Method of Test for
FIBER GLASS ROVING
DOTD Designation: TR 509-93

Method A - Organic Content

I. Scope

This method determines the percent organic content.

II. Apparatus

A. **Muffle furnace** - capable of maintaining a temperature of $550 \pm 25\,°C$ ($1025 \pm 45\,°F$).
B. **Measuring device** - capable of measuring 9 m (30.0 ft).
C. **Desiccator.**
D. **Analytical balance** - 120 g capacity sensitive to 0.0001 g.
E. **Scissors.**
F. **Evaporating dish** - ceramic.
G. **Thermal gloves, apron, tools, eye protection** - for handling hot materials.
H. **Worksheet** - Fiber Glass Roving. (Figure 1)

III. Sample

The sample shall consist of approximately 24 m (75 ft) of fiber glass roving. The test specimen shall consist of approximately 9 m (30.0 ft) of fiber glass roving.

IV. Health Precautions

Proper equipment and precautions are to be used whenever hot materials or equipment must be handled. Use container holders or gloves while handling hot containers.

V. Procedure

A. Measure and cut a test specimen of fiber glass roving 9 m (30.0 ft) in length.
B. Roll the specimen into a small bundle.
C. Weigh rolled up specimen on the analytical balance and record weight to the nearest 0.0001 g.
D. Place specimen in evaporating dish and place into the muffle furnace set at $550 \pm 25\,°C$ ($1025 \pm 45\,°F$) for a minimum of 15 min.
E. Remove the dish with specimen from the muffle furnace and allow to cool.
F. Weigh the dish with specimen and record to the nearest 0.0001 g.

VI. Calculations

Calculate the % organic content (D) using the following formula:

$$D = \frac{A - B}{A} \times 100$$

where:

A = weight of fiber glass bundle before ashing, g
B = weight of fiber glass bundle after ashing, g
100 = constant

example:

A = 22.8291
B = 22.6031

$$D = \frac{22.8291 - 22.6031}{22.8291} \times 100$$

$$= 0.00990 \times 100$$

$$= 0.990$$

$$D = 1.0 \ \%$$

VII. Report

Report the percent organic content to the nearest 0.1 percent.

VIII. Normal Test Reporting Time

Normal test reporting time is 1 day.

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Method B - Strands per Rove

I. Scope

This method determines the number of strands per rove in fiber glass roving.

II. Apparatus

A. **Scissors.**
B. **Measuring device** - capable of measuring in cm or in.
C. **Worksheet** - Fiber Glass Roving. (Figure 1)

III. Sample

This sample shall consist of approximately 24 m (75 ft) of fiber glass roving. The test specimen shall consist of approximately 10 cm (4 in.) of fiber glass roving.

IV. Procedure

A. Measure and cut a test specimen of fiber glass roving approximately 10 cm (4 in.) in length.
B. Count the number of strands in the specimen.
C. Record this number on the worksheet.

V. Report

Report the number of strands per rove to the nearest whole number.

VI. Normal Test Reporting Time

Normal test reporting time is 1 day.

DOTD Designation: TR 509-93

Method C - Yards per Pound of Fiber Glass Roving

I.   Scope

This method of test determines the yards per pound of roving.

II.   Apparatus

A.   **Measuring device** - capable of measuring 9 m or 30.0 ft.
B.   **Analytical balance** - 120 g capacity sensitive to 0.0001 g.
C.   **Scissors.**
D.   **Worksheet** - Fiber Glass Roving. (Figure 1)

III.   Sample

The sample shall consist of approximately 24 m (75 ft) of fiber glass roving. The test specimen shall consist of approximately 9 m (30.0 ft) of fiber glass roving.

IV.   Procedure

A.   Measure and cut a test specimen of fiber glass roving 9 m (30.0 ft) in length.
B.   Roll the specimen into a small bundle.
C.   Weigh the rolled up specimen on the analytical balance and record weight to the nearest 0.0001 g.

V.   Calculations

Calculate the yards per pound of rove (B)

using the following formula.

$$B = \frac{4536}{A}$$

where:

A = weight of fiber glass bundle, g

4536 = conversion factor (constant)

example:

A = 22.8291 g

$$B = \frac{4536}{22.8291}$$

$$= 198.69$$

$$B = 199$$

VI.   Report

Report the yards per pound of roving to the nearest yard per pound.

VII.   Normal Test Reporting Time

Normal test reporting time is 1 day.

DOTD Designation: TR 509-93

Method D - Strand Thickness

I. **Scope**

This method determines the strand thickness of fiber glass roving.

II. **Apparatus**

A. **Scissors.**
B. **Micrometer** - accurate to 0.00001 in.
C. **Measuring device** - capable of measuring cm or in.
D. **Worksheet** - Fiber Glass Roving. (Figure 1)

III. **Sample**

The sample shall consist of approximately 24 m (75 ft) of fiber glass roving. The test specimen shall consist of approximately 10 cm (4 in.) of fiber glass roving.

IV. **Procedure**

A. Measure and cut a test specimen of fiber glass roving 10 cm (4 in.) in length.
B. Place one strand on the center of the micrometer measurement face.
C. Close the micrometer until the tension wheel clicks.
D. Read and record the micrometer reading to the nearest 0.00001 in.
E. Repeat Steps IV.B.- D. for two more strands.

V. **Report**

Report the average of the three readings to the nearest 0.00001 in.

VI. **Normal Test Reporting Time**

Normal test reporting time is 1 day.

5/92

Louisiana Department of Transportation and Development
Materials Section

Fiber Glass Roving
(TR 509)

REMARKS 2

	TEST RESULTS (Max. of 15 characters)	P/F
STRANDS PER ROVE	3 2	P
YDS./LB. OF ROVE, (4536 ÷ A)	1 9 9	P
Sample Wt. (A) 22.8291		
FIBER THICKNESS, IN.:	xxxxxxxxxxxxxxxxxxxxxx	xxxxx
TRADE DESIGNATION G (A+B+C) ÷ 3..................	0 . 0 0 0 3 7	P

Measurement A   0.00036
Measurement B   0.00037
Measurement C   0.00038

TRADE DESIGNATION K (A+B+C) ÷ 3................	0 .	

Measurement A   _____
Measurement B   _____
Measurement C   _____

ORGANIC CONTENT, % [(A-B) ÷ A] x 100	1 . 0	P

Sample Wt., g. (A)   22.8291
Sample Wt. After Ashing, g. (B)   22.6031
Wt. Loss, g. (A-B)   0.2260

Tested By: RA   Date: 1/8/93   Checked By: JDB   Date: 1/8/93

APPROVED BY: J. D. Byrd   Date: 1/8/93

09 / 4 3 4 - 0 5 - 0 0 8 7 / 128 / 2 2 - 5 7 7 1 1 3 /N

Figure 1 (Methods A - D)
Fiber Glass Roving Worksheet