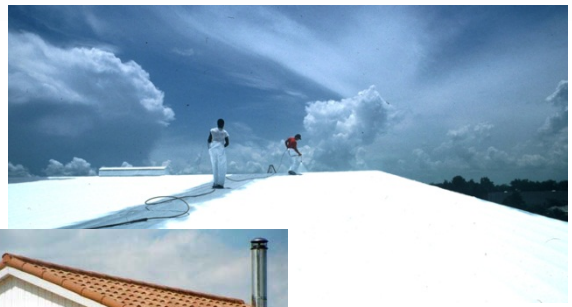
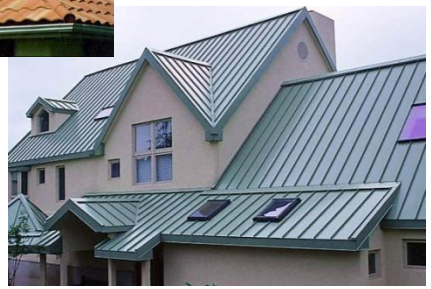
COOL ROOF RATING COUNCIL ®





Technical Committee Update

Membership Meeting

June 27, 2012

Technical Committee Roster 2011-2012

Voting Member	Company	Alternate	Company
Bill Kirn	National Coatings	**Tim Kersey**	Siplast
Ronnen Levinson	Lawrence Berkeley National Laboratory	**Hashem Akbari**	Lawrence Berkeley National Laboratory
Andre Desjarlais	Oak Ridge National Laboratory	**Bill Miller**	Oak Ridge National Laboratory
Stan Graveline	Sika Sarnafil, Inc.	**Mike Ennis**	SPRI
Bill Morgan	Malarkey Roofing	**Darrel Higgs**	DPH Consulting
Scott Kriner, Chair	Metal Construction Association	**Chuck Praeger**	Metal Building Manufacturer Association
Richard Slomko, Vice Chair	Atlas Material Testing Technology	**Matthew Friday**	Q-Lab Weather Research Service
Ted Best	Valspar	**Mark Thimons**	American Iron & Steel Institute
Wade Shepherd	Boral Roofing	**Rick Olson**	Tile Roofing Institute
Kurt Shickman	Global Cool Cities Alliance	**Payam Bozorgchami**	California Energy Commission
David Roodvoets	DLR Consultants	**Cindy Campbell**	Momentum Technologies
Richard Allan Snyder	CertainTeed Corporation	**Tim McQuillen**	Firestone Building Products
Kurt Sosinski	Tremco, Inc.	**Ingo Joedicke**	ISP Minerals Inc
Greg Peterson	Eagle Roofing	**Yoshi Suzuki**	MCA Clay Tile
Hal Leland	Western Colloid	**Frank Klink**	3M
Dave Yarbrough	R&D Services, Inc.	**Tyler Westerling**	Architectural Testing, Inc.

2011-2012 Updates & Accomplishments

2012 Research & Study Budget

- CRRC Board allocated $90,000 to support research in 2012
- Currently funded projects
  - Electronic thickness gage round robin
  - E1918 precision & bias study
  - Directionally reflective product ratings

AITL Interlaboratory Comparison

- Updated inaccurate title of “Round Robin”
- Study results compared to other labs and database values for same products
- 2011 Study results showed high consistency between labs
- Plan to integrate AMTL labs into process for 2012 comparison

Random Testing +/- Threshold

- Random testing results must now be within +/- 0.05 to pass
- Formerly only lower threshold enforced
- Cedar/ extruded polymer product compound ratings held only to lower threshold

Changes to Test Results Reports

- Reporting ambient conditions (temperature, relative humidity)
- All nine initial samples tested for all products
- PDF form performs calculations and checks for errors automatically

Color Family Table Update

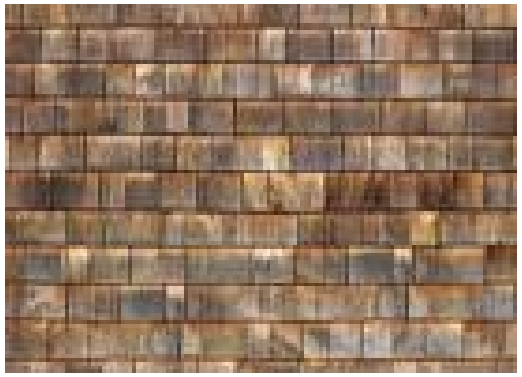
- Adjustments to the Color Family Table for Dark Blue's Hunter L range and Medium to Light Brown's Hunter b range

