

# Technical references for mortar and associated topics



## Mortar Industry Association (MIA) Publications

Reference/Publication Date	Subject
Data Sheet No. 1: January 2005	Factory-produced lime:sand mortar for masonry
Data Sheet No. 2: January 2005	Factory-produced ready-to-use mortar for masonry
Data Sheet No. 3: January 2005	Factory-produced silo mortar for masonry
Data Sheet No. 4: January 2005	Factory-produced mortar for external rendering
Data Sheet No. 5: January 2005	Factory-produced mortar for internal plastering
Data Sheet No. 6: January 2005	Factory-produced lime:sand mortar for paving
Data Sheet No. 7: January 2005	Factory-produced mortar for use at low/freezing temperatures
Data Sheet No. 8: January 2005	Efflorescence and bloom on masonry
Data Sheet No. 9: May 2009	Technical references for mortar and associated topics
Data Sheet No. 10: January 2005	Guide to remedial measures associated with internal plastering
Data Sheet No. 11: January 2005	The benefits of factory-produced lime:sand mortar for masonry
Data Sheet No. 12: January 2005	Guide to minimising rain penetration through masonry walls
Data Sheet No. 13: January 2005	Terms, descriptions and definitions
Data Sheet No. 14: January 2005	Guide to best practice for external rendering
Data Sheet No. 15: May 2003	Admixtures for mortar
Data Sheet No. 16: May 2008	The use of ground granulated blastfurnace slag and pulverised fuel ash in mortar
Data Sheet No. 17: May 2004	Pigments for mortar
Data Sheet No. 18: May 2004	The use of lime in mortar
Data Sheet No. 19: January 2005	New mortar standards
Data Sheet No. 20: January 2007	Health & Safety Product Data Sheet - Factory-produced Mortar
Data Sheet No 21: May 2009	The specification of an appropriate mortar

## Concrete Society Publications

Reference/Publication Date	Subject
CS 116:2000	Rendering - a practical handbook by W L Monks.
CS 159:2005	Mortars for masonry: Guidance on specification, types, production and use.
CAS24	Rendering - Defects and Remedial Measures.

## British Cement Association (BCA) Publications

Reference/Publication Date	Subject
48.063	BCA guide to materials for masonry mortar.

## British Standards Institution (BSI) publications

BS No./Publication Date	Subject
BS 476:Part 4:1970 (2007)	Fire tests on building materials and structures. Non-combustibility test for materials.
BS 476:Part 10:1983 (1989)	Fire testing on building materials and structures. Guide to the principles and application of fire testing.
BS 476:Part 20:1987	Fire tests on building materials and structures. Method for determination of the fire resistance of elements of construction (general principles).
BS 476:Part 21:1987	Fire testing on building materials and structures. Methods for the determination of fire resistance of loadbearing elements of construction.
BS 743:1970 (2007)	Specification for materials for damp-proof courses.
BS 3921:1985 (2007)	Specification for clay bricks.
BS 4027:1996	Specification for sulfate-resisting Portland cement.
BS 4551:2005	Mortar. Methods of test for mortar. Chemical analysis and physical testing.
BS 4729:2005	Clay and calcium silicate bricks of special shapes and sizes. Recommendations.
BS 5502:Part 21:1990 (1995)	Buildings and structures for agriculture. Code of practice for selection and use of construction materials.
BS 5628:Part 1:2005	Code of practice for use of masonry. Structural use of unreinforced masonry.
BS 5628:Part 2:2005	Code of practice for use of masonry. Structural use of reinforced and prestressed masonry.
BS 5628:Part 3:2005	Code of practice for use of masonry. Materials and components, design and workmanship.
BS 5642:Part 1:1978	Sills and copings. Specification for window sills of precast concrete, cast stone, clayware, slate and natural stone.
BS 5642:Part 2:1983	Sills and copings. Specification for copings of precast concrete, cast stone, clayware, slate and natural stone.
BS 6100-6:2008	Building and civil engineering vocabulary. Construction parts.
BS 6100-9:2007	Building and civil engineering vocabulary. Work with concrete and plaster.
BS 6398: 1983	Specification for bitumen damp-proof courses for masonry.
BS 7979: 2001	Specification for limestone fines for use with Portland cement.
BS 8000:Part 3:2001	Workmanship on building sites. Code of practice for masonry.
BS 8103-2:2005	Structural design of low-rise buildings. Code of practice for masonry walls for housing.
BS 8215:1991	Code of practice for design and installation of damp-proof courses in masonry construction.
BS 8221-1:2000	Code of practice for cleaning and surface repair of buildings. Cleaning of natural stones, brick, terracotta and concrete.
BS 8221-2:2000	Code of practice for cleaning and surface repair of buildings. Cleaning of natural stones, brick, terracotta and concrete.
BS 8481: 2006	Design, preparation and application of internal gypsum, cement, cement and lime plastering systems. Specification.
BS EN 197-1:2000	Cement. Composition, specification and conformity criteria for common cements.
BS EN 197-4:2004	Cement. Composition, specification and conformity criteria for low early strength blastfurnace cements.
BS EN 413-1:2004	Masonry cement. Composition, specifications and conformity criteria.

