

Sika Sarnafil

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DOCKET

10-BSTD-1

DATE JUL 18 2011

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SENT BY E-MAIL TO: docket@energy.state.ca.us, and by USPS

July 18, 2011

California Energy Commission
Dockets Office
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket No. 10-BSTD-01

We are writing to you to comment on the proposal to change the prescriptive aged reflectivity requirement within Title 24, from 0.55 to 0.70 or possibly 0.67. It is our understanding that this change, if adopted, would become effective January 1, 2014.

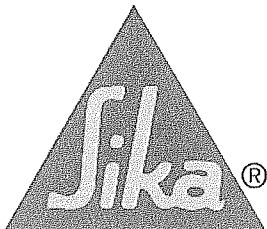
Sika Sarnafil has long been a strong advocate for cool roofing. We have held positions on the Cool Roof Rating Council's (CRRC) Board of Directors and/ or Technical Committee from its earliest days. The undersigned is currently a voting member on the Technical Committee. Sika Sarnafil (Sarnafil Inc. at that time) was a Charter Member of the Environmental Protection Agency's (EPA) Energy Star Roofing Program. We have participated in and/or sponsored a number of Lawrence Berkley National Laboratory (LBNL) studies on cool roofing including "Measured Energy Savings and Demand Reduction from a Reflective Roof Membrane on a Large Retail Store in Austin"¹, one of the first studies to measure and quantify the energy savings and other benefits of cool roofs in the field.

Our products are protecting some of California's most important buildings such as the State Capitol, the Staples Center, over 100 buildings for the University of California system, over 25 facilities for the California Department of Corrections, Los Angeles City Hall, Honda Center, USC campus buildings including the Galen Center, LAX Airport buildings, Northrop Grumman, Lockheed, Boeing and countless other facilities.

We applaud the California Energy Commission for their foresight in the development and implementation of the various requirements in Title 24, most notably the use of cool roofs. With its size, the State can, and does, drive innovation and change not only within its own borders but across the country. We understand, and fundamentally support, the CEC's desire to "raise the bar" within the State's Energy Code. We do however have numerous serious concerns about the proposed changes, including:

- The economic impact

¹ Konopacki, S., Akbari, H., Measured Energy Savings and Demand Reduction from a Reflective Roof Membrane on a Large Retail Store in Austin, Ernest Orlando Lawrence Berkeley National Laboratory, June, 2001, LBNL-47149



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- The magnitude of the change of the prescriptive aged reflectivity
- The significant disruption of the entire low slope roofing market
- The timeframe for implementation

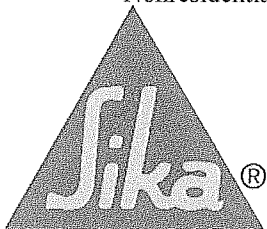
The CEC has not presented any data demonstrating any significant benefit to making such a dramatic change. The Center for Environmental Innovation in Roofing (CEIR)² on the other hand has shown that the incremental energy, and by extension cost, savings in moving from an aged reflectivity of 0.55 to 0.70 are minimal, ranging from fractions of a penny to a couple of cents per square foot per year.

According to the CEC's own evaluation, based on data from the CRRC's Rated Product Directory, less than 40% of listed single ply membranes, and less than 55% of listed coatings, that meet the current requirements, would meet the proposed 0.70 threshold. These numbers are, if anything conservative, as many products are sold under various names under private label agreements. Changing the value to 0.67, a small handful of additional products would meet the requirement. The net effect would still be roughly a 50% reduction in the number of products currently used in the State that could meet the prescriptive requirement

The manufacturers of these products have invested significant resources insuring compliance with the current requirements. Providing approximately 30 months notice to allow these vendors the opportunity to modify their products or introduce new products to meet the proposed requirements is unreasonable and unrealistic.

Roof coverings are first and foremost intended to protect the structure from the elements. They should be formulated to provide maximum durability, thereby imposing the lowest life cycle costs possible to the building owners. Although much artificial weathering and ageing testing is done on roof membranes as they are developed, only the test of time in the field, in various climates, in various roof system build-ups, over a variety of building types and occupancies, installed by contractors of a variety of skill levels, etc. can determine whether a given formulation of product will provide the desired life expectancy. Any change in formulation whether it be to improve reflectivity, fire resistance, cost or any other property, can have a significant impact on the overall performance of the material. Therefore formulation changes should only be implemented after extensive, long term, field testing programs. The development cycle for roofing materials is a very lengthy process. In order to protect their position in the State, manufacturers not meeting the proposed prescriptive requirement, would need to rush new, unproven formulations, developed specifically to meet the aged reflectivity requirement, into service. This would be done at significant risk of affecting product durability and life expectancy. A reduction of even a year of average life expectancy would change a

² Hoff, Dr. J.L., Center for Environmental Innovation in Roofing, "Roof Reflectance and Energy Savings: An Incremental Analysis, Presentation to the CEC Staff Workshop on Draft Revisions for Residential and Nonresidential Buildings for Possible Inclusion in the 2013 Building Energy Efficiency Standards, June 10, 2011



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building owner's life cycle cost of a roof significantly. The magnitude of the cost impact would dwarf the negligible potential energy and cost savings as calculated by the CEIR.

Even if a product manufacturer had a formulation modification ready for market introduction, and they submitted it to be rated by the CRRC today, they would still not have their three year aged data by the implementation date. It is highly unlikely that many, if any, manufacturers are even in this position at this time.

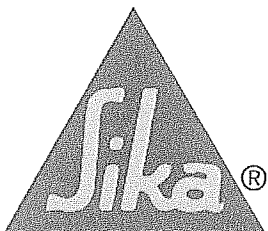
Beyond the unreasonably short notice, increasing the requirement 27% or even 22% in a single step further compounds the challenge.

