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**RIGID CELLULAR PLASTICS SHEETS
FOR THERMAL INSULATION**

**Part 3—RIGID CELLULAR
POLYSTYRENE**

[Title allocated by Defence Cataloguing Authority:
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STANDARDS ASSOCIATION OF AUSTRALIA

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The following interests were represented on the committee responsible for the preparation of this standard:

Board of Fire Commissioners of New South Wales
Commercial Refrigeration Manufacturers Association of Australia
CSIRO, Division of Building Research
Department of Housing and Construction
Experimental Building Station
Metropolitan Fire Brigades Board, Melbourne
Plastics Institute of Australia Incorporated
Railways of Australia Committee

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AUSTRALIAN STANDARD

**RIGID CELLULAR PLASTICS SHEETS
FOR THERMAL INSULATION**

**Part 3
RIGID CELLULAR
POLYSTYRENE**

AS 1366, Part 3—1982

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PREFACE

This edition of this standard was prepared by the Association's Committee on Rigid Cellular Plastics for Thermal Insulation, under the direction of the Plastics Standards Board, to supersede AS K156—1965. It is one of three parts, the other parts being Part 1—Rigid Cellular Polyurethane, and Part 2—Rigid Cellular Polyisocyanurate.

The products dealt with by this standard are mainly intermediate products used as insulants, either by their manufacturer or by another manufacturer, in the production of thermal insulation products, e.g. building panels, cool store panels, insulation for bulk containers.

Density has been used over a number of years as a means of classifying cellular plastics and was the basis of the classification in AS K156. Because of advances in technology, similar physical characteristics may be achieved by materials of different density; for this reason the density of the material is not included in the list of specified physical properties. Nominal densities of rigid cellular polystyrene are included in Appendix B for guidance purposes only.

International (ISO) test methods have been adopted instead of the more conventionally used ASTM methods.

The subsequent processing referred to above is the determining factor in the fire hazard associated with the use of these materials, i.e. the potential for harm to life or property resulting from the occurrence of a fire. For example, when used in buildings the cellular plastics may need to be faced with lining materials in order to achieve adequate fire performance. Thus it is not relevant to include a fire performance test for the materials specified in this standard. The users of these materials should apply suitable fire performance tests to these products in their finished form. Purchasers of products fabricated from these materials should specify such tests in their purchasing agreements. For building structures and components, suitable tests are described in AS 1530, Parts 3 and 4.

A combustion characteristics test has been included as a quality control test of the sheet. However, it must be emphasized that a combustion characteristics test gives no indication of the fire hazard associated with the use of the sheet, but is used to compare relative combustion properties of the material. The test has been included to ensure a specified minimum level of fire retardancy in the sheet.

Reference should be made to AS, The Installation of Above Ceiling Insulation Material*, for installation of thermal insulation in domestic dwellings and for guidance on correct placing of vapour barriers for protection in situations where temperature differentials may occur. For industrial and commercial applications, expert advice should be sought.

*In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
RIGID CELLULAR PLASTICS FOR THERMAL INSULATION
PART 3—RIGID CELLULAR POLYSTYRENE

1 SCOPE. This standard specifies requirements for rigid cellular polystyrene in the form of sheets, board, blocks and cut shapes for thermal insulation purposes.

NOTE: Advisory information on the determination of compliance of a 'lot' with this standard is given in Appendix A. Guidance to purchasers on recommended applications and nominal densities for each class of rigid cellular polystyrene is given in Appendix B.

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

- | | |
|-----------------|--|
| AS 1199 | Sampling Procedures and Tables for Inspection by Attributes |
| AS 1327 | Standard Environments for Conditioning and Testing Plastics Materials |
| AS 1399 | Guide to AS 1199, Sampling Procedures and Tables for Inspection by Attributes |
| AS 1530 | Methods for Fire Tests on Building Materials and Structures
Part 3—Tests for Early Fire Hazard Properties of Materials
Part 4—Fire-resistance Test of Structures |
| AS 1821 to 1823 | Suppliers Quality Control Systems—Levels 1, 2 and 3 |
| AS 2000 | Guide to AS 1821-1823, Suppliers Quality Control Systems |
| AS 2122.1 | Combustion Propagation Characteristics of Plastics
Part 1—Determination of Flame Propagation Following Surface Ignition of Vertically Oriented Specimens of Cellular Plastics |
| AS 2464.6 | Methods for Testing Thermal Insulation
Part 6—Steady-state Thermal Transmission Properties of Thermal Insulation Materials by Means of the Guarded Hotplate* |
| AS 2498 | Methods of Testing Rigid Cellular Plastics
Part 1—Sampling and Conditioning
Part 3—Determination of Compressive Stress
Part 4—Determination of Cross-breaking Strength
Part 5—Determination of Water Vapour Transmission Rate
Part 6—Determination of Dimensional Stability |

3 DEFINITIONS. For the purposes of this standard, the following definitions apply:

3.1 Rigid cellular plastics sheet—a rectangular flat slab of cellular plastics material of definite uniform thickness.

3.2 Rigid cellular polystyrene (RC/PS)—a cellular material produced by the expansion of a styrene based polymer with a blowing agent.

4 CLASSIFICATION. Rigid cellular polystyrene (RC/PS) shall be classified on the basis of its performance in relation to the physical characteristics as given in Table 2.

5 COLOUR STRIPE. Rigid cellular polystyrene (RC/PS) shall be marked with a colour stripe to designate each class as follows:

- Class L - Blue
- Class SL - Yellow
- Class S - Brown
- Class M - Black
- Class H - Green
- Class VH - Red

The colour stripe shall not be less than 10 mm in width and shall be applied at the edge of the sheet across the full thickness.

NOTE: The presence of the colour stripe on the rigid cellular polystyrene sheet to denote its classification may be deemed to be a claim that the material complies with the requirements of this standard in all respects, in particular those for flame propagation.

6 APPEARANCE. There are a number of properties such as uniformity of cell structure and voids which cannot be sensibly quantified.

NOTE: Where any of these are considered to be important, arrangements should be made between the purchaser and the supplier.

7 DIMENSIONS AND FINISH.

7.1 Rough Shapes. Rough shapes shall be finished to specified dimensions.

NOTE: Dimensions are a matter for agreement between the purchaser and the supplier.

7.2 Cut Shapes. Cut shapes shall be finished to the specified size and in accordance with the particular application.

NOTE: Size is a matter for agreement between the purchaser and the supplier.

7.3 Rectangular Shapes. Rectangular shapes shall be cut straight and square to conform to the requirements of Table 1.

NOTE: In applications where flatness or special tolerances are considered to be important, arrangements should be made between the purchaser and the supplier.

*In course of preparation.