## British Standards Institution (BSI) publications (cont)

BS No./Publication Date	Subject
BS EN 413-2:2005	Masonry cement: Test methods.
BS EN 450-1:2005 + A1 (2007)	Fly ash for concrete. Definition, specifications and conformity criteria.
BS EN 459-1:2001	Building lime. Definitions, specifications and conformity criteria.
BS EN 480-1:2006	Admixtures for concrete, mortar and grout. Test methods. Reference concrete and reference mortar for testing.
BS EN 480-2:2006	Admixtures for concrete, mortar and grout. Test methods. Determination of setting time.
BS EN 480-5:2005	Admixtures for concrete, mortar and grout. Test methods. Determination of capillary absorption.
BS EN 480-6:2005	Admixtures for concrete, mortar and grout. Test methods. Infrared analysis.
BS EN 480-8:1997	Admixtures for concrete, mortar and grout. Test methods. Determination of the conventional dry material content.
BS EN 480-10:1997	Admixtures for concrete, mortar and grout. Test methods. Determination of water soluble chloride content.
BS EN 480-12:2005	Admixtures for concrete, mortar and grout. Test methods. Determination of the alkali content of admixtures.
BS EN 480-13:2002	Admixtures for concrete, mortar and grout. Test methods. Reference masonry mortar for testing mortar admixtures.
BS EN 771-1:2003	Specification for masonry units. Clay masonry units.
BS EN 771-2:2003	Specification for masonry units. Calcium silicate masonry units.
BS EN 771-3:2003	Specification for masonry units. Aggregate concrete masonry units (dense and light-weight aggregates).
BS EN 771-4:2003	Specification for masonry units. Autoclaved aerated concrete masonry units.
BS EN 771-5:2003	Specification for masonry units. Manufactured stone masonry units.
BS EN 771-6:2005	Specification for masonry units. Natural stone masonry units.
BS EN 772-1:2000	Methods of test for masonry units. Determination of compressive strength.
BS EN 772-2:1998	Methods of test for masonry units. Determination of percentage voids in masonry units (by paper indentation).
BS EN 772-3:1998	Methods of test for masonry units. Determination of net volume and percentage of voids of clay masonry units by hydrostatic weighing.
BS EN 772-4:1998	Methods of test for masonry units. Determination of real and bulk density and of total and open porosity for natural stone masonry units.
BS EN 772-5:2001	Methods of test for masonry units. Determination of the active salts content of clay masonry units.
BS EN 772-6:2001	Methods of test for masonry units. Determination of bending tensile strength of aggregate concrete masonry units.
BS EN 772-7:1998	Methods of test for masonry units. Determination of water absorption of clay masonry damp-proof course units by boiling in water.
BS EN 772-9:1998	Methods of test for masonry units. Determination of volume and percentage of voids and net volume of calcium silicate masonry units by sand filling.
BS EN 772-10:1999	Methods of test for masonry units. Determination of moisture content of calcium silicate and autoclaved aerated concrete units.

