



Designation: D 3490 – 80 (Reapproved 1990)

Standard Specification for Flexible Cellular Materials—Bonded Urethane Foam¹

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1. Scope

1.1 This specification covers the physical properties of bonded flexible urethane foam used for cushioning.

1.2 Bonded urethane foam is made by combining a urethane or other suitable binder to small pieces of urethane foam, molding, and curing into suitable shapes.

1.3 The values stated in SI units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standard:

D 3574 Methods of Testing Flexible Cellular Materials—Slab, Bonded, and Molded Urethane Foams²

2.2 Other Documents:

HUD/FHA Use of Materials Bulletin No. 47a, July 8, 1971³

Fed. Spec. L-C-001369 (GSA/FSS) Cushion, Carpet and Rug, Bonded Urethane⁴

3. Classification

3.1 This specification places primary emphasis on the physical properties of bonded-flexible urethane foam (Table 1).

3.2 *Grades*—Table 1 provides for five uncured bonded urethane (UBU) grades based on indentation load deflection hardness.

3.3 *Additional Requirement*—All products sold under the provisions of this specification must comply with the requirements for extractable color, odor, and cleanliness.

4. Basis of Purchase

4.1 Purchase orders for, or inquires about, materials described by this specification shall identify:

4.1.1 ASTM designation D 3490,

4.1.2 Required grade,

4.1.3 Particle size and shape, if choice is available (6.2), and

4.1.4 If necessary, such other requirements as may be agreed upon between the purchaser and the seller.

5. Materials and Manufacture

5.1 Materials supplied under this specification shall be

bonded flexible urethane foam.

5.2 Materials shall be of uniform composition and free of hard spots and obvious visible defects.

5.3 The binder used shall be a urethane-type, or other suitable type, with sufficient solid content to allow the finished product to meet physical requirements of this specification. Materials may be added that will reduce the viscosity and improve the wetting characteristics of the urethane polymer. Bonded-flexible urethane foam of good commercial quality usually has a minimum of 8 % urethane binder.

5.4 These materials may contain colorants, but such additives shall not bleed or alter the ability of the materials to meet the requirements of this specification. Such bleeding shall be determined by the method described in 7.1.2. No more than a trace of color in one or more reagents shall be allowed.

5.5 *Cleanliness*—Adulterants such as dirt, tramp metal, wood chips, paper, fabric, etc. shall not be allowed. In the event of dispute, bonded foam shall be tested as described in 7.1.3, and the debris calculated as a weight percent. A maximum of 1 % debris is permitted.

6. Physical Requirements

6.1 Material requirements are prescribed in Table 1.

6.2 When used as carpet cushion in the construction or furnishing of properties eligible for HUD/FHA Mortgage Insurance or Low Rent Public Housing Programs, the material described in this specification shall meet the requirements of HUD/FHA Use of Materials Bulletin No. 47a, dated July 8, 1971. In the event of requirements that conflict with this specification, UM 47a shall then govern. When used as carpet and rug cushion for such other federal government jurisdictions as may apply, bonded-flexible urethane foam shall be acceptable if it complies with Federal Specification L-C-001369 (GSA/FSS). In the event of requirements which conflict with this specification, L-C-001369 shall be the criteria of acceptance.

6.3 *Combustibility*—Bonded-urethane foam must meet any applicable federal, state, and local regulations for the end use being considered.

6.4 The bonded foam must be free of objectionable odor both when dry and wet, and shall exhibit no tackiness when in contact with solid surfaces.

7. Test Methods

7.1 Physical Requirements:

7.1.1 Determine the density and the physical requirements listed in Table 1 in accordance with Method D 3574.

7.1.2 *Extractable Color*—Immerse three samples of approximately 5 g each for 1 h at room temperature in

¹ This specification is under the jurisdiction of ASTM Committee D-11 on Rubber and is the direct responsibility of Subcommittee D11.33 on Flexible Cellular Materials.

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² *Annual Book of ASTM Standards*, Vol 09.02.

³ Available from the Department of Housing and Urban Development, 451 7th St., S.W., Washington, DC 20410.

⁴ Available from the Superintendent of Documents U. S. Government Printing Office, Washington, DC 20402.