



Standard Test Method for EVALUATING THE ABILITY OF A LATEX PAINT TO RESIST EFFLORESCENCE FROM THE SUBSTRATE¹

This Standard is issued under the fixed designation D 2831; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

1. Scope

1.1 This method covers the determination of the degree to which an emulsion paint resists the formation of efflorescence on the exposed paint surface brought about by normal environmental conditions.

1.2 The method is designed primarily to relate efflorescence originating in the substrate to the deposit appearing on the surface of exterior latex paints. The method could, under some circumstances, pertain to interior emulsion paints or organic solvent-thinned paints; however, any efflorescence originating from the paint film itself could not be distinguished from that coming from the substrate.

1.3 Practically, the method relates chiefly to the painting of masonry-type substrates such as concrete block, brick and mortar, stucco, poured concrete, asbestos cement-building board, and similar materials.

NOTE 1—The values stated in U.S. customary units are to be regarded as the standard. The metric equivalents of U.S. customary units given in the body of the standard may be approximate.

2. Description of Term

2.1 *Efflorescence* is caused by the deposition of soluble salts on the exposed paint surface, and is characterized by a light-colored, nonuniform, powdery incrustation which detracts from the paint film appearance. The crystals are not readily removed by dry wiping or washing with water, but can be removed with dilute mineral acid. The discoloration occurs when soluble salts in the substrate or paint migrate to the surface by the leaching and evaporating action of the water carrier. The efflorescence originating in the substrate

is that with which this method is concerned. Masonry surfaces such as concrete block, stucco, brick and mortar, asbestos cement board, and poured concrete are the main sources of this trouble.

3. Summary of Method

3.1 Panels known to have a level of salts capable of being easily and quickly transported to the paint surface are coated with the emulsion paint which is to be evaluated. Since deep colored paints show the efflorescence most clearly, all white paints are to be tinted to a medium deep blue color before application. The well-dried panel is placed face down over the surface of a vessel which contains warm water, so that moisture condenses and remains on the painted surface of the panel for a period of 16 h. After drying at ambient conditions, the panels are rated for the degree of efflorescence which has formed. Cycling of the panels is not necessary to effect severe efflorescence if the paint film is of the type which does not block the passage of the salts.

4. Apparatus

4.1 A constant-temperature bath of sufficient size to accommodate the pan described below and capable of maintaining a temperature of 40 ± 3 C can be used. (Any means of keeping the water in the test container at 40 ± 3 C is acceptable.)

4.2 A pan with inside dimensions $9\frac{1}{4}$ in.

¹ This method is under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings and Materials. Effective Oct. 17, 1969.