



Designation: ~~D4214 – 07~~ D4214 – 07 (Reapproved 2015)

Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films¹

This standard is issued under the fixed designation D4214; 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 U.S. Department of Defense.

1. Scope

1.1 These test methods cover the evaluation of the degree of chalking on white or tinted exterior paint films. These test methods describe the procedures recommended for transferring the chalk to a fabric or fingertip, which is then compared to photographic reference standards, or in the case of adhesive tapes, compared to a reflectance table or photographic reference standards, to determine the degree of chalking.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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 limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D662 Test Method for Evaluating Degree of Erosion of Exterior Paints

E1347 Test Method for Color and Color-Difference Measurement by Tristimulus Colorimetry

2.2 *Other Document:*

Pictorial Standards of Coating Defects³

3. Terminology

3.1 *Definitions:*

3.1.1 *chalking, n*—the formation on a pigmented coating of a friable powder evolved from the film itself at or just beneath the surface.

4. Significance and Use

4.1 The procedures provide a broad range of techniques and photographic references to evaluate chalking of exterior paints.

5. Type of Chalking

5.1 Only one type of chalking is recognized, as defined in Section 3.

6. Use of Photographic Reference Standards

6.1 The photographic reference standards that are part of these test methods are representative of the degrees of chalking on a paint film. The photographs shown in Fig. 1 and Fig. 2 are for illustration purposes only and should not be used for evaluation.

6.2 The use of photographic reference standards illustrated in Fig. 1 and Fig. 2 requires the following precautions:

6.2.1 The degree of chalking will vary over any given area. Therefore, an average portion of the coating should be evaluated. On large surfaces, it is recommended that the rating be made at several locations and the mean and range reported.

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

Current edition approved July 1, 2007; June 1, 2015. Published July 2007; June 2015. Originally approved in 1982. Last previous edition approved in 1998 as D4214 – 98; D4214 – 07, which was withdrawn March 2007 and reinstated in July 2007. DOI: 10.1520/D4214-07; DOI: 10.1520/D4214-07R15.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

³ Copies of the pictorial photographic reference standards applicable to Test Method A are contained in the publication *Pictorial Standards of Coatings Defects* and may be obtained from the Federation of Societies for Coatings Technology, 492 Norristown Rd., Blue Bell, PA 19422.

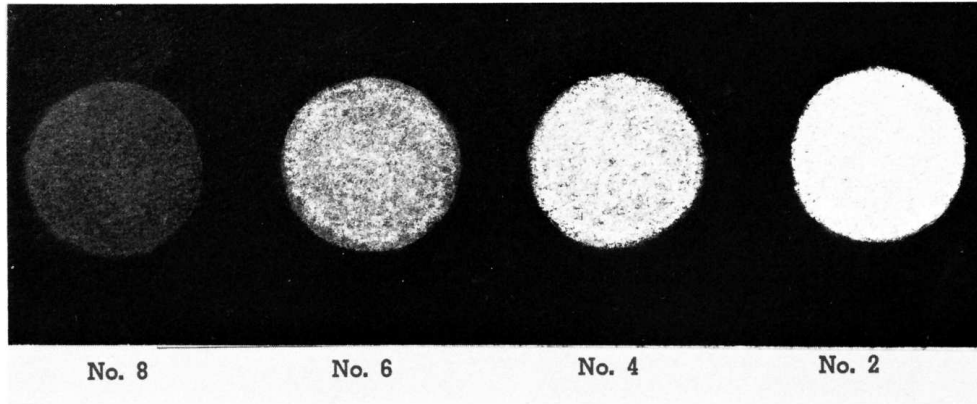


FIG. 1 Photographic Reference Standard No. 1—Test Method D659

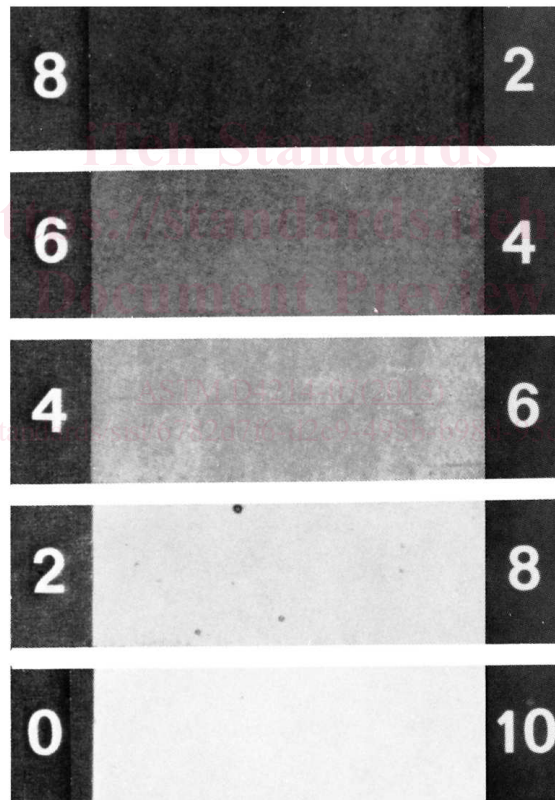


FIG. 2 Photographic Reference Standard No. 2—Verfinstituut TNO

6.2.2 It is difficult to make readings on a windy day and making readings at such time should be avoided. It should also be noted that rain, snow, or moisture in any form will remove chalk so that readings should be made after a period of clear weather and when the surface is dry.

6.2.3 Chalking and erosion (**Note 1**) are closely related. However, the rate of chalking as measured by these test methods, and the rate of erosion may not be comparable because some pigment combinations tend to retain chalk on the surface while other pigment combinations exert a self-cleaning action by natural means.

NOTE 1—For the evaluation of erosion, see Test Method **D662**.

6.3 Records may be kept on forms⁴ such as shown in Fig. 3. Reporting of the results shall include the information given in Section 8.

6.4 When these test methods is referenced in specifications for performance, the permissible degree of chalking is established between the producer and the user.

7. Recommended Procedures

7.1 *Test Method A—Cloth Tape Method:*

7.1.1 *Material*—Fabric, as agreed upon between the producer, user, or other interested parties, to rub against the surface being tested. Black (or white for dark coatings) wool felt, velvet, and velveteen have proven particularly effective.

⁴ These record sheets may be obtained from the Federation of Societies for Coatings Technology, 492 Norristown Rd., Blue Bell, PA 19422.

TAPE CHALK RATING WORKSHEET

Reflectance Method

Client Name _____
 Order # _____
 Radiation to date _____

iTech Standards
 (https://standards.itih.ai)
 Document Preview

	Measurements		Avg /%	Corrected Value	Rating
	1st Set	2nd Set			
Sheet
Tape & Sheet
1
2
3
4
5
6
7
8
9
10
Tape & Sheet
Sheet

Date _____

Inspected by _____

NOTE 1—Label sample numbers, apply initial blank tape, and proceed with tape specimens of the samples.

FIG. 3 Example of Worksheet