TABLE 1: CRRC Color Families and Characteristics

	Color Family	Hunter "L" range	Hunter "a" range	Hunter "b" range	Default SR	Default TE
1	Red	17 to 29	+7 to +36	0 to +15	0.25	0.83
2	Terra Cotta	20 to 38	+15 to +30	+6 to +16	0.35	0.83
3	Bright Red	23 to 38	+35 to +49	+10 to +48	0.35	0.83
4	Beige / Off-White	59 to 86	-5 to +5	-3 to +23	0.55	0.83
5	Tan	51 to 65	-2 to +7	+6 to +21	0.45	0.83
6	Dark Blue	13 to 35	-7 to +6	-25 to -2	0.25	0.83
7	Med to Light Blue	34 to 55	-12 to -3	-25 to -8	0.32	0.83
8	Dark Brown	17 to 30	-1 to +9	0 to +10	0.25	0.83
9	Med to Light Brown	25 to 58	-2 to 17	+2 to +26	0.32	0.83
10	Dark Green	18 to 45	-20 to -3	-25 to +11	0.25	0.83
11	Med to Light Green	24 to 70	-20 to 0	-25 to +11	0.32	0.83
12	White	76 to 89	-3 to +2	-3 to +10	0.65	0.83
13	Bright White	>85	-3 to +1	-3 to +6	0.70	0.83

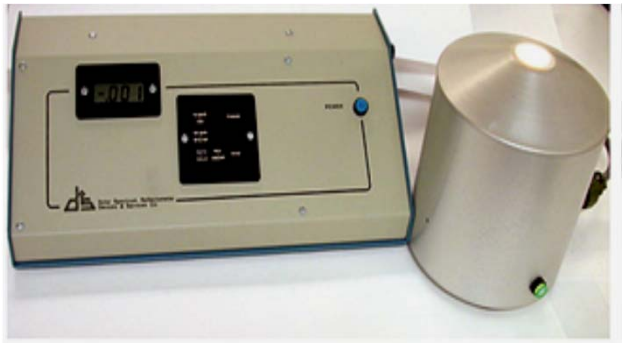
Interim Cedar Test Method

- Uses Test Method 1 across a range of naturally occurring wood colors
- Interim status to be reassessed in 2013

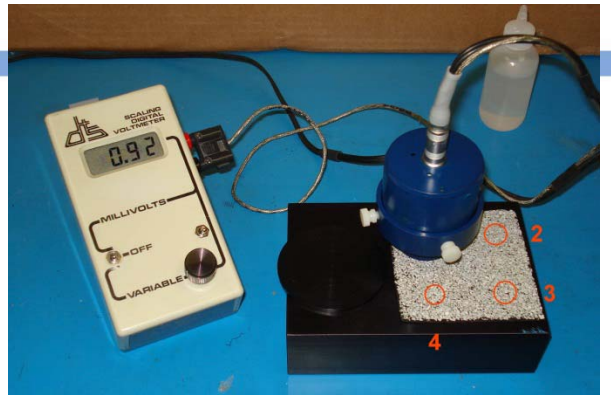


Reflectometer Study

- Three rounds of comparisons between Devices & Services v5 and v6 instruments
- Technical Committee found differences to be not significant
- Version 6 devices must be run in v5 emulation mode



Slide Method

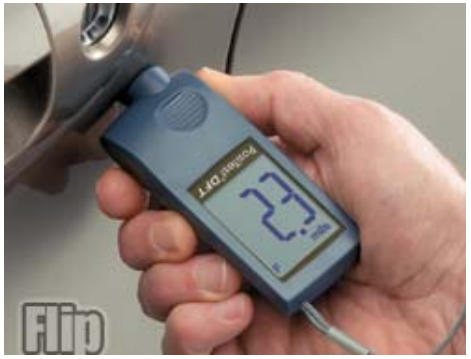


- C1371not developed for products of high thermal resistance
- Slide Method study showed increased precision for all product types
- Slide Method approved for all products except coatings on uninsulated metal panels

Current Studies & Technical Issues

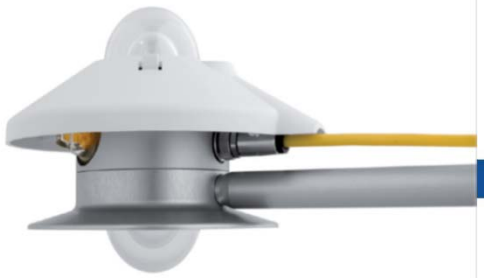
Electronic Thickness Measurement Devices

