMENT

- Started with changes to existing logo:
 - Removed arrows, which are indistinguishable at a small size
 - Removed “Cool Roof Rating Council”
 - Extended upper roof line to wall
- Too similar to roof logo, additional iteration needed





LOGO DEVELOPMENT

- Explored additional changes:
 - Arrows on wall → made logo too wide
 - Addition of the word “walls” → looked awkward
- Experimented with various color schemes
 - Three best options sent to WRPC via survey



LOGO SURVEY

- 20 survey respondents
 - Winner: Option 3
 - Colors indicate a cool interior while reflecting exterior sunlight

1



SAMPLE - DO NOT CIRCULATE

2



SAMPLE - DO NOT CIRCULATE

3



SAMPLE - DO NOT CIRCULATE

- Number 3 was the winner, but there were questions:
 - Could a different shade of yellow be used?
 - What would the black and white version look like?
 - Is it too similar to the existing logo?

3



LOGO SURVEY COMMENTS

- A grayscale option should be developed specifically for that purpose. Shades have been changed on existing CRRC mark

3



- Shades of yellow
 - Many possibilities, input from WRPC color experts?





FOUNDING MEMBER LOGO

- Founding Member Logo is needed as soon as possible
- WRPC input needed on four ideas:





LOGO NEXT STEPS

- Recommendation to Board needed for mark and Founding Member Logo
- Feedback by online poll
- Take to Board at next meeting on April 8



TECHNICAL WORKING GROUP UPDATE

- On January 19, 2021, WRPC Technical Working Group (TWG) unanimously voted to recommend inclusion of a three-year weathering requirement and aged testing for the Wall Program





WEATHERING

- + Aligns with CRRC Roof Program
- + Provides end-users with some indication of longer-term product performance
- + Requirement can be removed later if supported by weathered product data
- + Weathering data can be used to develop a laboratory-aging protocol

- Not required for Color Family Additional Elements
- Products would be weathered vertically (90°) on South-facing exposure racks
 - Staggered to prevent cross-contamination



Photo: LBNL

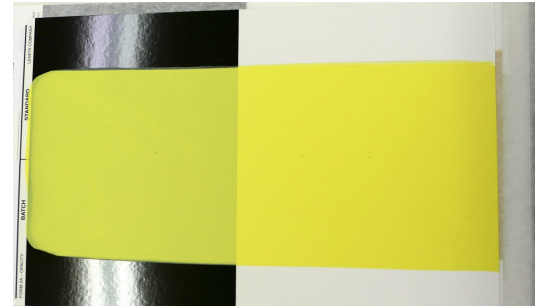


COMMITTEE MOTION

- Motion to accept the Technical Working Group's recommendation that the Wall Rating Program include a three-year weathering requirement and aged testing

PAINT SUBSTRATE

- Need a standard substrate for paint products seeking a CRRC rating
- Attributes needed:
 - Withstand three-year weathering
 - At least 3" x 5" but preferably 4" x 6"
 - Commercially available, reasonable cost
 - Paint must have good adhesion to panel
 - Must have low reflectivity (not bare aluminum)



PAINT SUBSTRATE

- Several options have been explored
 - Thank you, Dunn-Edwards team!
- Leading candidate has a measured SR of 0.06
 - 6061T6 aluminum panel, anodized
 - Has not yet been tested for adhesion
 - 4" x 6" size is not standard; 3" x 10" samples have been requested



- Key takeaways from TWG call on January 19, 2021:
 - Color Family Additional Elements do not need to be submitted on a substrate that has to hold up to 3-year weathering because aged testing will not be required
 - Importance of selecting a substrate with $SR \leq 0.10$

- TWG's next call is February 19
- Topics:
 - Color Family rating option
 - Laboratory training



Photo: Ronnen Levinson



WALL RATING PROGRAM “INDEX”



SOLAR REFLECTANCE INDEX (SRI)

- Calculated value that incorporates both solar reflectance and thermal emittance
 - ASTM E1980, *Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces*
 - Scale of 0-100, with some materials >100 or <0
 - Minimum SRI values set by code bodies

Showing 1-25 of 82 results **1** 2

COLOR	SOLAR REFLECTANCE		THERMAL EMITTANCE		SRI	
	INITIAL	3 YEAR	INITIAL	3 YEAR	INITIAL	3 YEAR
Grey	0.34	0.34	0.88	0.82	36	34
Tan	0.55	0.49	0.88	0.83	65	55
Bright White	0.86	0.73	0.87	0.84	108	89
Bright White	0.31	0.31	0.87	0.88	32	32
Bright White	0.86	0.57	0.91	0.91	109	68

SOLAR REFLECTANCE INDEX (SRI)

- Assumptions are required to calculate SRI

4.1 For a surface exposed to the sun, when the conduction into the material is zero, the steady-state surface temperature is obtained by:

$$\alpha I = \varepsilon \sigma (T_s^4 - T_{sky}^4) + h_c (T_s - T_a) \quad (1)$$

where:

- α = solar absorptance = 1 - solar reflectance,
- I = solar flux, $W \cdot m^{-2}$,
- ε = thermal emissivity,
- σ = Stefan Boltzmann constant, $5.66961 \times 10^{-8} W \cdot m^{-2} \cdot K^{-4}$,
- T_s = steady-state surface temperature, K,
- T_{sky} = sky temperature, K,
- h_c = convective coefficient, $W \cdot m^{-2} \cdot K^{-1}$, and
- T_a = air temperature, K.

