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Commissioner Jackalyne Pfannenstiel
Vice Chair of the Commission
Presiding Member, Energy Efficiency Committee
California Energy Commission
1516 Ninth Street, MS 31
Sacramento, CA 95814

March 28, 2005

Subject: Petition for Adoption of an Alternate Test for Liquid Applied Roof Coatings to Meet the Cool Roof Requirements of the 2005 Building Energy Efficiency Standards (Title 24, Part 6, § 118 (i) 3 and Table 118-C)

Dear Vice Chair Pfannenstiel:

National Coatings Corporation and the 23 additional roof coating manufacturers listed at the end of this letter, hereby petition the California Energy Commission to conduct a rulemaking proceeding to adopt an alternate test for determining satisfactory physical performance at low outdoor temperatures. The current test requirements specified in § 118 (i) 3 and Table 118-C of the 2005 Building Energy Efficiency Standards are unduly restrictive for meeting the Commission's intent of insuring high quality roof coatings that are durable at all California climate conditions. Although a limited subset of all roof coatings meet the current test requirements, some coatings, which have good durability at low outdoor temperatures, cannot meet the current test requirements. Also, the current test requirement requires expensive equipment, and is different from the national consensus test procedures that the industry commonly uses. For these reasons (discussed in more detail below), we request that the Energy Commission adopt an alternate to the current test requirements that is simpler, consistent with commonly used test procedures, and will be practical for a large number of roof coating products to use.

Table 118-C lists seven tests and minimum requirements. We have concerns about two of the tests listed in the table: "Initial percent elongation" and "Final percent elongation (break) after accelerated weathering 1000 h". The requirements for minimum initial elongation is 60% at 0° F and final elongation after 1000 hours of accelerated weathering is 40% at 0°F.

We understand that the test methods and performance requirements for coatings when originally adopted in 2001 were intended to be consistent with ASTM Standard D-6083, "Standard Specification for Acrylic Coatings Used in Roofing," and the updates to these requirements that

appear in Table 118-C were intended to expand the scope of the 2001 Standards coating requirements to establish proper durability requirements for other than acrylic coatings while maintaining appropriate requirements for acrylic coatings. However, Standard D-6083 does not have minimum elongation requirements at low temperatures. Under Standard D-6083, low temperature flexibility is determined using the "Mandrel Bend Test" of ASTM D-522. We believe that an alternate testing requirement should be added to Table 118-C to refer to the ASTM D-522 test for low temperature flexibility, and in doing so, the Commission's requirements will become much more achievable and effective for a large number of products.

There are several reasons why we, the petitioners below, who are manufacturers of roof coatings, request that an alternate test be provided:

- There is no low temperature elongation test requirement in the current ASTM D-6083 specification. However, there is a low temperature flexibility test, ASTM D-522, "Standard Test Method for Mandrel Bend Test of Attached Organic Coatings." This test effectively evaluates the performance of coatings at low temperature consistent with the intent of the 2005 Standards tests described above.
- The current elongation testing in Table 118-C is difficult to conduct because it requires a specially fabricated tensile testing machine. The moving parts of this apparatus must be jacketed and cooled with liquid nitrogen or other suitable low temperature boiling liquid to perform the tests at low temperature. We propose that an alternate to the low temperature elongation testing be allowed that would instead use the low temperature flexibility test described in ASTM D-522, which is incorporated by reference in the ASTM D-6083 acrylic roof coating specification. This would accomplish essentially the same intent as the 2005 Standards using a less cumbersome and less expensive piece of equipment. The "ASTM D-522 B Cylindrical Mandrel Test" simply requires that the coating be applied to a metal panel, allowed to dry and then be conditioned in a freezer. After conditioning, the panel is then bent over a one-inch (1") metal rod (i.e., a cylindrical mandrel) and the coating surface is examined for cracking. The coating would receive a rating of "Pass" if there is no cracking in the stressed coating film surface.
- In actual use, these coatings are applied to new or existing roof membranes, which are affixed to the structural roof deck. These coatings are always "fully adhered to" and are "supported by" the waterproofing membrane below. In no case is the coating simply loose laid over the waterproofing membrane. This proposed alternate low temperature flexibility test, where the coating is attached to a supporting substrate (thin gauge sheet metal), more closely simulates the stresses that are actually imposed on the coating.

- Some manufacturers have products that can pass the current low temperature elongation test. However, we believe that many more manufacturers have products that will pass the proposed alternate test. These other manufacturers do not have the equipment necessary to conduct the current test. If the alternate is adopted, then additional manufacturers will be able to compete in the California marketplace to supply complying cool roof coatings.

Please note that we are not asking for elimination of the low temperature testing requirements or elimination of the existing approved method with this proposed method. We are petitioning that the commission adopt this alternate method as an additional means to comply through a more expedient test method that will not impose an unnecessary testing burden on manufacturers. This will make the testing requirements more consistent with low temperature testing specified in consensus standards that are widely used by the industry, and create more competition in this market; thus benefiting the consumers in the State of California.

Thank you in advance for your consideration of our request.

For the petitioners,

William A. Kirn RRC
Technical Director
National Coatings Corporation

cc: Commissioner Arthur H. Rosenfeld, Ph. D, Member, Energy Efficiency Committee

Bill Pennington
Elaine Hebert

Additional Petitioners:
Elastomeric Roofing Systems, Inc.
United Coatings
Advanced Coating Systems, Inc.
Conklin Company, Inc.
Green Products, LLC
Neogard Div. Of Jones-Blair
RoofMart International, Inc.
Nationwide Chemical Coating

Everest Coatings
Insulating Coatings Corporation
KST Coatings Manufacturers, Inc.
MEGA Industries Corporation
Metacrylics
Pro-Tech Products, Inc.
Raintek Coatings
Aldo Products Company, Inc.
Manufacturers, Inc.
Republic Powdered Metals, Inc.
SPM Thermo-Shield, Inc.
Superior Products International II, Inc.
Western Colloid
Industrial Coatings Alliance Group, Inc
Acrymax Technologies, Inc.