

## CRD-C 311-69

## METHOD OF TEST FOR DRYING TIME AND REFLECTANCE BY THE MEMBRANE FORMED BY A CONCRETE CURING COMPOUND

## Scope

1. This test method outlines a procedure for determining, under standard laboratory conditions, the drying time and the infrared reflectance of the membrane formed by a concrete curing compound on a horizontal smooth-troweled mortar surface at an age of not less than 24 hr.

## Apparatus for Reflectance Tests

2. (a) Geometric Characteristics.- Illumination shall be within 4 degrees of and centered about a direction of 45 degrees from the perpendicular to the test surface; viewing shall be within 15 degrees of and centered about the perpendicular.

(b) Spectral Characteristics.

(1) Source.- The source shall approximate standard illuminant C, representative of average daylight, recommended by the International Commission on Illumination (I.C.I.). The relative spectral irradiance of standard illuminant C is as follows for the wavelengths indicated (10-m $\mu$  intervals).

Wave-length m $\mu$	Relative Spectral Irradi- ance	Wave- length m $\mu$	Relative Spectral Irradi- ance	Wave- length m $\mu$	Relative Spectral Irradi- ance
380	33.0	520	96.9	660	87.9
390	47.4	530	98.0	670	86.3
400	63.3	540	102.1	680	84.0
410	80.6	550	105.2	690	80.2
420	98.1	560	105.3	700	76.3
430	112.4	570	102.3	710	72.4
440	121.5	580	97.8	720	68.3
450	124.0	590	93.2	730	64.4
460	123.1	600	89.7	740	61.5
470	123.8	610	88.4	750	59.2
480	123.9	620	88.1	760	58.1
490	120.7	630	88.0	770	58.2
500	112.1	640	87.8	780	59.1
510	102.3	650	88.2		

(2) Receptor.- The receptor shall have a spectral sensitivity approximating the luminosity function of the standard I.C.I. observer, or equivalent source (receptor combinations may be used).

(c) Acceptable Equipment.- The

Hunter multipurpose reflectometer used in the manner described in National Bureau of Standards Research Paper RP 1345 (Nov. 1940) meets the requirements mentioned above.

## Standards for Reflectance Test

3. (a) Primary Standards.- The primary standard is the ideal, completely reflecting, perfectly diffusing surface. Experiment has shown that a freshly smoked surface of magnesium oxide prepared according to the instructions in National Bureau of Standards Letter Circular LC 547 (1939) is not significantly different from the primary standard in its power to reflect light perpendicularly when illuminated at 45 degrees. Surfaces of magnesium carbonate or aged surfaces of MgO may be significantly lower in apparent reflectance than freshly prepared MgO.

(b) Infrared Calibration Standards.- Suitable infrared calibration standards shall be used. A standard in the range  $65 \pm 5$  percent reflectance should be obtained.

## Test Specimens

4. Specimens used in this test shall be prepared and sprayed in accordance with the methods outlined in CRD-C 302 except that the mortar surface shall be smooth-troweled rather than broomed before spraying. They shall be stored in the test cabinet as described in Par. 5(i) of CRD-C 302 for not less than 24 hr prior to test for reflectance.

## Procedure

5. (a) Infrared Reflectance.- The test specimens shall be tested for infrared reflectance in accordance with the specific procedures provided with the particular apparatus complying with the requirements of Par. 2 that is to be used in the test except that either Wratten filter

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No. 88 or 89B shall be used.

Report

(b) Drying Time.- The membrane formed by a curing compound shall be considered to have set to touch when a light touch of the finger shows a tacky condition but none of the coating adheres to the finger. The specimen will be tested at an age of 4 hr or sooner if the film appears to have reached the specified condition before 4 hr have elapsed.

6. (a) Infrared reflectance shall be reported to the nearest percent reflectance.

(b) Compliance with the drying time requirement shall be reported as "-4," indicating that the film was dry to touch within 4 hr. Failure to comply shall be reported as "+4."