



Designation: D4572 – 21

Standard Test Method for Rubber Chemicals—Wet Sieve Analysis of Sulfur¹

This standard is issued under the fixed designation D4572; 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 evaluation of the particle size distribution of the coarse fraction of sulfur. It is limited to the measurement of those particles greater than 45 μm (No. 325 sieve).

1.2 *Units*—The values stated in SI units are to be regarded as the 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

[D4483 Practice for Evaluating Precision for Test Method Standards in the Rubber and Carbon Black Manufacturing Industries](#)

[E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

3. Significance and Use

3.1 This test method is used to evaluate sulfur for suitability as a rubber vulcanizing agent. Sulfur particles must be significantly small enough to dissolve in rubber during cure and produce a uniform network of cross-links. This test method is

¹ This test method is under the jurisdiction of ASTM Committee D11 on Rubber and Rubber-like Materials and is the direct responsibility of Subcommittee D11.20 on Compounding Materials and Procedures.

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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.

used as a quality control method to ensure that no excessively large sulfur particles are present and to see if the product follows a typical pattern of size distribution.

3.2 This procedure is necessary when problems of the sulfur caking occur with the use of the dry sieving procedure for particle size.

4. Apparatus

4.1 *Standard Sieves*, stainless steel, 76 mm diameter containing selected stainless steel wire cloth in the range of 45 to 250 μm mesh count, conforming to Specification E11. A cascade stack/support is recommended to keep cascade sieves in place during analysis.

4.2 *No. 6 Stiff Bristle Artist Brush*, having 10 to 15 mm long bristles.

4.3 *Balance*, with a minimum capacity of 150 g sensitive to 0.001 g.

4.4 *Oven*, circulating air type, controlled to $70 \pm 2^\circ\text{C}$.

4.5 *Beaker*, 250 cm^3 .

5. Materials

5.1 *Liquid Detergent*.

6. Procedure

6.1 Weigh 10.0 g of the sulfur sample into a 250- cm^3 beaker. Wet the sulfur with 25 cm^3 of water. Mix thoroughly with a glass stirring rod to guarantee wetting all the sulfur.

NOTE 1—A 1 % solution of a liquid detergent may be used if the sulfur sample does not wet out properly.

6.2 Weigh each cleaned and dried sieve to the nearest 0.001 g. Assemble preweighed stainless steel sieves in order of descending fineness with the coarsest screen on top. Carefully transfer the wetted sulfur to top screen using additional water to wash all of the sulfur out of the beaker. Wash the sulfur through the top sieve with a gentle stream of water from a nozzle and add additional detergent (see 5.1) as needed. Tap or vibrate the screen while washing (not needed if using a cascade stack). Finally, break up all agglomerated sulfur particles using the brush. Clean sulfur from the bristles of the brush using wash water. Be careful that the wash water does not back up on the finer sieves causing the sulfur slurry to overflow the sieve sides.