



Standard Test Method for Evaluating Degree of Blistering of Paints¹

This standard is issued under the fixed designation D714; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This test method employs photographic reference standards to evaluate the degree of blistering that may develop when paint systems are subjected to conditions which will cause blistering. While primarily intended for use on metal and other nonporous surfaces, this test method may be used to evaluate blisters on porous surfaces, such as wood, if the size of blisters falls within the scope of these reference standards. When the reference standards are used as a specification of performance, the permissible degree of blistering of the paint system shall be agreed upon by the purchaser and the seller.

1.2 *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 Adjuncts:

Reference Standards for Blistering of Paint Coatings²

3. Significance and Use

3.1 A phenomenon peculiar to painted surfaces is the formation of blisters relative to some system weakness. This test method provides a standard procedure of describing the size and density of the blisters so that comparisons of severity can be made.

4. Reference Standards

4.1 The photographic reference standards are glossy prints.² Figs. 1-4 are reproductions of these standards and are included to illustrate two characteristics of blistering: size and frequency.

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.25 on Evaluation of Weathering Effects.

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² Glossy prints of the photographic reference standards showing types of blistering are available from ASTM International Headquarters. Order Adjunct No. ADJD0714. Original adjunct produced in 1986.

4.2 *Size*—Reference standards have been selected for four steps as to size on a numerical scale from 10 to 0, in which No. 10 represents no blistering. Blistering standard No. 8 represents the smallest size blister easily seen by the unaided eye. Blistering standards Nos. 6, 4, and 2 represent progressively larger sizes.

4.3 *Frequency*—Reference standards have been selected for four steps in frequency at each step in size, designated as follows:

Dense, *D*,
Medium dense, *MD*,
Medium, *M*, and
Few, *F*.

NOTE 1—A quantitative physical description of blistering would include the following characteristics determined by actual count:

Size distribution in terms of mensuration units,
Frequency of occurrence per unit area,
Pattern of distribution over the surface, and
Shape of blister

For the usual tests, an actual count is more elaborate than is necessary.

5. Procedure

5.1 Subject the paint film to the test conditions agreed upon by the purchaser and the seller. Then evaluate the paint film for the degree of blistering by comparison with the photographic reference standards in Figs. 1-4.

6. Report

6.1 Report blistering as a number (Note 2) designating the size of the blisters and a qualitative term or symbol indicating the frequency.

6.2 Intermediate steps in size or frequency of blisters may be judged by interpolation.

6.3 When the distribution of blisters over the area has a nonuniform pattern, use an additional phrase to describe the distribution, such as “small clusters,” or “large patches.”

NOTE 2—The number refers to the largest size blister that is numerous enough to be representative of the specimen. For example, photographic standard No. 4, “Dense,” has blisters ranging in size from about No. 7 to No. 4, inclusive.

