



# Standard Test Method for Weight Loss of Gasket Materials Upon Exposure to Elevated Temperatures<sup>1</sup>

This standard is issued under the fixed designation F495; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers the determination of gasket material weight loss upon exposure to elevated temperatures.

1.2 This test method may include hazardous materials, operations, and equipment.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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 determine the applicability of regulatory limitations prior to use.*

## 2. Significance and Use

2.1 Weight loss represents the amount of combustibles and volatiles of the material at various temperatures between 315°C (600°F) and 815°C (1499°F). This procedure should not be used to determine percent of binder content.

## 3. Apparatus

3.1 *Muffle Furnace*, capable of maintaining a temperature range between 315°C (600°F) and 815°C (1499°F) with an accuracy of  $\pm 5^\circ\text{C}$  (9°F).

3.2 *Porcelain Crucible*.

3.3 *Analytical Balance*.

3.4 *Desiccator*, containing anhydrous calcium chloride or silica gel.

3.5 *Circulating Air Oven*, maintained at  $100 \pm 2^\circ\text{C}$  (212  $\pm$  3.6°F).

## 4. Test Specimens

4.1 Specimens shall consist of a 5 to 10-g quantity of the material. The specimens shall be cut into pieces not larger than 12.7 mm (1/2 in.) square to allow all of it to be placed within the crucible.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee F03 on Gaskets and is the direct responsibility of Subcommittee F03.40 on Chemical Test Methods.

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## 5. Conditioning

5.1 After the specimen has been cut or broken up and placed in the crucible, heat it in the circulating air oven for 1 h at 100°C (212°F) and allow it to cool to 21 to 30°C (70 to 86°F) in the desiccator.

## 6. Number of Tests

6.1 A minimum of three tests shall be run on separate specimens taken from the same sample with the results averaged, unless otherwise agreed upon between the producer and the user.

## 7. Procedure

7.1 Heat a clean crucible for 30 min at the specified test temperature. Cool to 21 to 30°C (70 to 86°F) in a desiccator. Weigh the crucible on the analytical balance and record as  $W_1$ .

7.2 Place the cut or broken-up specimen in the crucible and condition in accordance with 5.1. Weigh the specimen and crucible and record the weight as  $W_2$ .

7.3 Place the specimen and the crucible in the muffle furnace at the temperature level determined for this test for 60 min (recommend  $\pm 1$  min), cool the specimen and the crucible to 21 to 30°C (70 to 86°F) in a desiccator, weigh the specimen and crucible and record the weight as  $W_3$ .

7.3.1 For tests at 815°C (1499°F) the specimen should be ignited initially in the crucible by supporting over a flame in an exhausted hood until the sample has extinguished.

NOTE 1—It is felt that the life of the heater elements in a muffle furnace will be greatly extended if the majority of the organics in a specimen are burned off prior to placing the crucible in the furnace.

## 8. Calculations

8.1 Calculate percent of weight loss as follows:

$$\text{Weight loss, \%} = \frac{(W_2 - W_3)}{(W_2 - W_1)} \times 100$$

## 9. Report

9.1 Report the following information:

9.1.1 Percent of weight loss, and

9.1.2 Complete identification of the gasket material tested, including type, source, date of manufacture, thickness, manufacturer's designation, test temperature, etc.

## 10. Precision and Bias

10.1 The following data should be used for judging the acceptability of results:

10.1.1 *Reproducibility (Multilaboratory)*—The coefficient of variation of results (each the average of duplicate determinations) obtained by analysis in different laboratories has been

estimated to be 12.4 % relative. Two such values should be considered suspect (95 % confidence) if they differ by more than 25 % relative.

## 11. Keywords

11.1 combustibles; elevated temperatures; muffle furnace; volatiles; weight loss

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