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Polyurethane

Australian Standard 2281-1979

FLEXIBLE CELLULAR POLYURETHANE FOR SEAT CUSHIONING AND BEDDING

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Seat Cushioning and Bedding)]



STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Experimental Building Station
Commonwealth Scientific and Industrial Research Organization
Board of Fire Commissioners, New South Wales
Metropolitan Fire Brigade Board, Melbourne
Plastics Institute of Australia Incorporated
Federated Furnishing Trade Society of Australasia
Australian Consumers Association

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AUSTRALIAN STANDARD

**FLEXIBLE CELLULAR
POLYURETHANE FOR SEAT
CUSHIONING AND BEDDING**

AS 2281—1979

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PREFACE

This standard was prepared by the Association's Committee on Flexible Polyurethane, under the direction of the Plastics Standards Board, as the revision and metrication of AS K 165—1967, which it accordingly supersedes. It sets out specifications for the physical properties and dimensions of flexible, load-bearing, cellular polyurethane. In this revision, the scope has been expanded to include high-resilience and reconstituted cellular polyurethane. In addition, the cellular polyurethane is classified into thirteen grades according to the 40 percent indentation force value.

In the preparation of this standard, consideration was given to ISO/TC 45 document N 3295, Draft Proposal for Flexible Urethane Foam for Load Bearing Applications Excluding Carpet Backing and Underlay, and to BS 3379, Flexible Urethane for Load Bearing Applications.

There is increasing awareness throughout the world of the fire hazard which often occurs when new or different types of materials are installed as replacements for traditional materials. The hazard largely results from insufficient knowledge and experience, and this standard therefore includes in an appendix information relating to the burning properties of flexible cellular polyurethane.

Recommendations on the grade and thickness of cellular polyurethane for various applications are also given in an appendix. This appendix is intended to serve as a guideline only and not in any way to limit the possible combinations of different grades that are available.

This standard requires reference to the following Australian standards:

- AS 2122 Methods of Test for Combustion Propagation Characteristics of Plastics
Part 1—Determination of Flame Propagation following Surface Ignition of Vertically Oriented Specimens of Cellular Plastics
- AS 2282 Methods for Testing Flexible Cellular Polyurethane

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

FLEXIBLE CELLULAR POLYURETHANE FOR SEAT CUSHIONING AND BEDDING

1 SCOPE. This standard sets out requirements for flexible load-bearing cellular polyurethane, manufactured in block, flat or profiled sheet and strip form, in moulded and fabricated shapes, and as reconstituted material, for use in seat cushioning, bedding and similar applications.

It does not apply to cellular polyurethane foamed in place or cellular polyurethane for use in heat-welded systems unless for load-bearing purposes, nor does it apply to cellular polyurethane with an ash content exceeding 2 percent.

2 DEFINITIONS. For the purpose of this standard, the following definitions apply:

Flexible cellular polyurethane—flexible, expanded, slab plastics material of predominantly open cell structure, manufactured essentially from polyhydroxy compounds and polyisocyanates.

Reconstituted cellular polyurethane—small pieces of flexible, cellular polyurethane bonded together by means of a urethane or other suitable binder, moulded and cured into suitable shapes.

3 CLASSIFICATION.

3.1 Types. Flexible cellular polyurethanes shall be classified into types on the basis of physical properties and constitution as follows:

Type A—Flexible cellular polyurethane of conventional resilience.

Type B—Flexible cellular polyurethane of high resilience.

Type C—Reconstituted cellular polyurethane.

3.2 Classes. Flexible cellular polyurethane of conventional resilience (Type A) shall be subclassified as Normal (N) or Heavy (H) duty on the basis of density. Types B and C shall be classified as Class H.

When determined in accordance with AS 2282.3, the minimum density of the flexible cellular polyurethane shall conform to the requirements of Table 1.

3.3 Grades. Flexible cellular polyurethanes shall be graded according to the values of the 40 percent indentation force (IF_{40}) as given in Table 1.

NOTE: The IF_{40} value is the force in newtons required to indent by 40 percent a sample of cellular polyurethane 380 mm × 380 mm × 50 mm in size, using the procedure described in Method 7A of AS 2282.

4 MATERIAL. Flexible cellular polyurethanes shall consist of a network of cells which are essentially open and interconnecting. The cellular polyurethane shall be free from abnormalities which are likely to detract from its performance.

5 CONSTRUCTION. Because of manufacturing conditions, material may have to be corrected or repaired. Corrected or repaired material shall be deemed to comply with this standard if the cellular polyurethane used in such corrections or repairs is of the same composition and quality as the original product and provided that such corrections or repairs do not affect the performance, or alter size and shape beyond the permissible tolerances.

Where components are corrected, repaired, or fabricated, any adhesives used shall be non-injurious to the cellular polyurethane or to textile covering materials, and the resulting bonds shall be at least as strong and durable as the cellular polyurethane itself.

TABLE 1
GRADES AND DENSITIES OF FLEXIBLE CELLULAR POLYURETHANE

Grade	40% indentation force on deflection, N	Minimum density, kg/m ³			
		Type A		Type B Class H	Type C Class H
		Class N	Class H		
00	25—45	15	22	22	40
0	40—65	15	25	25	40
1	60—90	17	28	28	45
2	85—115	20	30	30	45
3	105—145	23	35	35	50
4	140—180	27	35	35	50
5	170—220	31	35	35	55
6	210—270	31	35	35	55
7	260—330	31	35	35	60
8	320—400	31	35	35	65
9	380—480	31	35	35	70
10	460—580	31	35	35	75
11	560—720	31	35	35	80

NOTE: In accordance with Clause 3, flexible cellular polyurethane can be designated on the basis of Type, Class and Grade. For example, AN3 means a material of conventional resilience, a minimum density of 23 kg/m³, and a 40 percent indentation force of 105 N to 145 N.