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This Test Method may include safety precautions which are believed to be appropriate at the time of publication of the method. The intent of these is to alert the user of the method to safety issues related to such use. The user is responsible for determining that the safety precautions are complete and are appropriate to their use of the method, and for ensuring that suitable safety practices have not changed since publication of the method. This method may require the use, disposal, or both, of chemicals which may present serious health hazards to humans. Procedures for the handling of such substances are set forth on Material Safety Data Sheets which must be developed by all manufacturers and importers of potentially hazardous chemicals and maintained by all distributors of potentially hazardous chemicals. Prior to the use of this method, the user must determine whether any of the chemicals to be used or disposed of are potentially hazardous and, if so, must follow strictly the procedures specified by both the manufacturer, as well as local, state, and federal authorities for safe use and disposal of these chemicals.

Loss on ignition of fiber glass mats

1. Scope

This method covers the determination of the percent loss on ignition of fiber glass mats. This ignition loss can be considered to be the binder content.

2. Applicable documents

- 2.1 TAPPI T 658 "Properties of Diatomaceous Silica" (Section 5) (withdrawn 1998).
- 2.2 TAPPI T 1007 "Sample Location."

3. Summary of method

Fiber glass mat is ignited in a muffle furnace at $1157^{\circ} \pm 45^{\circ}\text{F}$ ($625^{\circ} \pm 25^{\circ}\text{C}$) until only an ash and the glass fiber remain. The residue is weighed and the percent loss on ignition of the moisture-free mat is calculated. (Appropriate ventilation should be used when conducting this test to avoid exposure to potentially hazardous products of combustion.)

4. Significance

The loss on ignition of fiber glass mat may consist of: binders used to hold the glass fibers together, fibers with an ignition temperature lower than 1157°F (625°C), and materials used to coat the glass fibers.

5. Apparatus

- 5.1 *Balance*, accurate to 0.001 g.
- 5.2 *Drying oven*, equipped with a means of constant temperature regulation and mechanical air convection.
- 5.3 *Electric muffle furnace*, capable of maintaining a temperature of $1157^{\circ} \pm 45^{\circ}\text{F}$ ($625^{\circ} \pm 25^{\circ}\text{C}$).
- 5.4 *Crucible*, high form, 250 mL.
- 5.5 *Desiccator*.

6. Test specimen

- 6.1 Obtain samples in accordance with TAPPI T 1007 "Sample Location."
- 6.2 Use a 5- to 10-g specimen cut into pieces small enough to fit into crucible.
- 6.3 Place sample in crucible.

NOTE 1: With appropriate care, a specimen of mat can be subjected to this test without use of a crucible; see Note 2 after Section 8.8.

7. Procedure

7.1 Precondition each test specimen by drying for 1 h at $105^{\circ} \pm 3^{\circ}\text{C}$ ($220^{\circ} \pm 5^{\circ}\text{F}$), unless otherwise specified. Remove the test specimens from the drying oven and cool in the desiccator for 30 min in the standard atmosphere for testing glass textiles.

7.2 Place the empty containers in the muffle furnace at $625^{\circ} \pm 25^{\circ}\text{C}$ ($1157^{\circ} \pm 45^{\circ}\text{F}$). After 30 min, remove and cool in the standard atmosphere (TAPPI T 1008) for 30 minutes.

7.3 Identify each container with respect to each test specimen.

7.4 Weigh the empty container to the nearest 0.001 g. Record this as the tare mass, T .

7.5 Place the test specimen in the container and weigh to the nearest 0.001 g. Record this as the initial mass, A .

7.6 Place the test specimen and container in the muffle furnace and ignite at $625^{\circ} \pm 25^{\circ}\text{C}$ ($1157^{\circ} \pm 45^{\circ}\text{F}$).

7.7 After ignition for at least 30 min, remove the test specimen and container from the muffle furnace and cool in the desiccator for 30 min in the standard atmosphere (TAPPI T 1008).

7.8 Remove each container and test specimen separately from the desiccator, and immediately weigh to the nearest 0.001 g. Record this as the ignited mass, B .

NOTE 2: When it is known that no ash residue separates from the specimen during the weighing and igniting process, the specimen may be weighed separately without the container. When this occurs, T equals zero. With appropriate care, a single piece of mat can be dried, weighed intact, and placed with tongs into the ignition oven on appropriate refractory supports. When the ignition time is complete, the sample may be removed as an intact fragile web and weighed directly on a pan balance.

8. Calculation

8.1 Calculate the percentage of ignition loss of the glass textile for each specimen as follows:

$$\text{Ignition loss, \%} = 100 \times (A - B)/(A - T)$$

where:

- A = initial mass of container and specimen before ignition, g
- B = mass of container and glass residue after ignition, g
- T = mass of container (Note 2).

9. Report

Report the percent loss on ignition of the glass mat to the nearest 0.1%.

10. Precision

10.1 On the basis of studies made in accordance with TAPPI T 1200 "Interlaboratory Evaluation of Test Methods to Determine TAPPI Repeatability and Reproducibility," test results, each representing an average of 5 determinations from the same sample (commercial 2.00 lb/100ft² fiberglass mat), are expected to agree within the amounts stated below. The study included five laboratories.

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| 10.2 | Average loss on ignition | 25.1 % |
| | Repeatability | 3.2 % - 0.8 weight loss % |
| | Reproducibility | 6% - 1.5 weight loss % |