An EVT review

by **Mark S. Graham**

Twenty-five years ago, NRCA adopted the equiviscous temperature (EVT) concept for the application of interply mopping asphalt in built-up roof (BUR) systems. Since then, this concept has become widely accepted and adopted by the U.S. roofing industry. However, it sometimes is incorrectly applied to purposes other than those for which it was intended.

If you install hot-applied, bitumen-based roof systems, it would be useful to review the EVT concept and know when it applies.

Background

In 1977, after more than four years of research and experiments, NRCA adopted the EVT concept and issued its *Technical Bulletin #2*.

The research revealed that the critical property for mopping asphalt is the flow of the asphalt at the application point. The experiments proved that the ideal flow, adhesion and mopping weight for asphalt for BUR systems are achieved when the asphalt's viscosity is about 125 centistokes (0.125 Pa•s) immediately before application, such as in a mop cart or felt layer.

NRCA later issued *Technical Bulletin #2A* to clarify the previous bulletin. The clarification introduced the EVT range concept where application is intended to take place at EVT ±25 F (±14 C), which will give an acceptable application range of 50 F (28 C). Also, specific recommendations were provided for asphalt packaging and bills of lading for bulk asphalt shipments.

In 1988, NRCA issued a revised *Technical Bulletin #2* to supersede the previous bulletins. This bulletin changed the recommended viscosity for reporting asphalts' EVTs to 75 centipoise (0.075 Pa•s). It also applied the EVT concept to coal-tar BUR systems by recommending an EVT for coal-tar products based on 25 centipoise (0.025 Pa•s).

Following considerable cooperative research by NRCA; Trumbull Division of Owens Corning, Summit, Ill.; and Koppers Co. Inc., Pittsburgh, NRCA issued *Technical Bulletin 2-91* in 1991, which was intended to supersede the 1988 bulletin.

In *Technical Bulletin 2-91*, NRCA recommends reporting an EVT for asphalt based on asphalt's apparent viscosity of 125 centipoise (0.125 Pa•s) for mop applications and 75 centipoise (0.075 Pa•s) for mechanical-spreader applications.

For coal tar, NRCA recommends an EVT based on coal tar's apparent viscosity of 25 centipoise (0.025 Pa•s) for mopped and mechanical-spreader applications.

Technical Bulletin 2-91 indicates the EVT range concept also may apply to adhering insulation and certain BUR surfacing applications, such as glaze coating.

Current recommendations

NRCA still considers the recommendations contained in *Technical Bulletin 2-91* to be appropriate. These recommendations are incorporated into the fourth and fifth editions of NRCA's roofing and waterproofing manual.

NRCA also recommends that asphalt and coal tar used in roofing applications be labeled with product type (ASTM International designation and type classification), EVT and flash point. For packaged products, this is best achieved with appropriate package labeling. For bulk material shipments, appropriate designation on bills of lading is acceptable.

A roofing bitumen's EVT and flash point, particularly those for asphalt products, likely vary somewhat depending on a specific manufacturing production run.

For this reason, NRCA strongly recommends asphalt and coal-tar manufacturers provide EVT and flash-point information based on a specific product run. EVT and flash-point information based on "representative samples" of multiple product runs has been less than accurate. (For additional information, see "Are labels always accurate?" June 2001 issue, page 32.)

Closing thoughts

It should be noted that the EVT concept applies specifically to BUR systems. It is not necessarily appropriate for the application of mop-applied polymer-modified bitumen sheet membrane products—despite some manufacturers' recommendations. (For additional information, refer to "Reports of blistering are increasing," April 2000 issue, page 55, and "Minimizing SBS blistering," May 2000 issue, page 71.)

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