



Standard Test Method for Kerosine Number of Unsaturated (Dry) Felt by Vacuum Method¹

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1. Scope

1.1 This test method covers the determination of the relative saturating capacity of unsaturated (dry) felt papers used in roofing.

1.2 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

D585 Practice for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, and Related Product (Withdrawn 2010)³

D1298 Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method

D3699 Specification for Kerosine

3. Summary of Test Method

3.1 The kerosine number of unsaturated (dry) felt is computed from the weight of a kerosine of known specific gravity retained by the felt after displacement of the air from interior

¹ This test method is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.04 on Felts, Fabrics and Bituminous Sheet Materials.

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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.

³ The last approved version of this historical standard is referenced on www.astm.org.

voids. It is the millilitres of kerosine held /100 g of felt, and thus, is a measure of the quantity of saturant that a given felt will absorb.

4. Significance and Use

4.1 The ability to absorb kerosine is an indication of the ability to absorb hot asphalt. The kerosine number is used in calculating saturation efficiency.

5. Apparatus

5.1 *Glass Vessel*, approximately 1500 mL capacity, for soaking specimens of felt in kerosine, under vacuum.

5.2 *Vacuum Pump*, capable of reaching and maintaining a vacuum of at least 700 mm Hg in the glass vessel.

5.3 *Lightweight Glass or Metal Weighing Container*, with tightly fitting cover, 60 by 140 mm [2.5 by 5.5 in.] or larger, to contain felt strips in a horizontal position without bending or distortion.

5.4 *Drying Oven*, with dimensions at least 300 by 300 by 300 mm [12 by 12 by 12 in.].

5.5 *Other Apparatus*—Desiccator, wire hook, and if necessary, a punch to make a small hole in a corner of the specimens after they are cut.

6. Materials

6.1 *Water-White Kerosine*, complying to the requirements of Specification **D3699** and having a specific gravity of 0.800 ± 0.025 at 25°C, as determined in accordance with Practice **D1298**.

7. Sampling

7.1 Obtain a sample of the felt in accordance with Practice **D585**.

8. Test Specimen

8.1 From each test unit of the sample cut two sets of six test specimen strips, each strip measuring 51 by 127 ± 13 mm [2 by $5 \pm \frac{1}{2}$ in.] with the longer side parallel to the machine direction of the sheet.

9. Procedure

9.1 Place a set of strips in the tared weighing container and expose them, uncovered, for at least 1 but not more than 2 h in an oven, the interior of which is maintained at a temperature of $105 \pm 3^\circ\text{C}$. Keep the felt strips flat. Do not fold, roll, or distort them in any way. Handle the six strips as a unit in all of the following operations.

9.2 Remove the strips in the weighing container from the oven and place them, with the container still uncovered, in a desiccator to cool.

9.3 After cooling, rapidly close the container and weigh it with enclosed strips to the nearest 10 mg to obtain the net weight of the dry strips.

9.4 Insert a wire hook in one corner of the strips and immerse them at once in a vertical position in 1000 mL of kerosine at $25 \pm 1^\circ\text{C}$ in the glass vacuum vessel. Apply a vacuum of at least 700 mm Hg to the vessel containing the strips and hold it under these conditions for 15 min or for 5 min after the bubbles cease to come from the felt strips, whichever period is longer. Remove the felt strips from the kerosine and let them drain in the machine direction of the felt for $3 \text{ min} \pm 1 \text{ s}$, allowing the lower corner of each strip to touch the edge of the kerosine container.

9.5 Return the soaked strips to their weighing container, close the container, and determine the combined weight of the strips and the absorbed kerosine. (**Warning**—Care should be exercised in the use of kerosine because it is flammable. Do not expose the material and its vapors to open flame or electrical spark.)

10. Calculation

10.1 Calculate the kerosine number as follows:

$$\text{Kerosine number} = \frac{(b/a) - 1}{c} \quad (1)$$

where:

- a = weight of dry felt in g,
- b = weight of dry felt plus absorbed kerosine in g, and
- c = specific gravity of the kerosine.

NOTE 1—Kerosine Percent can be calculated by multiplying Kerosine number by 100 %.

11. Report

11.1 Report the kerosine number as the average of two determinations, to three significant figures.

12. Precision and Bias

12.1 The following criteria shall be used for judging the acceptability of any result (95 % confidence level):

12.1.1 *Repeatability*—Duplicate results by the same operator should not be considered suspect unless they differ by more than 2.5 %.

12.1.2 *Reproducibility*—Reproducibility has not been determined.

12.1.3 *Bias*—The bias of this test method has not been determined.

13. Keywords

13.1 kerosine number; unsaturated (dry) felt; unsaturated roofing felt

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