

BRITISH STANDARD

Rigid polyisocyanurate (PIR) and polyurethane (PUR) products for building end-use applications –

**Part 4: Specification for laminated
boards (roofboards) with auto-
adhesively or separately bonded
facings for use as roofboard thermal
insulation under non-bituminous
single-ply roofing membranes**

ICS 91.100.60



NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© BSI 2006

ISBN 0 580 48192 1

The following BSI references relate to the work on this standard:

Committee reference PRI/72/4

Draft for comment 05/30124175 DC

Publication history

First published, July 2006

Amendments issued since publication

Amd. no.	Date	Text affected
-----------------	-------------	----------------------

Contents

Foreword *ii*

1	Scope	<i>1</i>
2	Normative references	<i>1</i>
3	Terms, symbols and definitions	<i>2</i>
4	Construction and composition	<i>2</i>
5	Requirements	<i>3</i>
6	Designation	<i>6</i>
7	Marking	<i>7</i>

Annexes

Annex A (informative)	Method for the determination of areas of unbonded facings	<i>8</i>
Annex B (informative)	Information for users and designers	<i>10</i>
Annex C (informative)	Reaction to fire performance of PIR and PUR products and recommendations regarding their use	<i>11</i>
Annex D (informative)	Information on the installation of roofboards into single-ply roofs	<i>12</i>
Bibliography		<i>13</i>

List of figures

Figure 1	Diagram to explain orientations for compressive strength measurements	<i>5</i>
Figure A.1	Determination of area(s) of unbonded facings: cutting and marking of the test specimen	<i>9</i>

List of tables

Table 1	Tolerances for lengths and widths	<i>4</i>
Table 2	Classes for thickness tolerances	<i>4</i>
Table 3	Thickness tolerances	<i>4</i>
Table 4	Deviation from flatness	<i>5</i>
Table B.1	Relationships between roofboard thickness and metal deck trough openings	<i>11</i>

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 13, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard was published by BSI and came into effect on 20 July 2006. It was prepared by Subcommittee PRI/72/4, *Polyurethane*, under the authority of Technical Committee PRI/72, *Rigid cellular materials*.

Information about this document

This British Standard has been introduced to specify the requirements needed to ensure fitness for purpose of those polyurethane and polyisocyanurate cored laminated insulation boards (roofboards) with auto-adhesively or separately bonded flexible and/or rigid facings used in the single-ply roofing application in the United Kingdom. The requirements have been written so that products conforming to BS 4841-4 also conform to BS EN 13165:2001 (including amendments 1 and 2) whilst satisfying the specified minimum performance levels of the properties included in the current standard.

Attention is drawn to BS 8217:2005 which describes the recommended practice for laying the roofboards conforming to this standard into roof structures, and their weatherproofing to maximise their service performance after installation.

Additional information for the guidance of users, installers and designers is given in informative Annexes A, B, C and D to this standard.

The other parts of BS 4841 have been revised to reflect recent technical advances and to take into account the European Standard BS EN 13165:2001 (including amendments 1 and 2).

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal obligations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard specifies requirements for polyisocyanurate (PIR) and polyurethane (PUR) cored thermally insulated laminated boards (roofboards) with auto-adhesively or separately bonded flexible and/or rigid facings, for use in roofs under non-bituminous single-ply roofing membranes. This specification is also applicable to roofboards with OSB or plywood facings bonded in place after the initial product has been created (see Clause 4).

NOTE 1 Additional information for the guidance of users, installers and designers is given in informative Annexes A, B, C, and D to this standard.

NOTE 2 Because of the changes introduced into this standard, products conforming to this standard will also conform to BS EN 13165:2001 (including amendments 1 and 2).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 300:1997, *Oriented strand boards (OSB) – Definitions, classification and specifications*

BS EN 636: 2003, *Plywood – Specifications*

BS EN 822:1995, *Thermal insulating products for building applications – Determination of length and width*

BS EN 823, *Thermal insulating products for building applications – Determination of thickness*

BS EN 825:1995, *Thermal insulating products for building applications – Determination of flatness*

BS EN 826:1996, *Thermal insulating products for building applications – Determination of compression behaviour*

BS EN 1426, *Methods of test for petroleum and its products – Bitumen and bituminous binders – Determination of needle penetration*

BS EN 1427, *Methods of test for petroleum and its products – Bitumen and bituminous binders – Determination of softening point – Ring and ball method*

BS EN 1607:1997, *Thermal insulating products for building applications – Determination of tensile strength perpendicular to faces*

BS EN 13165:2001, *Thermal insulation products for buildings – Factory made rigid polyurethane foam (PUR) products – Specification*

BS EN 13170:2001, *Thermal insulation products for buildings – Factory made products of expanded cork (ICB) – Specification*

BS EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests*

3 Terms, symbols and definitions

3.1 Terms and definitions

For the purposes of this part of BS 4841 the following terms and definitions apply.

3.1.1 auto-adhesively bonded facing

NOTE These facings can be flexible or rigid.

facing that becomes bonded onto the PIR or PUR core during the process of creating it

3.1.2 separately bonded facing

NOTE These facings can be flexible or rigid.

facing that is bonded onto the PIR or PUR core in a separate manufacturing process

3.1.3 polyisocyanurate product

rigid cellular plastics insulation material or product with a substantially closed cell structure mainly based on polymers of the isocyanurate type

3.1.4 polyurethane product

rigid cellular plastics insulation material or product with a substantially closed cell structure mainly based on polymers of the polyurethane type

3.2 Symbols

d_N	nominal thickness of the product in mm
λ_D	declared thermal conductivity in mW/(m·K)
S_b	deviation from squareness in mm/m
S_{max}	maximum deviation from flatness in mm/m

4 Construction and composition

4.1 General

The insulation boards shall consist of an insulating core (4.2) with either two bonded flexible facings (4.3), or two rigid facings (4.4), or one flexible facing (4.3) and one rigid facing (4.4).

4.2 Core product type

The cores of the product type shall be of rigid polyisocyanurate (PIR) or polyurethane (PUR).

4.3 Flexible facings

4.3.1 General

Both flexible facings of the roofboards shall be either functional or decorative, e.g. paper, metal foil, bitumen coated glass flexible facing