



Designation: ~~D4139 – 04 (Reapproved 2009)~~ D4139 – 04 (Reapproved 2014)

Standard Guide for Determining Volatile and Nonvolatile Content of Pigments¹

This standard is issued under the fixed designation D4139; 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 is intended to aid in the selection of the proper ASTM test method for determining the volatile and nonvolatile content of pigments.

NOTE 1—Test methods for determining the composition of the volatile fraction are not covered by this guide.

1.2 The standards included are as follows:

Standard	Section	ASTM Designation
Inert or low hiding pigments	4.1	D280
White pigments	4.2	D280
Black pigments	4.3	D280
		D1509
Aluminum and zinc pigments	4.4	D280
		D480
Blue pigments	4.5	D280
		D1135
Green pigments	4.6	D280
Yellow, orange, brown pigments	4.7	D280
		D3724
Red pigments	4.8	D280
Miscellaneous	4.9	

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

2. Referenced Documents

2.1 *ASTM Standards*:²

[D280 Test Methods for Hygroscopic Moisture \(and Other Matter Volatile Under the Test Conditions\) in Pigments](#)

[D480 Test Methods for Sampling and Testing of Flaked Aluminum Powders and Pastes](#)

[D1135 Test Methods for Chemical Analysis of Blue Pigments](#)

[D1509 Test Methods for Carbon Black—Heating Loss](#)

[D3724 Specification for Synthetic Brown Iron Oxide Pigment](#)

3. Significance and Use

3.1 The nonvolatile content of raw materials may be used to determine the total nonvolatile content (solids) of paint and related coatings. Such information may be useful to coatings producers and users for the determination of the total solids available for film formation and for the estimation of the volatile organic content.

4. Procedure

4.1 *Inert or Low Hiding Pigments*:

4.1.1 Test Methods [D280](#) contain Method A for pigments that do not decompose at 110°C, using a time of 2 h at 105 to 110°C, and Method B for pigments that decompose at 110°C, using vacuum to remove the volatile material.

4.1.1.1 Test Methods [D280](#) are applicable to anhydrous and hydrous aluminum silicate, barium sulfate, calcium, borosilicate, calcium carbonate, diatomaceous silica, magnesium silicate, pumice, and wet ground mica pigments for determination of hygroscopic moisture and other matter volatile under the test conditions.

¹ This guide is under the jurisdiction of ASTM Committee [D01](#) on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee [D01.31](#) on Pigment Specifications.

Current edition approved ~~June 1, 2009~~ Dec. 1, 2014. Published ~~June 2009~~ December 2014. Originally approved in 1982. Last previous edition approved in ~~2004~~ 2009 as ~~D4139 – 04~~ D4139 – 04 (2009). DOI: ~~10.1520/D4139-04R09~~ 10.1520/D4139-04R14.

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.