

Specification for

Type MR phenolic and aminoplastic synthetic resin adhesives for wood

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Adhesives Standards Policy Committee (ADC/-) to Technical Committee ADC/6, upon which the following bodies were represented:

- British Adhesives and Sealants Association
- British Chemical Distributors and Traders Association Limited
- British Plastics Federation
- British Railways Board
- Department of the Environment (Building Research Establishment)
- Furniture Industry Research Association
- Ministry of Defence
- Timber Research and Development Association

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Foreword

This British Standard has been prepared under the direction of the Adhesives Standards Policy Committee. This edition introduces technical changes but it does not reflect a full review or revision of the standard which will be undertaken in due course.

Specifications and methods of test for type WBP and BR adhesives, formerly included in BS 1204-1:1979 and BS 1204-2:1979, have been superseded by BS EN 301 and BS EN 302-1 to BS EN 302-4.

This edition combines the previous Parts 1 and 2 which are withdrawn but covers only type MR phenolic and aminoplastic adhesive, which is not covered in BS EN 301.

It is envisaged that revisions of BS EN 204 and BS EN 205, at present in preparation, will supersede this edition.

It is current practice, in British Standard specifications concerned with wood products bonded with synthetic resin adhesives, to classify the durability of the joint in terms of its resistance to breakdown under various natural conditions of exposure; data on these have been obtained over a number of years. The results of these long-term trials have been linked with the behaviour of standard test pieces when these are immersed in cold or hot water, and such tests are the distinguishing requirements of these specifications.

The various wet tests have been devised solely to differentiate between the types and have proved adequate for this purpose for the phenolic and aminoplastic resins with which this British Standard is concerned. With other resins or other chemical formulations, compliance with the test requirements would not necessarily indicate equal durability, and confirmation of type grouping by actual service trials would be required.

Adhesives covered by BS 1204 are intended for the manufacture of wooden assemblies which are of many forms and sizes and employ a wide range of timbers. It would be advantageous to prescribe testing methods that would predict the bond quality of the joints actually used, but this is not possible within the compass of the present standard.

The purpose of BS 1204 is to provide a standard against which adhesives of a given type can be tested and which can be used to check the quality of the adhesive. The standard timber, European beech *Fagus sylvatica*¹⁾, is eminently suitable for discriminatory testing work. Compliance of an adhesive with the requirements of BS 1204 should not, however, be taken as a guarantee that it will be equally satisfactory for use in all types of joints or with all species of timber.

BS 1204 applies equally to cold-setting, warm-setting and hot-setting adhesives and the type to be supplied is a matter for agreement between the purchaser and the vendor.

IMPORTANT NOTE A manufacturer may authorize the use of extenders with the adhesive, and such an addition may be found, on retesting the mix, to change the characteristics or type (see clause 4) from that of the resin/hardener mix as supplied. Manufacturers should give guidance on this matter and users should not increase the amount of extender beyond that recommended.

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 10, 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⁾ See BS 7359 for nomenclature and sources of supply.

1 Scope

This British Standard specifies the technical requirements and methods of test for type MR gap-filling and close-contact adhesives based on synthetic resins of the phenolic and aminoplastic types, with or without additional hardeners, for use in the manufacture of wooden assemblies. Cold-setting, warm-setting and hot-setting adhesives are covered.

This standard also covers the combination of resin and hardener when the user is required to add hardener; if the resin and hardener are sold separately, neither by itself can be said to comply with this standard.

NOTE The synthetic resin adhesives covered by this specification are commonly manufactured in two forms:

- a) liquid which may or may not require the addition, before use, of hardener in liquid or powder form, or may be used with a hardener separately applied;
- b) powder which requires the addition, before use, of water or other liquid, with or without the addition of a separate hardener.

The properties of the adhesives to which this standard applies are determined by tests made on beechwood joints. The failing forces obtained on the test pieces prescribed cannot be converted into terms of stress values measured, for example, in pascals.

The standard is not applicable to adhesives based on resins of types other than phenolic or aminoplastic and should not be quoted for these other materials.

The standard is also not applicable to structural adhesives of the phenolic and aminoplastic types covered in BS EN 301.

2 References

The titles of the standards publications referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this British Standard the following definitions apply.

3.1

synthetic resin adhesive

a composition, based on a synthetic resin of either the phenolic or aminoplastic type or mixtures of these two types, prepared for use in accordance with the manufacturer's instructions

3.2

phenolic resin

a synthetic resin derived from a condensation reaction between a phenolic compound, e.g. phenol, cresol, xylenol, resorcinol, or a mixture of phenolic compounds, with an aldehyde, e.g. formaldehyde, furfuraldehyde, or a mixture of aldehydes

3.3

aminoplastic resin

a synthetic resin derived from a condensation reaction between a synthetic compound containing amino groups, e.g. urea, thiourea, melamine, or allied compounds alone or in combination, with formaldehyde

3.4

hardener

a substance that causes or regulates the curing reaction of resins that yield rigid (hard) products. It may be supplied separately, either in liquid or in powder form, or may have been incorporated with the resin by the manufacturer

3.5

extender

a substance, sometimes having some adhesive action, added to an adhesive to reduce cost

3.6

cold-setting adhesive

an adhesive which sets and hardens satisfactorily at temperatures of 23 °C or below under the specified conditions of use

NOTE A cold-setting adhesive may be heated to accelerate setting if required.

3.7

warm-setting adhesive

an adhesive which sets and hardens satisfactorily at temperatures between 25 °C and 50 °C

NOTE Some warm-setting adhesives may require a minimum temperature above 23 °C.

3.8

hot-setting adhesive

an adhesive which cures at a temperature of 50 °C or above

NOTE If temperatures above 90° are to be employed, it is essential that the suitability of the adhesive for heating to such temperatures, and the method of heating to be employed, are confirmed by the manufacturer.

3.9

gap-filling adhesive

an adhesive used for load bearing purposes which will provide satisfactory bond strength in bond-lines up to 1.3 mm in thickness

3.10

spread of adhesive

the quantity of adhesive per unit bond area applied to an adherend. In single spreading this quantity of adhesive is applied to one surface; in double spreading it is divided between the two surfaces to be joined