4.2 Given the solar reflectivity and thermal emissivity of a surface, and the convective coefficient, Eq 1 needs to be solved iteratively for surface temperature. Alternatively, one can use the following equation to obtain the surface temperature:

$$T_s = 309.07 + \frac{(1066.07\alpha - 31.98\varepsilon)}{(6.78\varepsilon + h_c)} - \frac{(890.94\alpha^2 + 2153.86\alpha\varepsilon)}{(6.78\varepsilon + h_c)^2} \quad (2)$$

4.3 In this practice, Solar Reflectance Index is defined as:

$$SRI = 100 \frac{T_b - T_s}{T_b - T_w} \quad (3)$$

where: T_b and T_w are the steady-state temperature of black and white surfaces.

Under the standard solar and ambient conditions, Eq 3 is regressed to:

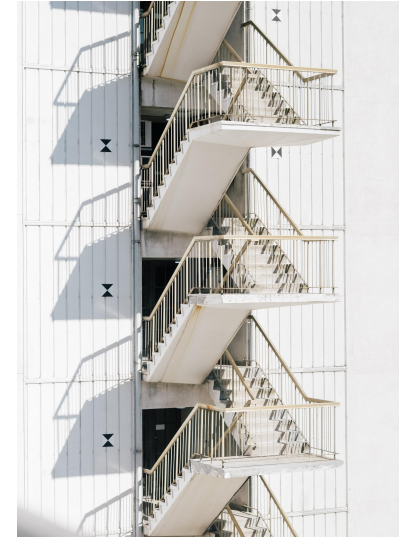
$$SRI = 123.97 - 141.35\chi + 9.655\chi^2 \quad (4)$$

where:

$$\chi = \frac{(\alpha - 0.029\varepsilon)(8.797 + h_c)}{9.5205\varepsilon + h_c} \quad (5)$$

WALL RATING INDEX?

- SRI is not appropriate for walls
- Developing a similar metric for walls is not recommended
 - More assumptions are required
 - Is the wall sun-facing?
 - What is the orientation of the wall (N,S,E,W)
 - Are there nearby buildings (i.e. neighboring walls)?
 - What is the albedo of the ground?



- Directory and Label need to be easy to understand; fewer metrics = simpler
 - SRI is not on the roof label
- **Proposal:** Emphasize solar reflectance as the primary Wall Program metric
 - Assumption is that many exterior wall products have a thermal emittance of at least 0.75
 - Less so with roofs (e.g., aluminized coating)

- Emphasizing solar reflectance can help to:
 - Simplify the CRRC Directory and CRRC Label
 - Avoid the erroneous use of SRI for wall products
- Measured value is more accurate than a calculated value



Example label with only solar reflectance



LABEL AND DIRECTORY

- Thermal emittance testing should still be required in the Wall Program for credibility and data robustness
 - Could be included, but minimized on CRRC Label and hidden on CRRC Directory (default view)
- **Input from Committee?**



MARKETING WORKING GROUP UPDATE

- Members
 - Brandon Bethke
 - Steve Drennan
 - Jonathan Parfrey
- Met on January 12, 2021
 - Outcome: *Need to create more market demand!*



- CRRC Communications
- Founding Member Campaign
- Educational Campaign
- Earned Media
- Participant Commitments
- Marketing Plan Outline
- Presentations





MARKETING GOALS

#	GOAL	TARGET	STRATEGIES (not exhaustive)
1	10 Founding Members	4/2021	<ul style="list-style-type: none"> • Incentives (logo, discount) • Leverage contacts • CRRC communications
2	7 Program Participant Commitments	9/2021	<ul style="list-style-type: none"> • Targeted outreach
3	14 Additional Program Participants	12/2022	<ul style="list-style-type: none"> • Industry publications • Industry presentations • Outreach
4	2 WRP and/or S100 References in codes & programs	12/2023	<ul style="list-style-type: none"> • Advertising campaign • Educational materials • Earned media • Outreach



PROGRAM FEE SCHEDULE



BACKGROUND

- Fees modeled after CRRC Roof Program
- Proposed fees were used in Wall Program financial model
- Fee schedule needs to be finalized in order to communicate costs to prospective participants
- Any changes to proposed fees will result in changes to financial models