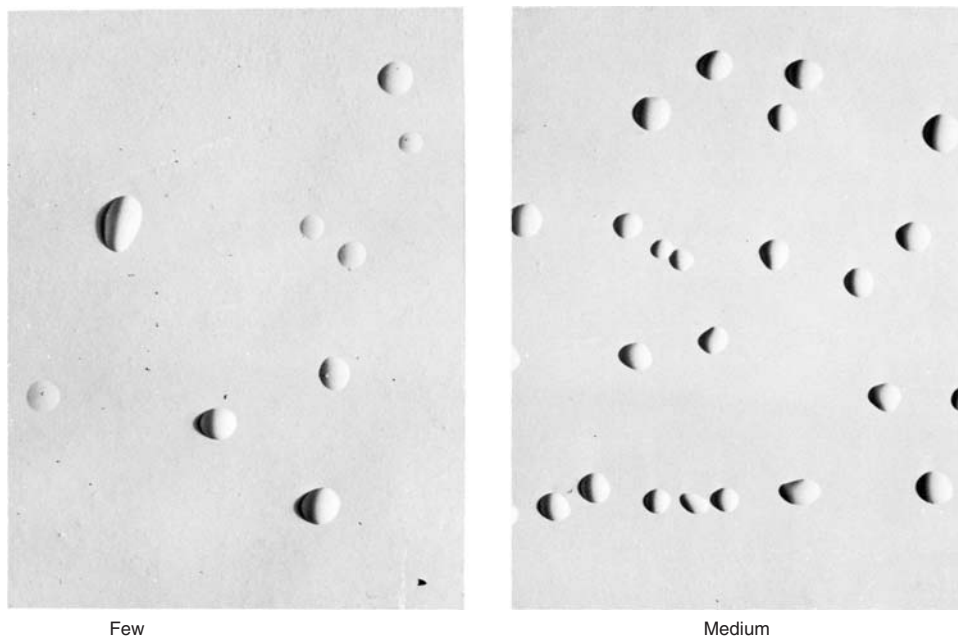


FIG. 1 Blister Size No. 2

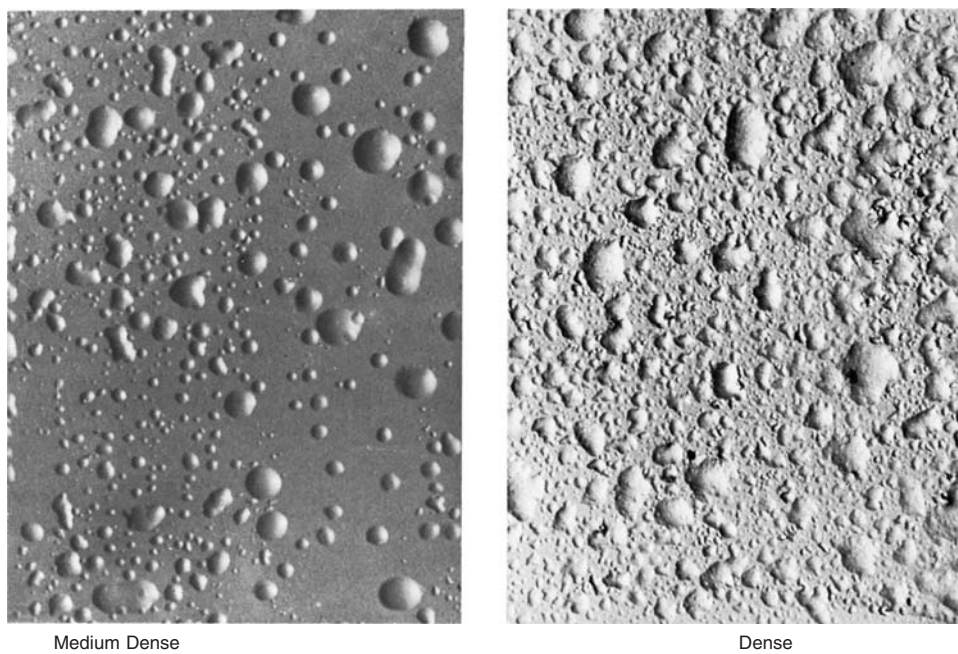


FIG. 1 (continued)

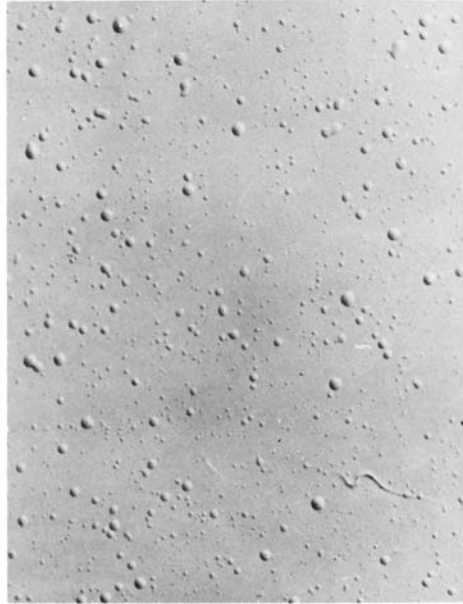
6.4 The pictorial representations in this standard which are published in the Book of Standards are sufficient in order to conduct the evaluation. It is preferable however, to use the original photographs or drawings when available.

