

Methods of test for

Water vapour transmission resistance of board materials used in buildings

Committees responsible for this British Standard

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- American Plywood Association
- Association of British Plywood and Veneer Manufacturers
- British Woodworking Federation
- Council of the Forest Industries of British Columbia
- Department of the Environment (Building Research Establishment)
- Fibre Building Board Organization (FIDOR)
- Finnish Plywood International
- Furniture Industry Research Association
- Institution of Structural Engineers
- National House-building Council
- National Panel Products Association
- Timber Research and Development Association
- Timber Trade Federation
- United Kingdom and Ireland Particleboard Association

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Foreword

This British Standard has been prepared under the direction of the Timber Standards Policy Committee. It supersedes DD 146, which is withdrawn.

Two methods of determining the water vapour transmission resistance of board or sheet materials used in buildings are given. The first, referred to as the wet cup method, is based on a method originally described in DD 146. The second, called the dry cup method, has been adapted from BS 3177 where it was used to measure the water vapour transmission of packaging films.

For most building materials, which tend to be hygroscopic in nature, the wet cup method is to be preferred. In this test the test specimen attains a moisture content which is closer to its likely service condition. The results are consequently more meaningful than those obtained from the very low moisture contents prevailing in the dry cup method. However, for a few non-hygroscopic materials the dry cup procedure can be satisfactory. It is important to specify which test procedure has been used as the two methods can give quite different results.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, 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 British Standard describes two methods of test for determining the water vapour permeability resistance of board or sheet materials used in buildings. They are known respectively as the wet cup and dry cup methods.

The wet cup method is intended for use when testing hygroscopic materials (for example wood-based panels and gypsum plasterboard). The dry cup method is intended for use when testing non-hygroscopic materials such as plastic sheeting. Appendix A gives guidance on the conversion of units.

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

2 Definitions

For the purposes of this British Standard the definitions given in BS 6100 apply together with the following.

2.1

water vapour transmission resistance

the water vapour pressure differential across a sheet material, when expressed in meganewtons per square metre (MN/m^2), to produce a steady-state water vapour flow of $1 \text{ g}/(\text{m}^2 \text{ s})$ through the sheet material concerned, normal to the plane of the sheet

NOTE The water vapour transmission resistance (R_v) should be expressed in meganewton seconds per gram ($\text{MN s}/\text{g}$).

2.2

water vapour transmission resistivity

the water vapour transmission resistance adjusted to a notional 1 m thickness of the material concerned

NOTE The water vapour transmission resistivity is expressed in meganewton seconds per gram metre [$\text{MN s}/(\text{g m})$].

2.3

water vapour permeance

the reciprocal of water vapour transmission resistance

NOTE The water vapour permeance is usually expressed in grams per meganewton second [$\text{g}/(\text{MN s})$] but it can be expressed in micrograms per newton hour [$\mu\text{g}/(\text{N h})$] (see Appendix A).

2.4

water vapour permeability

the water vapour permeance adjusted to a notional 1 m thickness of the material concerned

NOTE 1 The water vapour permeability is expressed in gram metres per meganewton second [$\text{g m}/(\text{MN s})$]. It is thus the reciprocal of water vapour transmission resistivity.

