

National Bureau of Standards Certificate Standard Reference Material 1007a Smoke Density Chamber Standard Flaming Exposure Condition

This Standard Reference Material is recommended for checking the operation of the Smoke-Density Chamber under flaming exposure conditions. However, it does not obviate the need for following the prescribed calibration and standardization techniques outlined in the test procedure.

The certified value for maximum specific optical density is:

$$D_m(\text{corr.}) = 17850(t) - 132; \quad \text{Standard error} = \pm 28$$

where t = specimen thickness in inches.

The following table also gives the certified values based on the above formula.

Thickness, inch	$D_m(\text{corr.})$
0.031	421
0.032	439
0.033	457
0.034	475
0.035	493

The values for $D_m(\text{corr.})$ are based on a best fit straight line derived from 70 measurements on representative specimens from a lot of plastic sheet, ranging in thickness from 0.030 to 0.040 inch (0.76 to 1.02 mm). The estimate of precision is the standard error of the difference between a single measured value and the corresponding certified value. Errors from curve fitting, specimen thickness and smoke density measurements are included in the quoted standard error. The window deposit correction (D_c) was 22 ± 4 . Smoke-density measurements were made under flaming exposure conditions in accordance with the detailed procedures outlined in "Standard Test Method for Measuring the Smoke Generated by Solid Materials," NFPA 258 T (National Fire Protection Association, 470 Atlantic Avenue, Boston, MA. 02210).

NOTE: Prior to test, the material must be dried for 24 hours at 60 °C and then conditioned to equilibrium at 23 ± 3 °C and 50 ± 5 percent relative humidity. Thickness of each 3 x 3 inch specimen should be measured by a micrometer to within .0005 inch (0.013 mm).

Engineering tests leading to the certification of this Standard Reference Material were performed by T. G. Lee of the Center for Fire Research, using a commercially available Smoke-Density Chamber.

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J. Paul Cali, Chief
Office of Standard Reference Materials