7. Keywords

7.1 blistering; corrosion; evaluations; reference standards

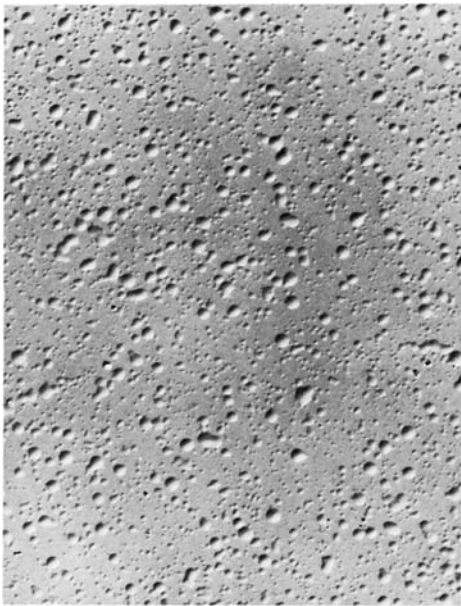


Few

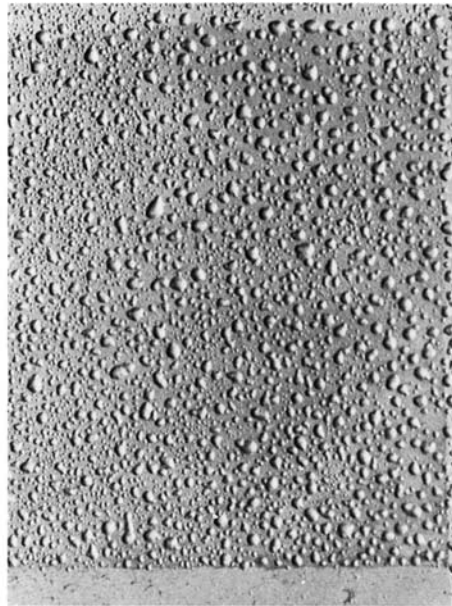


Medium

FIG. 2 Blister Size No. 4

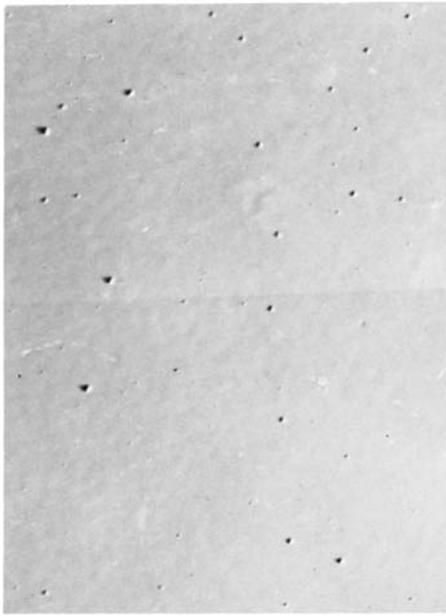


Medium Dense

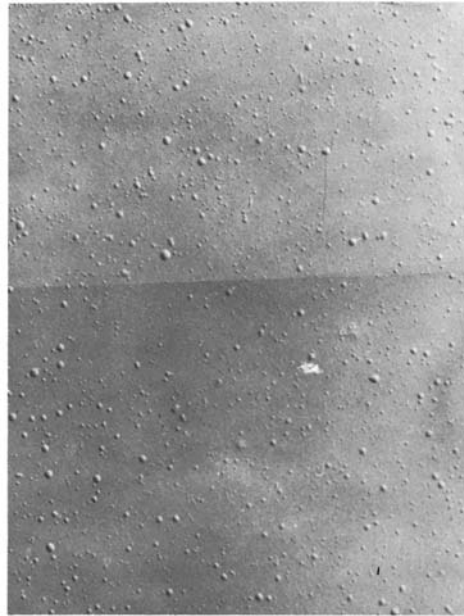


Dense

FIG. 2 (continued)

