

Corrugated plastics translucent sheets made from thermo-setting polyester resin (glass fibre reinforced) —

Part 1: Specification for material and performance requirements

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- British Plastics Federation
- Department of the Enviroment (Property Services Agency)
- Electricity Supply Industry in England and Wales
- Fibre Cement Manufacturers' Association Limited
- Greater London Council
- Institution of Civil Engineers
- National Federation of Roofing Contractors
- Plastics and Rubber Institute

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Foreword

This British Standard, which was first published in 1967, has now been revised into two Parts, prepared under the direction of the Elements and Components (of diverse materials) for Buildings Standards Committee. It specifies requirements for glass fibre reinforced corrugated plastics sheeting for building purposes, as follows.

- *Part 1: Specification for material and performance requirements;*
- *Part 2: Specification for profiles and dimensions.*

In this revision the minimum bolt shearing test loads have been increased to ensure that the sheet quality is maintained at a high level.

The appendix giving recommendations for fixing is no longer included and reference should be made to BS 5427. Reference should also be made to BS 5427 for information on prevention of pull through of fasteners and compatibility with sealants.

This Part of BS 4154 specifies material and performance requirements. Since it was not possible to include all of the many profiles manufactured in GRP, eight of the more commonly used profiles have been specified in Part 2.

Care should be taken to ensure that sheeting for buildings complies with the fire performance requirements set out in the relevant regulations. Information on the fire performance of profiled sheeting may be obtained from BS 5427. Sheets may need to be tested in accordance with the methods given in the relevant Parts of BS 476 and marked to show their gradings in accordance with that standard.

A range of colours for external cladding materials including plastics sheeting is given in BS 4904. It is recommended that the colour be agreed between the purchaser and the supplier and a sample of the agreed colour be retained for reference.

Certification. Attention is drawn to the certification facilities described on the inside back cover of this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 4154 specifies requirements for material and performance of glass fibre reinforced translucent corrugated plastics sheeting made from thermo-setting polyester resin.

NOTE The titles of the publications referred to in this standard are listed on page 12.

2 Materials

The sheet shall be composed of a thermo-setting polyester resin system reinforced with glass fibre.

NOTE 1 This system may include curing agents, catalysts, light stabilizers, flame retardants, fillers and colouring matter.

NOTE 2 Surface films and gel coats to improve weathering properties may also be included.

3 Freedom from defects

The sheet shall be free from visible defects such as foreign inclusions, cracks and pinholes and from bubbles of over 1 mm in diameter.

4 Tolerance on length, width and squareness

The length and width of the sheet shall be within the following tolerances on the nominal dimensions as declared by the manufacturer.

Length: Sheets up to 5 m long, – 0, + 10 mm.

Sheets over 5 m long, – 0, + 15 mm.

Width: ± 5 mm.

Squareness: The deviation shall be not more than 0.5 mm in every 100 mm of width within the sheet tolerance.

5 Thickness variation

When the thickness of a sample covering the full width of the sheet is measured by means of a micrometer at five points equally spaced across the width of the sheet and not less than 25 mm from an edge, the thickness at any point shall be within 15 % of the mean value.

6 Tolerance on mass per unit superficial area

When the mass per unit superficial area of a panel covering the full width of the sheet and at least 150 mm in length is determined, it shall be within 10 % of the nominal value as declared by the manufacturer.

7 Bolt shear test

When the sheet is tested in accordance with the method given in Appendix A, the mean tearing load for the six test specimens shall be not less than 375 N. No test specimen shall have a tearing load of less than 250 N.

8 Load deflection

The requirements specified in this clause are applicable only to corrugated sheets of profiles 1 to 8 as specified in BS 4154-2 and not to flat, curved or cranked sheets.

When the sheet is tested in accordance with the method given in Appendix B, none of the sheets shall rupture, although minor crazing round the areas of support or loading shall be permitted. The total load as shown in Table 1 shall produce a deflection of not more than 15 mm (i.e. span/70) on any of the sheets.

Table 1 — Deflection under test load

Profile (see BS 4154-2)	Full width of sheet (nominal)	Total load
	mm	N
Profile 1	762	190
Profile 2	1 087	1 100
Profile 3	1 043	950
Profile 4	1 092	850
Profile 5	1 145	1 100
Profile 6	813	190
Profile 7	932	850
Profile 8	959	750

NOTE This test is only indicative of the rigidity of an unfixed sheet. The specified test requirements should not be used as a basis of structural calculation.

9 Barcol hardness

When the sheet is tested in accordance with the method given in Appendix C, the Barcol hardness shall not increase by more than 30 % of its initial value.

10 Light diffusion

When the sheet is tested in accordance with the method given in Appendix D, the gradient constant G , shall be within the limits set out in Table 2 for the appropriate diffusion classification.

Table 2 — Light diffusion gradient constant

Diffusion classification	Description	Gradient constant <i>G</i>
I	Clear	Above 0.80
II	Moderately diffusing	Above 0.32 to 0.80
III	Heavily diffusing	0.10 to 0.32
IV	Very heavily diffusing	Below 0.10

11 Light transmission

The requirements specified in this clause are applicable only to untinted sheet.

The total light transmission determined in accordance with the method given in Appendix E shall be not less than the value given in Table 3 for the appropriate diffusion classification.

Table 3 — Minimum total light transmission

Diffusion classification	Minimum total light transmission
I	80
II	75
III	70
IV	60

12 Marking

Each sheet shall be marked with the following particulars.

- The name, trade mark or other means of identification of the manufacturer.
- The number of this British Standard, i.e. BS 4154-1:1985¹⁾, and the diffusion classification.

In addition the following information shall be given in a certificate or delivery note accompanying each consignment.

- The nominal length and width.
- The nominal mass per unit superficial area.

¹⁾ Marking BS 4154-1:1985 on or in relation to a product is a claim by the manufacturer that the product has been manufactured to the requirements of the standard. The accuracy of such a claim is therefore solely the manufacturer's responsibility. Enquiries as to the availability of third party certification to support such claims should be addressed to the Director, Quality Assurance Division, BSI, Maylands Avenue, Hemel Hempstead, Herts HP2 4SQ for certification marks administered by BSI or to the appropriate authority for other certification marks.