Although the CEC may be satisfied that "sufficient" products meet the proposed requirements, such an assessment is overly simplistic. Imposing the new requirements as proposed would eliminate products with some of the longest records of proven performance in the State. Sarnafil membranes have for example has been used in California since 1979. Close to 200 million square feet of our materials have been installed on approximately 7,000 projects across the State.

Sarnafil S327 has a three year aged reflectivity of 0.63 based on CRRC testing and would therefore not comply with the proposed prescriptive requirement. We know from actual studies that the same membrane actually has a higher aged reflectivity in California than the average CCRC ratings, however we would nonetheless fail to meet the new prescriptive requirement. Many major institutions have used Sarnafil membranes to protect their facilities for decades. The University of California at Davis for example, has Sarnafil on over 35 buildings, some as old as 31 years which are still in service. Despite this proven performance, UCD would no longer be able to use Sarnafil S327 and meet the prescriptive requirements of the code.

Sika has invested significant resources in the State of California, with three facilities and approximately 50 employees, more than half of which are employed in the Sika Sarnafil roofing business unit. The Sika Sarnafil product line is also the primary source of income for numerous independent sales representatives working in the State. Such a rapid, dramatic change in the Title 24 cool roofing prescriptive requirements would have a devastating effect on our business and would likely lead to a significant reduction in our presence in the State. For many other companies, the consequences could be even more dramatic, particularly in the coating segment, where it is conceivable that this could force many companies out of business.

From a technology perspective, the most effective way to improve on the reflectivity of roofing materials is by increasing their titanium dioxide loading. There is currently a significant shortage of titanium dioxide due to a ramping up in demand in emerging economies, which is coinciding with an industry retrenchment in capacity as plants were shut down during the recent economic downturn. Prices are escalating at record rates, and suppliers are placing their customers on



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allocation, with no relief in site. Industry experts project that³ "... the feedstock supply landscape is mostly written for the next four to five years. Almost nothing can be done to remedy the situation that is evolving. ... expects pricing in the feedstock sector to rise dramatically, with the undersupply situation to reach a crescendo in 2014 or 2015". The timing of the proposed changes could not be worse. Increasing the prescriptive aged reflectivity requirement at this time would cause an additional burden on TiO₂ supply, and undoubtedly lead to roofing product availability issues and/or increase the cost of reflective roofs for building owners.

In summary, we believe that:

- The magnitude of the change is much too great
- There is not sufficient economic justification for such a dramatic change
- The timeframe to implementation is much too short
- This may force manufacturers to compromise their development processes in order to protect market share, likely compromising overall product quality and durability
- Consumer choice will be dramatically reduced
- The timing for such a change could not be worse.

We strongly object to any changes being made and implemented in the 2013 code release. The CEC should work with all stakeholders to map out a comprehensive road map for the future that would set reasonable targets and define time frames that would allow for the appropriate product development cycles.

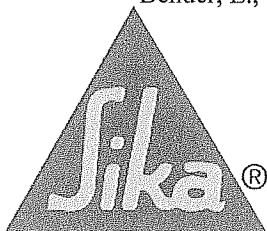
Should the Commission decide to implement a change for 2013, we recommend it not exceed 0.05, or a minimum prescriptive three year aged value of 0.60, and that the development of a road map as referenced above be initiated without delay.

Proceeding in this manner has the following advantages:

- Manufacturers will have clear, achievable targets to meet
- This provides time for development and testing/ rating
- Products with a long history of proven performance, will be permitted the opportunity to meet the requirements without interrupting supply to customers that value the quality and performance of their products
- Companies with significant investments in the state will have the opportunity to adapt their products rather than simply abandoning the State
- Improvements can be calibrated to what we can only hope will be improvements in the titanium dioxide supply chain.

The CEC is also apparently considering allowing the use of an insulation trade-off for products meeting a defined minimum reflectivity level, but not the prescriptive requirement. Should such

³ Bender, E., TiO₂ Landscape Changing Rapidly, Paint and Coatings Industry Magazine, May, 2011



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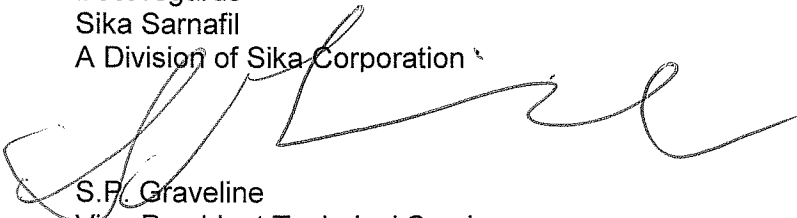
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an alternative compliance path be permitted, we propose it be based on a prescriptive minimum of 0.60 as noted above. Secondly, we concur with the CEIR that the insulation trade-offs being contemplated by the CEC are disproportionate to the energy impacts of the lower aged reflectivity levels. Our recommendation is shown in the second column in the following table:

Aged Reflectivity	CEC Insulation Increase Proposal	Sika Sarnafil Increase Proposal	CEIR Insulation Insulation Proposal
0.67	None	None	None
0.60	R-5	None	R-2
0.55	R-7	R-2	R-2
0.50	R-9	R-4	R-4
0.45	R-12	R-5	
0.40	R- 15	R-6	R-6
0.25	NA	R-8	R-8

Thank you for this opportunity to comment on the proposed change. Please do not hesitate to contact the undersigned should you have any questions.

Best regards
Sika Sarnafil
A Division of Sika Corporation



S.F. Graveline
Vice President Technical Services