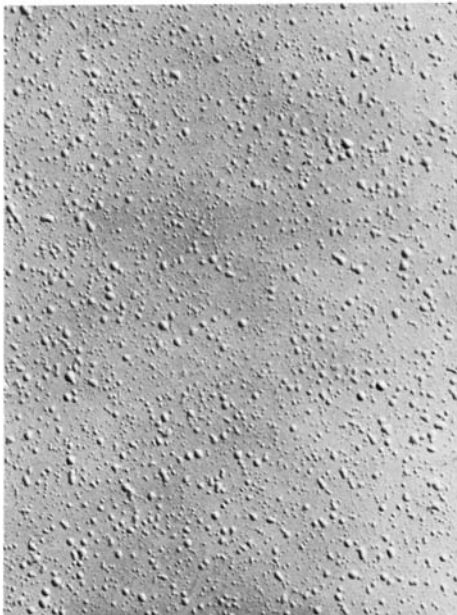


Few

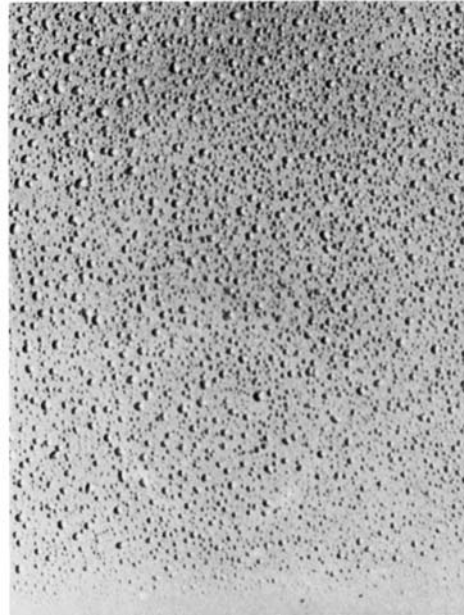


Medium

FIG. 3 Blister Size No. 6



Medium Dense

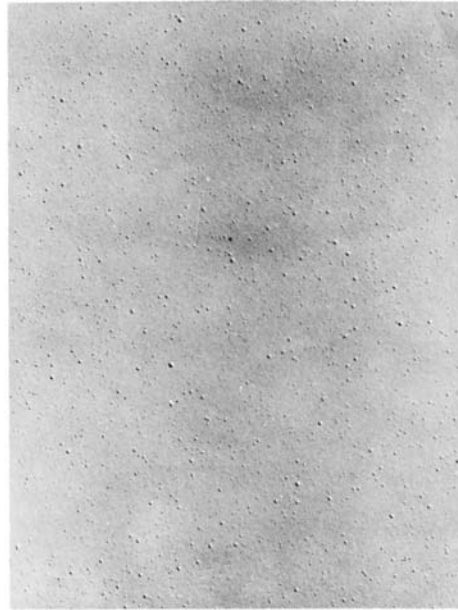


Dense

FIG. 3 (continued)

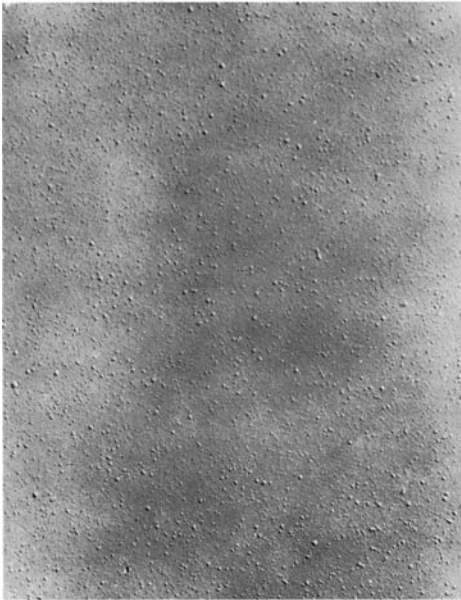


Few

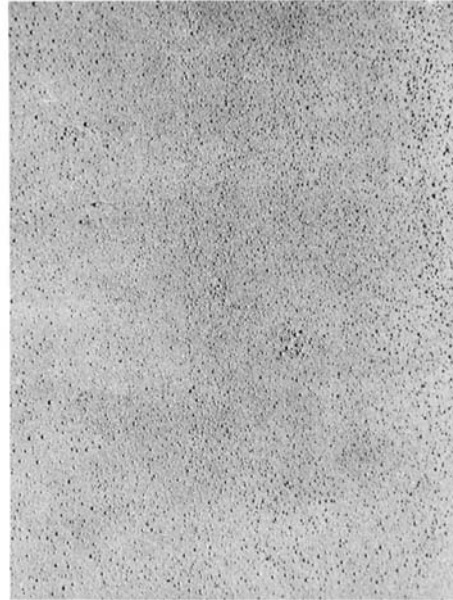


Medium

FIG. 4 Blister size No. 8




Medium Dense



Dense

FIG. 4 (continued)

 **D714 – 02 (2009)**

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