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Standard Methods for ANALYSIS OF GRAPHITES USED AS LUBRICANTS[1]

This standard is issued under the fixed designation D 1553; 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 These methods cover the determination of volatile matter at 105°C (including moisture) and of incineration ash of natural or manufactured graphites used as lubricants. The graphites shall not contain other solids or liquids.

1.2 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

VOLATILE MATTER AT 105°C

2. Summary of Method

2.1 A weighed sample is heated for 2 h at 105°C and the loss of weight is calculated as the percent volatile matter including moisture.

3. Apparatus

3.1 *Drying Container*—A widemouth cylindrical glass weighing bottle approximately 30 mm high and 50 mm wide provided with a ground-glass stopper, or an aluminum dish approximately 50 mm high and 90 mm wide with a tightly fitting cover.

3.2 *Drying Oven* capable of maintaining a temperature of 105 ± 2°C.

4. Procedure

4.1 Heat a clean drying container and cover in an oven for 2 h at 105°C. Cool it to room temperature and weigh it to the nearest 1 mg.

4.2 Transfer 5 ± 0.1 g of the thoroughly mixed sample, weighed to the nearest 1 mg, to the container. With the cover removed from the container, heat the sample at 105°C for 2 h in an oven. At the end of the heating period, affix the cover while hot and transfer the container to a desiccator containing anhydrous calcium sulfate. Cool to room temperature and weigh to the nearest 1 mg. Save the dried sample for determination of incineration ash (see 10.2).

5. Calculation

5.1 Calculate the volatile matter expressed as weight percent as follows:

$$\text{Volatile matter, \%} = (A/S) \times 100$$

where:
A = loss of weight on drying, g, and
S = weight of sample, g.

6. Report

6.1 Report the results of the test to the nearest 0.01 %.

7. Precision

7.1 The precision of the method as determined by statistical examination of interlaboratory results is as follows:

7.1.1 *Repeatability*—The difference between two test results, obtained by the same operator with the same apparatus under constant operating conditions on identical test material, would in the long run, in the normal and correct operation of the test method, exceed the following values only in one case in twenty:

If differs by more than 0.03 %

7.1.2 *Reproducibility*—The difference between two single and independent results ob-

[1] These methods are under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and are the direct responsibility of Subcommittee D02 L on Joint ASTM ASLE Committee on Industrial Lubricants.

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