



Designation: D8090 – 24

Standard Test Method for Particle Size Distribution of Paints and Pigments Using Dynamic Imaging Methods¹

This standard is issued under the fixed designation D8090; 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 covers the determination of particle size distribution of liquid paints and pigmented liquid coatings by Dynamic Image Analysis. This method includes the reporting of particles $\geq 1 \mu\text{m}$ in size and up to $300 \mu\text{m}$ in size.

NOTE 1—Shape is used to classify particles, droplets and bubbles and is not a reporting requirement.

NOTE 2—The term paint(s) as used in this document includes liquid paint and liquid pigmented coatings.

1.1.1 Some paints may be too viscous to flow through the imaging instrument without dilution which may be used to help the paint flow as long as significant contamination is not introduced into the paint.

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

D16 Terminology for Paint, Related Coatings, Materials, and Applications

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 D01.24 on Physical Properties of Liquid Paints & Paint Materials.

Current edition approved Feb. 1, 2024. Published February 2024. Originally approved in 2017. Last previous edition approved in 2017 as F3261 – 17. DOI: 10.1520/D8090-24.

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.

D3925 Practice for Sampling Liquid Paints and Related Pigmented Coatings

2.2 Other Documents:

ISO12103-1 Medium Test Dust

3. Terminology

3.1 For the definition of terms used in this standard refer to Terminology **D16**.

3.2 Definitions:

3.2.1 *bubble, n*—a non paint, gaseous formation within the paint, generally spherical in shape and visible as a thick walled ring with a transparent center.

3.2.2 *droplet, n*—a non paint, liquid formation within the paint, generally spherical in shape and visible as a thin walled ring with a transparent center.

3.2.3 *projected equivalent particle diameter, n*—the diameter calculated from the projected area of a particle if that area formed a circle, and in equation form is:

$$\begin{aligned} \text{Projected Equivalent Particle Diameter (D)} &= \text{SQRT}(\text{Area} / (\pi / 4)) \\ &= \sqrt{(\text{Area} / 0.785)} \end{aligned}$$

3.2.4 *count fraction, n*—the fraction of the total count of particles measured which are below a given percent value, and are denoted as follows:

3.2.4.1 *Dn10*—the projected equivalent diameter below which 10 % of the total count of all particles analyzed is represented.

3.2.4.2 *Dn50*—the projected equivalent diameter below which 50 % of the total count of all particles analyzed is represented.

3.2.4.3 *Dn90*—the projected equivalent diameter below which 90 % of the total count of all particles analyzed is represented.

4. Summary of Test Method

4.1 Test specimens are fed through the dynamic imaging instrument which is comprised of a camera sensor and illumination source opposing each other to form a measurement zone where the fluid image is captured and then analyzed for particle size and distribution. The particle size and size distribution values are based on the projected equivalent particle diameter.