NORA Specification for Vacuum Tower Asphalt Extender (VTAE) for Use in Pavement Construction

1. Scope

1.1 This specification covers Vacuum Tower Asphalt Extender that is used in the production of asphalt cement for Pavement Construction.

1.2 Units - The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards: ²

ASTM D92 Test Method for Flash and Fire Points by Cleveland Open Cup Tester
ASTM D2042 Test Method for Solubility of Asphalt Materials in Trichloroethylene

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¹ This specification is under the jurisdiction of NORA, An Association of Responsible Recyclers.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM customer service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard’s Document Summary page on the ASTM website.
ASTM D2872 Standard Test Method for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)


ASTM D140 Standard Practice for Sampling Bituminous Materials

3. Manufacture

3.1 VTAE is the product of processing used oil using atmospheric distillation followed by vacuum distillation to produce a vacuum residuum meeting the specifications outlined in table 1.

4. Physical Requirements

4.1 The VTAE shall be homogenous, free from water, and not foam when heated to 177ºC [350º F].

4.2 The VTAE shall conform to the requirements given in Table 1.

5. Methods of Sampling and Testing

5.1 Sample and test the VTAE in accordance with the following methods:

5.1.1 Sampling – Practice D140

5.1.2 Water – Test Method D95

5.1.3 Flash Point, Cleveland Open Cup – Test Method D92

5.1.4 Rolling Thin Film Oven Test – Test Method D2872

5.1.5 Solubility in Trichloroethylene – Test Method D2042

5.1.6 Viscosity at 60ºC [140ºF] – Test Method D440
6. Keywords

6.1 asphalt cement, pavement, vacuum tower, asphalt extender

Table 1 Requirement for VTAE

<table>
<thead>
<tr>
<th>Test</th>
<th>Requirement</th>
</tr>
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<tbody>
<tr>
<td>Flash Point, Cleveland Open Cup, min, °C [°F]</td>
<td>&gt;232° [450]</td>
</tr>
<tr>
<td>Mass Change, RTFOT, %w/w max</td>
<td>1.0</td>
</tr>
<tr>
<td>Solubility in Trichloroethylene, min, %</td>
<td>98.0&lt;sup&gt;A&lt;/sup&gt;</td>
</tr>
<tr>
<td>Viscosity, 60°C [140°F], max, cP</td>
<td>5000</td>
</tr>
</tbody>
</table>

<sup>A</sup> Solubility of less than 98.0% is acceptable provided the final asphalt blended product meets the solubility requirements in the specifications