

**DOCKETED**  
**12-BSTD-7**

TN 70871

MAY 16 2013

**Energy - Docket Optical System**

**From:** Ware, David@Energy  
**Sent:** Thursday, May 16, 2013 8:35 AM  
**To:** Energy - Docket Optical System  
**Subject:** FW: Docket 12-BTSD-07: Compliance Option for Low-Sloped Roofs the Use Aggregate

**Categories:** Ready to Docket

Can you place this email in Docket 12-BTSD-07. Thanks.

David W. Ware  
California Energy Commission  
1516 Ninth Street, MS 37  
Sacramento, CA 95814  
916-654-4168  
david.ware@energy.ca.gov

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**From:** Tom Hutchinson [mailto:hutch@hutchinsondesigngroup.com]  
**Sent:** Tuesday, May 07, 2013 4:19 AM  
**To:** Ware, David@Energy  
**Subject:** RE: Docket 12-BTSD-07: Compliance Option for Low-Sloped Roofs the Use Aggregate

Morning David,

Thank you for this opportunity to review your proposed cool roof default ballast cool roof reflectance. For the purpose of defining the use of reflective aggregate I think you have improved the default by having BUR and Single ply ballasted roofs separated out. You might want to add a colon after the word 'Roofs' though.

While reflection is one way to defer heat gain and shift cooling loads there are other options such as insulation, which at what I understand approximately R24, roof color has no impact. Additionally traditional ballast (ASTM No.4) for single plies, is self-cleaning, fire proof and maintains a stable reflectance in the mid 20's but also accepts some heat and stores it, thus also mitigating heat gain and shifts cooling loads to later in the afternoon. I would encourage the CEC that if they wish to truly become transparent and sustainable in their energy conservation efforts that they look to the insulation and traditional ballast options, both of which may be less costly than an manufactured, tumble stone.

I appreciate the opportunity to converse with you and appreciate you openness to my views. Should you ever wish to visit large or small ballasted roofs, some designed to have a service life of over 50 years, here in the Chicago area, or wish to set testing data loggers, etc. within them please let me know.

Sincerely, Tom

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**From:** Ware, David@Energy [<mailto:David.Ware@energy.ca.gov>]  
**Sent:** Wednesday, March 20, 2013 10:39 AM  
**To:** Thomas Hutchinson ([hutch@hutchinsondesigngroup.com](mailto:hutch@hutchinsondesigngroup.com))  
**Subject:** FW: Docket 12-BTSD-07: Compliance Option for Low-Sloped Roofs the Use Aggregate

Tom:  
I had a few errors in what I sent yesterday and have made those corrections below. I look forward to your comments.  
Thanks.

DAVE

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**From:** Ware, David@Energy  
**Sent:** Tuesday, March 19, 2013 2:29 PM  
**To:** Thomas Hutchinson ([hutch@hutchinsondesigngroup.com](mailto:hutch@hutchinsondesigngroup.com))  
**Subject:** Docket 12-BTSD-07: Compliance Option for Low-Sloped Roofs the Use Aggregate

Tom:  
We have modified our original proposed default cool roof solar reflectances and I would appreciate your feedback on this proposal. I believe we're more accurately reflecting how aggregate material is specified for construction purposes. We hope to move this forward for approval at the April 10<sup>th</sup> business meeting.

Your review and comment would be most helpful. Thanks.

Aggregate used as the surface layer of low-sloped roofs shall have the default cool roof properties for the aggregate sizes listed in Table 1 provided all eligibility criteria are met.

Eligibility criteria for aggregate used as the surface layer of low-sloped roofs:

1. Aggregate shall have a tested initial solar reflectance that meets or exceeds 0.50 for Built-Up Roofs and 0.45 for Ballasted Roofs using the ASTM E1918 test procedure conducted by an independent laboratory meeting the requirement of Section 10-113(d)4 of the *Building Energy Efficiency Standards*,
2. Aggregate shall have a label on bags or containers of the aggregate material stating: (a) the material's tested initial solar reflectance conforming to ASTM D1863, and (b) the material's size conforming to ASTM D448.

Table 1: Default Solar Reflectance and Thermal Emittance for Aggregate Materials Based on Size:

Aggregate Size	Required Tested Initial Solar Reflectance	Default Aged Solar Reflectance	Default Thermal Emittance
Built-Up Roofs Size <del>62-</del> <del>84</del> conforming to ASTM D448 and ASTM D1863	0.50	0.48	0.85
Ballasted Roofs Size 2-4 conforming to ASTM D448	0.45	0.40	0.85

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**From:** Ware, David@Energy  
**Sent:** Wednesday, March 13, 2013 10:14 AM  
**To:** Thomas Hutchinson ([hutch@hutchinsondesigngroup.com](mailto:hutch@hutchinsondesigngroup.com))  
**Subject:** Docket 12-BTSD-07: Compliance Option for Low-Sloped Roofs the Use Aggregate

March 13, 2013

Thomas W. Hutchinson  
 Hutchinson Design Group, Ltd.  
 232 E. Main Street  
 Barrington, IL 60010

RE: DOCKET 12-BTSD-07

Dear Mr. Hutchinson:

Tom—

This note responds to issues discussed in my email to you dated January 11<sup>th</sup>. You have suggested that our proposed compliance option for aggregate material include larger rock sizes, similar in size to that used for ballasted roofs, and that the compliance option account for the material's overall weight as a surrogate for the effectiveness of solar reflectance based on the thermal benefits of the heavier roof. We've been working towards completion of our proposed compliance option and have had several discussions with LBNL for recommendations of the aged solar reflectance of larger rock sizes based on their research results. Based on those discussions we are proposing to finalize our compliance option for aggregate material and are expanding it to include larger aggregate. Note, this compliance option proposal does not include roofing material weight. My January 11<sup>th</sup> email explained reasons for not including equivalent energy tradeoffs for varying roof types based on weight. However, we support the future development of a factsheet that is focused on these effects as stated in my previous email.

Please review our proposed modifications to the default aged solar reflectance for aggregate materials shown below. I'd like us to follow-up with a telephone conversation regarding this proposal.

Thanks.

1. Aggregate used as the surface layer of low-sloped roofs shall have the default cool roof properties listed in Table 1 provided all eligibility criteria listed in 2 below are met:

Table 1: Default Solar Reflectance and Thermal Emittance for Aggregate Materials

Aggregate Size	Required Tested Initial Solar Reflectance	Default Aged Solar Reflectance	Default Thermal Emittance
Passes No. 4 Sieve and Retained by No. 8 Sieve conforming to ASTM D448	0.50	0.48	0.85
Passes No. 4 Sieve and Retained by No. 5 Sieve conforming to ASTM D448	0.45	0.40	0.85

2. Eligibility criteria for aggregate used as the surface layer of low-sloped roofs:
  - Conforms to material standard ASTM D1863,
  - Has a tested initial solar reflectance that meets or exceeds 0.50 or 0.45 respectively using the ASTM E1918 test procedure conducted by an independent laboratory meeting the requirement of Section 10-113(d)4 of the *Building Energy Efficiency Standards*,
  - Has a label on bags or containers of aggregate stating the tested initial solar reflectance, that the materials conform to ASTM D1863 and ASTM D448, and the sieve size used for determining aggregate size.

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