



Designation: D7358 – 07 (Reapproved 2024)

Standard Test Method for Water Content of Paints by Quantitative Calcium Hydride Reaction Test Kit¹

This standard is issued under the fixed designation D7358; 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 test method describes the determination of the total water content of paints using a calcium hydride reaction test kit, or water content between 2 % and 85 % water.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D1193 Specification for Reagent Water

D3925 Practice for Sampling Liquid Paints and Related Pigmented Coatings

D4017 Test Method for Water in Paints and Paint Materials by Karl Fischer Method

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

3. Summary of Test Method

3.1 A 0.25 mL sample is reacted with a specially formulated calcium hydride reagent to convert water in the sample to

hydrogen gas. The reaction is carried out in a sealed pressure vessel and the resulting pressure is then measured using a specially designed meter programmed to convert gas pressure into water content. The results are displayed in milligrams of water in the reacted sample extract. The actual weight percent water in the whole paint sample is manually calculated using the exact weights of the paint sample and the diluted extract sample, if used.

4. Significance and Use

4.1 Although Test Method D4017 is widely used for the determination of water in paints and related materials, this method may overcome some of the variability found in the Karl Fischer method.

4.2 Control of water content is often important in controlling the performance of paints, and it is critical in determining volatile organic compound (VOC) content when VOC content is measured by difference from total volatile matter and water content as required in certain federal and state regulations.

5. Interferences

5.1 The following compounds, tested at twice the sample size, have been found to produce no measurable response to the calcium hydride reaction test kit and, therefore, cause no interference at levels up to 40 %:³

Ethanol
Methanol
Acetone⁴
Methyl Ethyl Ketone
Tetrahydrofuran
Diethylene Glycol Dimethyl Ether
Ethylene Glycol⁴
Diethylene Glycol
Dipropylene Glycol
Stearic Acid
2-Ethyl Hexanoic Acid
Lead Oxide (II and III)
Aluminum Oxide (Brockman I)

⁴ 0.25 mL sample size program A and B.

5.2 When using the 5 mL sample size programs, that is, programs C, D, or E, ethylene glycol and acids have been found to produce a positive result in the presence of a small

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 D01.21 on Chemical Analysis of Paints and Paint Materials.

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

³ HydroSCOUT User's Manual.