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Standard Test Method for Determining Acid Extractable Content in Activated Carbon by Ashing[1]

This standard is issued under the fixed designation D6385; 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 is to be used for determination of the acid extractable content of a sample of activated carbon. This test method presupposes the existence of substances other than carbon to be present with activated carbon but does not purport to address or identify those substances which may be present. This test method should be applicable to any form in which activated carbon may exist and requires the performance of Test Method D2866.

1.2 This test method requires the use of concentrated hydrochloric acid, which should be used in an appropriate and safe manner, with eye protection, skin protection and handling carried out in a properly operating fume hood. The proper use of a muffle furnace is addressed in Test Method D2866.

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

1.4 *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 determines the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1193 Specification for Reagent Water

D2866 Test Method for Total Ash Content of Activated Carbon

D2867 Test Methods for Moisture in Activated Carbon

E300 Practice for Sampling Industrial Chemicals

3. Summary of Test Method

3.1 The percent acid extractable content of an activated carbon sample is determined by the difference between the percent mass of total ash of a sample and the percent mass of total ash of a sample which has been acid extracted.

4. Significance and Use

4.1 The quantitative determination of acid extractable content is useful in evaluating activated carbon samples that contain acid soluble impurities. These acid soluble impurities can affect applications of activated carbon.

4.2 *Limitations of Method*—Hydrochloric acid is used in this test method as the extracting acid. All elements or compounds present in the activated carbon sample, which can be acid extracted, are assumed to form water soluble chloride salts. Hydrochloric acid may not solubilize all impurities of activated carbon.

5. Apparatus

5.1 *250-mL Glass Beakers,* for boiling and drying the sample.

5.2 *Watch Glass,* suitable for 250-mL beaker.

5.3 *Graduated Cylinders,* of 100-mL (TD) and 25-mL (TD) size.

5.4 *Buchner Vacuum Funnel,* 7-cm ID or equivalent filtering device.

5.5 *Vacuum Filter Flask,* with side arm, 500 mL.

5.6 *Vacuum Filter Collar,* for the above filter flask.

5.7 *Filter Paper,* which is hardened, ashless paper, ≤ 8 micron pore size and 7 cm in diameter is recommended, or a diameter which matches the vacuum funnel. The paper will be ashed with the carbon, so ashless paper is necessary.

5.8 *Drying Oven,* maintained at 150° C ± 5°C.

5.9 *Muffle Furnace,* as specified in Test Method D2866.

5.10 *Porcelain Crucibles,* as specified in Test Method D2866.

5.11 *Desicator,* containing indicating silica gel or any other desicant, which is effective in maintaining dryness of cooling hot crucibles or oven dried carbon samples.

5.12 *Balance,* capable of measurement of 0.1 mg.

[1] This test method is under the jurisdiction of ASTM Committee D28 on Liquid Phase Evaluation.

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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.