Method of Test for
PERCENT SULFUR IN CAPPING COMPOUND
DOTD Designation: TR 508M-94

I. Scope

This method is used to determine the sulfur content of sulfur mortars used for capping cylindrical concrete specimens. The loss on ignition is determined by placing the test specimen into a muffle furnace. This loss is directly related to the loss of sulfur due to combustion.

II. Apparatus

A. **Analytical balance** - readable to 0.0001 g.
B. **Muffle furnace** - capable of maintaining a temperature of 900 ± 25°C.
C. **Evaporating dish** - 25 mL capacity, which has been in a desiccator overnight.
D. **Desiccator.**
E. **Gloves, tongs, etc.** - for handling hot materials.
F. **Tin plate** - 75 x 150 mm.
G. **Sulfur Mortar Capping Compound worksheet.** (Figure 1)

III. Health Precautions

Proper equipment and precautions are to be used whenever hot material or equipment must be handled. Use tongs and/or gloves while handling hot material.

IV. Sample

The test sample shall consist of approximately 35 g of sulfur mortar capping compound melted in accordance with AASHTO T 231 and poured over a tin plate. The test specimen shall be approximately 10 g.

V. Procedure

A. Remove the evaporating dish from the desiccator and weigh the evaporating dish to the nearest 0.0001 g. On the worksheet, record the weight of the evaporating dish as Tare Wt.
B. Break approximately 10 g of the test sample into small pieces approximately 10-20 mm across and place in the evaporating dish.
C. Weigh the evaporating dish with specimen to the nearest 0.0001 g and record on the worksheet as Tare Wt. + Specimen Wt.
D. Subtract the Tare Wt. from the Tare Wt. + Specimen Wt. and record the difference on the worksheet as Sample Wt. (E).
E. Place the evaporating dish with specimen into the muffle furnace at 900 ± 25°C for a minimum of one hour.
F. At the end of the one hour time period remove the evaporating dish with specimen residue from the furnace and place into the desiccator to cool.
G. After the dish with specimen residue has cooled, weigh the dish and residue to the nearest 0.0001 g and record on the worksheet as Tare Wt. + Ignited Specimen Wt.
H. Subtract the Tare Wt. from the Tare Wt. + Ignited Specimen Wt. and record the difference on the worksheet the difference as Wt. of Residue After Ignition, (F).

VI. Calculations

Calculate the percent sulfur content (D) to the nearest 0.1 % using the following formula:

$$D = \frac{E - F}{E} \times 100$$

where:

E = specimen weight, g
F = weight of residue after ignition, g
100 = constant

example:

E = 9.1110
F = 3.6444

$$A = \frac{9.1110 - 3.6444}{9.1110} \times 100$$

$$= 0.60000 \times 100$$

$$A = 60.0$$

VII. Report

Report the percent sulfur content to the nearest 0.1 %.

VIII. Normal Test Reporting Time

The normal test reporting time is one day.

8/93

Louisiana Department of Transportation and Development
Materials Section
SULFUR MORTAR CAPPING COMPOUND

REMARKS 2

	TEST RESULTS (Max. of 15 Characters)	P/F
	xxxxxxxxxxxxxxxxxxx	xxxxx
PRODUCT NAME	CAPCON	xxxxx
TYPE OF MATERIAL	INGOT	xxxxx
MELTING TEMPERATURE, °F (ASTM C 617)	275	P
COMPRESSIVE STRENGTH AT 2 HRS., AVG. PSI (ASTM C 617)	6120	P

Compressive Load, lbs. (A)	24,640	24,080	24,710
Area, in.² (B)	4	4	4
Compressive Strength, psi (C) (A ÷ B = C)	6160	6020	6178

SPECIFIED WEIGHT PER CONTAINER, LBS.	50	P
ACTUAL WEIGHT PER CONTAINER, LBS.	52.4	P
PERCENT SULFUR (D), % = $\frac{E - F}{E} \times 100$ (DOTD TR 508)	60.0	P

Tare Wt. + Specimen Wt., g	34.1136
Tare Wt., g	25.0026
Specimen Wt., g (E)	9.1110
Tare Wt. + Ignited Specimen Wt., g	28.6471
Tare Wt., g	25.0026
Wt. of Residue After Ignition, g (F)	3.6444

Verification Equipment Used:

Dial Thermometer: _____ Date Calibrated: _____
Electric Melting Pot: _____ Next Calibration Date: _____
2" Cube Molds: _____
Compression Machine: _____

Tested by: AB Date: 8/9/94 Checked by: JC Date: 8/11/94

Approved by: _____ Date: _____

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Sulfur Mortar Capping Compound Worksheet

Figure 1