- Study compares micrometer to electronic thickness gage
- Received CRRC research funding to purchase shims of a known thickness
- Results will be analyzed at a future TC meeting



E1918 Precision & Bias Study

- Developed in partnership with ASTM
- Received CRRC research funding to purchase instruments and pay lab time
- Two instruments, 3 samples & 7 labs
- Results expected late 2012
- May influence changes to E1918

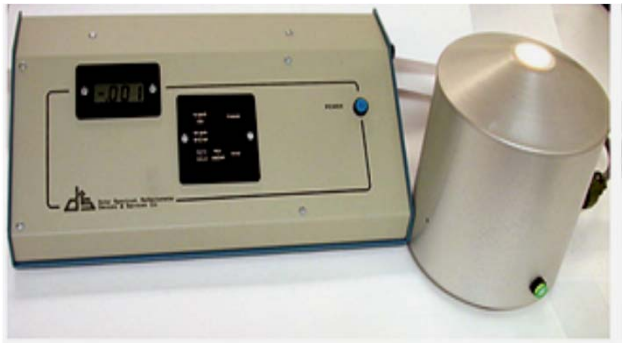


Directionally Reflective Products

- To develop a rating method for directional products
- Received CRRC research funding to support grad student for one year
- Partnering with Concordia University

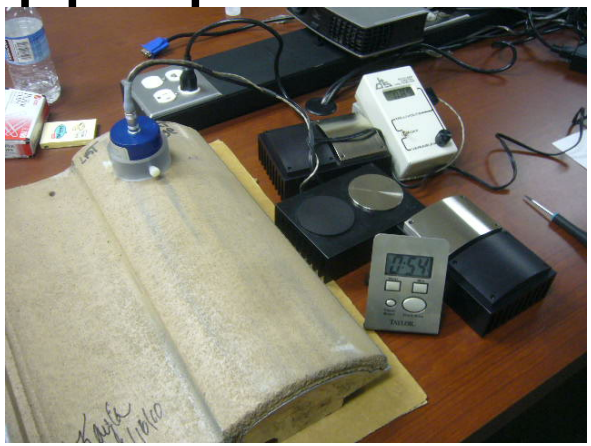
CRRC-1 Test Method 1 Precision Statement

- Conducting precision study for CRRC-1 Test Method 1
- Evaluate repeatability and reproducibility

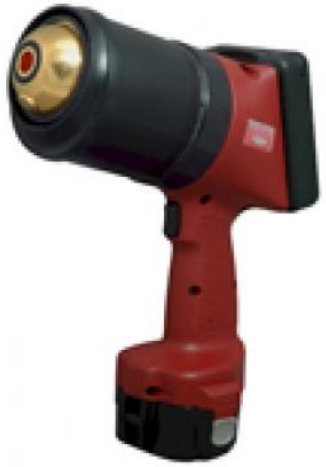


Curved Tile/Aggregate Thermal Emittance

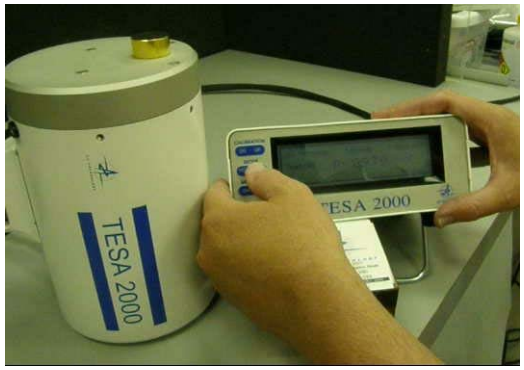
- Evaluate challenges to measuring thermal emittance for some product types
- Consideration if assigned default value is appropriate



ASTM E408 Consideration



- Working with device manufacturers AZ Technology and Surface Optics to update E408 to include new devices & hemispherical emittance
- Technical Committee to reassess E408 for use in CRRC



Solar Working Group

- Working group investigating synergy between photovoltaic panels and cool roofing

NIST Traceable Standard for Emittance

- Approaching National Institute of Standards and Technology (NIST) to develop a traceable standard for thermal emittance

National Institute of Standards and Technology
U.S. Department of Commerce

Method Evaluation

- Evaluating impacts of changes in test methods on CRRC ratings
- Determine if retesting of all/some of CRRC products is required
- Will determine technical requirements of retesting if needed

Upcoming Technical Committee Meetings

- August 8 – Conference call
  - 2 hours (10 am – 12 pm PT)
- October 31 – In-person
  - Denver, CO
  - 8 hours (9 am – 5 pm)

Questions