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SURFACE VEHICLE RECOMMENDED PRACTICE

An American National Standard

SAE J380

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Superseding J380 FEB69

SPECIFIC GRAVITY OF BRAKE LINING

***Foreword*—**This Document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. ***Scope*—**Specific gravity is a nondestructive test used as a quality control check of the consistency of formulation and processing of brake lining. Specific gravity alone shows nothing about a lining's ability to develop friction or to resist fade when used as a friction element in brakes. Specific gravity varies with the formulation of the lining.

The specific gravity of sintered metal powder linings, particularly those which have steel backing members, is usually determined somewhat differently. Reference ASTM B 376. The specific gravity and the range of specific gravity are peculiar to each formulation and, therefore, the acceptable values or range must be established for each formulation by the manufacturer.

1.1 **Purpose—**To establish a uniform procedure for determining the specific gravity of brake lining.

2. ***References***

2.1 **Applicable Publication—**The following publication forms a part of this specification to the extent specified herein.

2.1.1 ASTM PUBLICATION—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 376—Density of Sintered Metal Friction Material (Latest Version)

3. ***Equipment*—**(See Figure 1.)

3.1 A scale or balance that will weigh to 0.1 g.

3.2 A support for the scale or balance.

3.3 A container of distilled water 21.1 to 29.4 °C (70 to 85 °F) large enough to hold a completely submerged brake lining without contacting the inside surfaces of the container.

3.4 A monofilament cord and tray fastened to the weighing mechanism from which a brake lining can be suspended and be completely immersed in the water.

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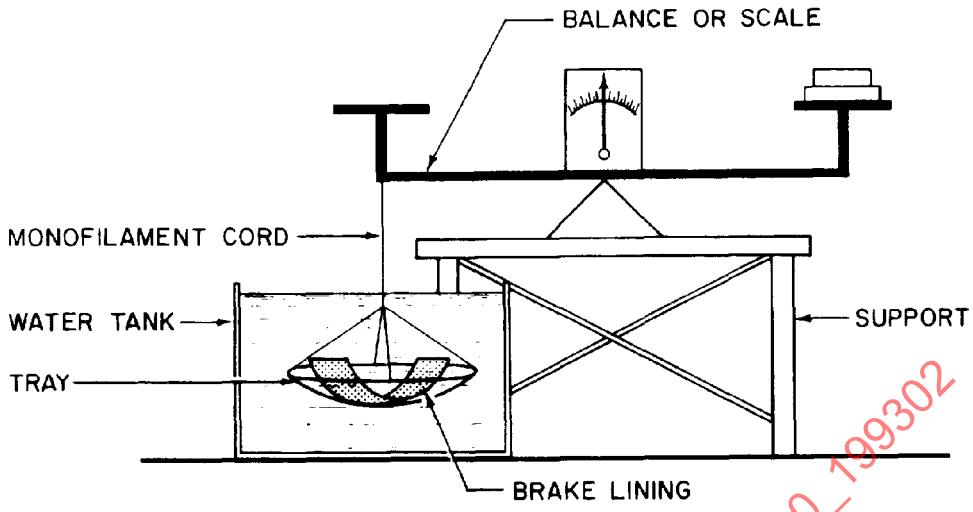

FIGURE 1—EQUIPMENT ARRANGEMENT

4. *Procedure*

a. Adjust the scale or balance to zero with the empty tray immersed in the water.
b. Place the lining on the scale or balance and determine the "weight in air." Record the weight in air to 0.1 g.
c. Place the lining on the tray and completely immerse the lining in the water. Record the "weight in water" of the brake lining to 0.1 g.
d. Subtract the "weight in water" from the "weight in air" and divide the "weight in air" by the difference.

The resultant figure, to the closest two decimal places, is the specific gravity of the brake lining.

EXAMPLE:

$$\text{Specific gravity} = \frac{A}{A - B} \qquad \text{(Eq. 1)}$$

where:

A = weight in air, g
B = weight in water, g

CAUTION—The weighing in water should be performed as rapidly as possible (within 15 s) to minimize the absorption of the liquid in the brake lining. Also, the addition of approximately 1 part of a wetting agent to 1000 parts of water will help to eliminate air bubbles from the specimen and will improve the accuracy of the test results.

It is recommended to test undrilled linings only, because there is a tendency for air bubbles to become trapped in the drilled holes.

PREPARED BY THE SAE BRAKE STANDARDS COMMITTEE 2—BRAKE LININGS