C-72-20

The Engineering Society For Advancing Mobility Land Sea Air and Space®

A Product of the Cooperative Engineering Program

SAE J80 JAN88

Automotive Rubber Mats

SAE Recommended Practice
Revised January 1988

Submitted for Recognition as an American National Standard

The Engineering Society For Advancing Mobility Land Sea Air and Space®
400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

Submitted for recognition as an American National Standard

MATERIALS PRACTICE

SAE J80

Issued May 1982
Revised Jan. 1988

Superseding J82 MAY82

AUTOMOTIVE RUBBER MATS

1. SCOPE:

This specification covers the requirements for rubber floor mats made from five types of rubber compounds as required by the physical property requirements of the application.

2. GENERAL REQUIREMENTS:

The following requirements are minimal product standards:

2.1 Sampling: A representative mat shall be selected from each lot to be tested.

2.2 Workmanship and Finish: The workmanship and finish shall be such as to provide a mat with a clean surface, clearly trimmed edges, holes free from slugs, and otherwise neat in appearance.

2.3 Color: The color shall be black unless otherwise specified by purchaser.

2.4 Packing, Marking and Shipping: Details regarding packing, marking, and shipping are subject to individual arrangements between purchaser and supplier.

2.5 Retests and Rejections: Any lot of mats which fails in one or more tests shall be resampled and retested for which purpose two additional mats shall be selected from the lot that failed to meet the requirements. Failure of either of the retested samples to meet any of the specification requirements shall be cause for final rejection.

3. PHYSICAL TEST REQUIREMENTS:

3.1 Preaging: Sections of automotive mats or mat samples which have been allowed Ø to rest at least 16 h after cure, are to be conditioned 6 h at 70°C in an air oven by suspending specimens vertically without touching each other or the sides of the aging chamber. Heated air shall be thoroughly circulated in the oven by means of mechanical agitation. (Conditioning test to be in accordance with Standard Test Method for Rubber Deterioration in an Air Oven, ASTM D 573). At the termination of the conditioning interval, the sections shall be removed from the oven, placed on a flat surface and allowed to rest 16 h minimum at room temperature before determining physical properties.

3.2 Durometer Hardness: Hardness is to be measured with an instrument according to Standard Test Method for Rubber Property - Durometer Hardness, ASTM D 2240.

3.3 Tensile Strength and Elongation: Tensile strength and elongation shall be determined in accordance with Standard Test Method for Rubber Properties in Tension, ASTM D 412, Die A, except that the average calculation shall be made on not less than three dumbell specimens with the grain and three across the grain, rather than the method specified in Section 7 of ASTM D 412.

3.4 Tear Resistance: Test shall be made in accordance with Standard Test Method for Rubber Property - Tear Resistance, ASTM D 624, Die C, except that the tear samples shall be based on the minimum thickness rather than the average of the section involved.

3.5 Bend Test: The bend test shall be performed on conditioned test specimens. The test specimen shall not crack when bent around a 1.60 mm (1/16 in) rod at 24 ± 3°C (70 ± 5°F).

3.6 Low Temperature Flexibility Test: A 25 x 300 mm sample strip cut from a mat shall be conditioned for 16 h in a cold box at -29°C. Immediately following the conditioning period, the sample shall be flexed, while still in the -29°C cold box, around a 125 mm diameter mandrel and shall not show any cracks or checks in the mat or coating material.

3.7 Tensile Set Test: The tensile set test shall be determined in accordance with ASTM D 412, paragraph 13.2. Elongate the test specimen 100%, hold under strain for 10 min, release quickly without snap back, and allow to rest for 10 minutes. At the end of the 10 min rest period, measure the length and calculate the percent permanent tensile set.

4. TEST REQUIREMENTS:

Test requirements are shown in Table 1.

TABLE 1 - TEST REQUIREMENTS

Type of Rubber	1	2	3	4	5
Properties After Preaging 6 h at 70°C and Resting 16 h min at 23°C					
Durometer	70 ± 5	70 ± 5	70 ± 5	70 ± 5	65 ± 5
Tensile strength, MPa, min	2.8	3.5	5.2	6.9	10.4
Elongation, %, min	150	150	150	200	250
Tear resistance, kN/m, min	13.1	14	21	26.3	52.5
Bend test	← No cracking →				
Low temperature flexibility test	← No cracking →				
Tensile set test, %, max	← 15 →				
Oven Aging 70 h at 70°C (After Preaging 6 h at 70°C) and Resting 16 h Min at 23°C					
Durometer, points increase, max	10	10	10	10	5
Tensile strength, mPa, min	2.1	2.6	4.2	5.6	8.3
Elongation, %, min	115	115	115	150	200
Tear resistance, % loss, max	25	25	25	25	25
Bend test	← No cracking →				

5. ADDITIONAL REQUIREMENTS AND RECOMMENDED PRACTICES:

5.1 Water Spotting: Apply five drops of distilled water to the mat surface and allow to stand at room temperature for 24 h before being examined. There shall be no effect on the surface of the mat.

5.2 Staining (ASTM D 1148): Samples shall not show objectionable staining or bleaching after 4 h exposure under S-1 or R-S sunlamp.

5.3 Cleanability: Mats must withstand cleaning with detergent and water without showing color transfer to the cloth. A 1% solution of detergent (Tide or equivalent) is used at room temperature with mild rubbing.

5.4 Odor: A mild, non-offensive odor is permitted.

5.5 Flammability (SAE J369): The material shall not burn or transmit a flame front across its surface at a rate of more than 101.6 mm (4 in) per min when tested in accordance with SAE J369.

5.6 Surface: The mat surface shall be clean and free of constituents which may cause slippery surfaces.

5.7 Coating Adhesion: Coatings, where required, must be 0.05 mm minimum thick, adherent and flexible. Flexing or twisting, either as received or after aging, must not cause any loss of adhesion or cracking of film.

5.8 Taber Wear Test: Under a 500 g load, solid color coated samples shall receive 200 cycles on the Taber Wear Tester using a CS17 abrasive wheel. There shall be no more than 20 points of failure within the Taber wear pattern. A failure is considered any point of distinct loss of top coat, clearly exposing the substrate material, having a diameter greater than 2 mm. These 20 points of failure can be individual points, each one being greater than 2 mm in diameter, or multiples of smaller points, each one being less than 2 mm in diameter. However, the total area of failure within any 6.4 mm square area shall not exceed 2 mm diameter or it is considered one point of failure.

5.9 Fadeometer Exposure: Mats or mat sections shall not show any loss of topcoat adhesion or noticeable color or gloss change after 60 h of exposure in a Type FDA-R Fadeometer exposed per American Association of Textile Chemist and Colorist (A.A.T.C.C.) Test Method 16A except the black panel temperature is to be 72 ± 2°C.

5.10 Identification: Mats must carry identification to indicate the manufacturer and date of manufacture.

The phi (Ø) symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.