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Standard Guide for Paintability of Latex Sealants[1]

This standard is issued under the fixed designation C 1520; 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. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide describes the practical considerations that may be used to determine the compatibility of a paint or coating to be applied over a latex sealant or caulk. It evaluates the appearance and not the performance characteristics of the coated or painted joint.

1.2 The committee with jurisdiction over this standard is not aware of any comparable standards published by other organizations.

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 requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

C 717 Terminology of Building Seals and Sealants[2]

D 1729 Practice for Visual Evaluation of Color Differences of Opaque Materials[3]

D 2244 Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates[3]

E 284 Terminology of Appearance[3]

3. Terminology

3.1 *Definitions*—Refer to Terminology C 717 for definitions of the following term(s) used in this guide: compatibility, cure, joint, latex sealant. Refer to Terminology E 284 for definitions of the following term(s) used in this guide: gloss.

3.2 *color change*—a change in either the observed (see Practice D 1729) or measured color (see Test Method D 2244) of a substance.

3.3 *cracking*—a failure resulting in a discontinuous film (of paint) or bead (of sealant).

4. Summary of Practice

4.1 This guide reviews many of the issues concerning the compatibility of latex sealants with paint. While the focus of this guide is on latex sealants, the paint or coating may be of any composition.

5. Significance and Use

5.1 The intent of this guide is to provide the reader with information concerning possible reasons for paint failures where the paint is used over a latex sealant.

CONSIDERATIONS

6. Temperature

6.1 Since standard testing is usually performed at "room temperature," about 22°C, this would be considered the ideal temperature for application and curing. As the temperature deviates from this ideal, the "science" of drying changes in as much as lower temperature results in slower drying and faster drying occurs at elevated temperatures.

7. Percent Relative Humidity

7.1 In waterborne sealants, the humidity directly affects the ability of the system to lose water. Standard testing is typically done at 50 % RH, which allows for an acceptable evaporation rate. Temperature and humidity variations in climatic regions and fluctuations through the application and cure will have significant impacts.

8. Type of Paint

8.1 The type of paint applied to the sealant has an effect on how well it may handle dimensional changes, adhere to the sealant or dry during the curing of the sealant. Paints made from more flexible resins (low Tg) with low pigment volume content (PVC) (PVC << CPVC) will withstand the most change while a hard resin (high Tg) at high PVC will be the

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[2] *Annual Book of ASTM Standards*, Vol 04.07.

[3] *Annual Book of ASTM Standards*, Vol 06.01.

least forgiving. Broadly speaking, high gloss, interior paints represent the former while interior flat paints represent the latter.

9. Type of Sealant

9.1 The sealant will have an effect on adhesion of the paint film, the degree of change in geometry of the paint film and changes in color and gloss. However, generally speaking, these changes are difficult to quantify by the type and quality of sealant.

10. Cure Time

10.1 The degree of sealant cure may affect the time to paint, the compatibility of the applied paint with the sealant, and the dry time of the applied paint. An uncured sealant may react with the paint ingredients. Cracking of the paint film may occur when the sealant is painted before curing of the sealant bead is complete due to subsequent shrinkage of the underlying sealant. Additionally, migration of sealant components to the bead surface may affect adhesion.

11. Sealant Geometry/Tooling

11.1 Use of a backing material usually helps to decrease sealant cracking and thereby also usually decrease paint failure.

12. Method of Paint Application

12.1 The manner in which the paint is applied, that is, roller, brush or sprayer, may affect the thickness of the paint that is initially applied. Some rollers and brushes, especially low cost applicators, may lose bristles or leave brush strokes or surface irregularities in the paint film, which may promote premature failures.

13. Substrate Effects

13.1 The porosity, composition and cleanliness of the substrate affect the cure of both sealant and paint. A more porous substrate will wick away water or solvent and shorten the paint curing period. A difficult to adhere to substrate, or one that consists of material containing low molecular weight oils, plasticizers, etc., will affect film formation and wetting, and may induce gloss and color change.

14. Type of Construction

14.1 This affects the substrates and amount of movement that a paint/sealant system may be subjected to.

15. Lot to Lot Variation

15.1 A number of factors contribute to lot to lot variation in both sealants and paints. Whenever changing either, it may be prudent to test compatibility.

OBSERVATIONS

16. Cracking

16.1 This may be simple cracking of the paint film or may manifest itself as a crack in the sealant. The degree and amount of cracking between the sealant and the paint will affect the acceptability of this condition. Severe cracking of the sealant may overwhelm the crack bridging ability of the paint film.

17. Color Change

17.1 This may be caused by the leaching of material from either the sealant or substrate into the paint and changing its appearance. This may also be caused by the paint being more susceptible to dirt pick-up, especially in areas where airborne dirt is prevalent.

18. Gloss

18.1 Plasticizer migration may cause the paint to develop a higher more gloss over time.

19. Keywords

19.1 cracking; latex sealant; paint