FEE TERMS

- **Licensee** - Wall product manufacturer seeking CRRC product rating
- **AMTL (Accredited Manufacturer Test Lab)** - A Licensee that will submit data directly to CRRC as a part of the Color Family Program
 - Most Licensees will work with an independent test lab to provide data to the CRRC
- **Licensee Sales** - Total global annual sales of products that could get CRRC Ratings



FEE TERMS

- **Standard Product** - A singular product that undergoes testing and weathering
- **Reference Product** - A “private label” of a product made by another manufacturer and sold under a different name. Inherits CRRC data from the parent application.
- **Compound Rating** - One rating that represents multiple SKUs of the same material (e.g., a vinyl siding with wood shingle or stone profiles)



FEE TERMS

- **Color Family Representative Element** - Paint product that undergoes aging and acts as a representative for the Color Family
- **Color Family Additional Element** - Paint products that meet Color Family requirements, do not undergo aging, and inherit data from the Representative Element

Please note that Color Family requirements are still under development



FEE TYPES

- Initial fee and annual renewal fees
 - Licensee fee
 - Sales-based tiers
 - AMTL fee
 - Licensees seeking to submit data to CRRC (e.g., through Color Family program)
 - Product Rating Fees
 - Keep costs low to encourage more ratings
 - Covers staff time for application processing and maintaining wall product Directory



PROPOSED LICENSEE FEES

Licensee Sales	Annual CRRC Licensee Fee
>\$100 M	\$9,800
\$10–\$100M	\$6,500
\$1–\$10M	\$4,500
<\$1M	\$1,750



PROPOSED LICENSEE FEES

Application Submittal Month	Licensee Sales				Accredited Manufacturer Test Lab (AMTL)
	>\$100M	\$10-100M	\$1-10M	<\$1M	
January	\$9,800	\$6,500	\$4,500	\$1,750	\$1,500
February	\$8,983	\$5,958	\$4,125	\$1,604	\$1,375
March	\$8,167	\$5,417	\$3,750	\$1,458	\$1,250
April	\$7,350	\$4,875	\$3,375	\$1,313	\$1,125
May	\$6,533	\$4,333	\$3,000	\$1,167	\$1,000
June	\$5,717	\$3,792	\$2,625	\$1,021	\$875
July	\$4,900	\$3,250	\$2,250	\$875	\$750
August	\$4,083	\$2,708	\$1,875	\$729	\$625
September	\$3,267	\$2,167	\$1,500	\$583	\$500
October	\$2,450	\$1,625	\$1,125	\$438	\$375
November	\$1,633	\$1,083	\$750	\$292	\$250
December	\$817	\$542	\$375	\$146	\$125



PROPOSED PRODUCT RATING FEES

Wall Rating Program Product Rating Fees		
Rating Type	Initial Rating	Annual Renewal
Standard Product	\$250	\$150
Reference Product	\$250	\$75
Compound Rating Product	\$450	\$225
Color Family Representative Element	\$450	\$225
Color Family Additional Element	\$75	\$25



EXAMPLE 1: START-UP PRIVATE LABELER

Small start-up company that privately labels a single product from a large producer

Fee Type	First Year	Annual Renewal
Licensee Fee (<\$1M)	\$1,750	\$1,750
Reference Product (1)	\$250	\$75
Total	\$2,000	\$1,825



EXAMPLE 2: SMALL PAINT PRODUCER

Specialty paint maker with \$7M in sales and 5 highly reflective products with CRRC ratings

Fee Type	First Year	Annual Renewal
Licensee Fee (\$1-10M)	\$4,500	\$4,500
Standard Product (5)	\$1,250	\$750
Total	\$5,750	\$5,250



EXAMPLE 3: MEDIUM VINYL SIDING PRODUCER

Medium-sized siding producer with \$25M in sales, rates 11 products, each available in 3 different profiles

Fee Type	First Year	Annual Renewal
Licensee Fee (\$10-100M)	\$6,500	\$6,500
Compound Product (11)	\$4,950	\$2,475
Total	\$11,450	\$8,975



EXAMPLE 4: LARGE PAINT COMPANY

Publicly-traded paint company with \$1B in annual sales. Rates an entire product line that contains 8 color families, and each with an average of 24 additional elements

Fee Type	First Year	Annual Renewal
Licensee Fee (>\$100M)	\$9,800	\$9,800
CF Representative Element (8)	\$3,600	\$1,800
CF Additional Element (192)	\$14,400	\$4,800
Total	\$27,800	\$16,400



2021 MEETING SCHEDULE



WRPC MEETINGS

- All CRRC Meetings will be virtual in 2021
- WRPC meetings:
 - End of April
 - Mid-July
 - Early October
 - Early December

Meeting polls will be sent after today's call



NEW BUSINESS?

- Any topics not addressed today for future consideration?



QUESTIONS?

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