## British Standards Institution (BSI) publications (cont)

BS No./Publication Date	Subject
BS EN 772-11:2000	Methods of test for masonry units. Determination of water absorption of aggregate concrete, manufactured stone and natural stone masonry units due to capillary action and the initial rate of water absorption of clay masonry units.
BS EN 772-13:2000	Methods of test for masonry units. Determination of net and gross dry density of masonry units (except for natural stone).
BS EN 772-14:2002	Methods of test for masonry units. Determination of moisture movement of aggregate concrete and manufactured stone masonry units.
BS EN 772-15:2000	Methods of test for masonry units. Determination of water vapour permeability of autoclaved aerated concrete masonry units.
BS EN 772-16:2000	Methods of test for masonry units. Determination of dimensions.
BS EN 772-18:2000	Methods of test for masonry units. Determination of freeze - thaw resistance of calcium silicate masonry units.
BS EN 772-19:2000	Methods of test for masonry units. Determination of moisture expansion of large horizontally perforated clay masonry units.
BS EN 772-20:2001	Methods of test for masonry units. Determination of flatness of faces of masonry units.
BS EN 934-3:2003	Admixtures for concrete, mortar and grout. Admixtures for masonry mortar. Definitions, requirements, conformity, marking and labelling.
BS EN 934-6:2001	Admixtures for concrete mortar and grout - Sampling, conformity control and evaluation of conformity.
BS EN 998-1:2003	Specification for mortar for masonry - Part 1: Rendering and plastering mortar.
BS EN 998-2:2003	Specification for mortar for masonry - Part 2: Masonry mortar.
BS EN 1015-1:1999	Methods of test for mortar for masonry. Determination of particle size distribution (by sieve analysis).
BS EN 1015-2:1999	Methods of test for mortar for masonry. Bulk sampling of mortars and preparation of test mortars.
BS EN 1015-3:1999	Methods of test for mortar for masonry. Determination of consistence of fresh mortar (by flow table).
BS EN 1015-4:1999	Methods of test for mortar for masonry. Determination of consistence of fresh mortar (by plunger penetration).
BS EN 1015-6:1999	Methods of test for mortar for masonry. Determination of bulk density of fresh mortar.
BS EN 1015-7:1999	Methods of test for mortar for masonry. Determination of air content of fresh mortar.
BS EN 1015-9:1999	Methods of test for mortar for masonry. Determination of workable life and correction time of fresh mortar.
BS EN 1015-10:1999	Methods of test for mortar for masonry. Determination of dry bulk density of hardened mortar.
BS EN 1015-11:1999	Methods of test for mortar for masonry. Determination of flexural and compressive strength of hardened mortar.
BS EN 1015-12:2000	Methods of test for mortar for masonry. Determination of adhesive strength of hardened rendering and plastering mortars on substrates.
BS EN 1015-17:2000	Methods of test for mortar for masonry. Determination of water-soluble chloride content of fresh mortars.
BS EN 1015-18:2002	Methods of test for mortar for masonry. Determination of water absorption coefficient due to capillary action of hardened mortar.

## British Standards Institution (BSI) publications (cont)

BS No./Publication Date	Subject
BS EN 1015-19:1999	Methods of test for mortar for masonry. Determination of water vapour permeability of hardened rendering and plastering mortars.
BS EN 1015-21:2002	Methods of test for mortar for masonry. Determination of the compatibility of one coat-rendering mortars with substrates.
BS EN 1052-1:1999	Methods of test for masonry. Determination of compressive strength.
BS EN 1052-2:1999	Methods of test for masonry. Determination of flexural strength.
BS EN 1052-3:2002	Methods of test for masonry. Determination of initial shear strength.
BS EN 1052-4:2000	Methods of test for masonry. Determination of shear strength including damp proof course.
BS EN 1052-5:2005	Methods of test for masonry. Determination of bond strength by the bond wrench method.
BS EN 1934:1998	Thermal performance of buildings. Determination of thermal resistance by hot box method using heat flow meter. Masonry.
BS EN 1996-1-1:2005	Eurocode 6: Design of masonry structures. General rules for reinforced and unreinforced masonry structures. + National Annex.
BS EN 1996-1-2:2005	Eurocode 6: Design of masonry structures. General rules. Structural fire design. + National Annex.
BS EN 1996-2:2006	Eurocode 6: Design of masonry structures. Design considerations, selection of materials and execution of masonry. + National Annex.
BS EN 1996-3:2006	Eurocode 6: Design of masonry structures. Simplified calculation methods for unreinforced masonry structures. + National Annex.
BS EN 12878:2005	Pigments for the colouring of building materials based on cement and/or lime. Specifications and methods of test.
BS EN 13139:2002	Aggregates for mortar.
BS EN 13658-1:2005	Metal lath and beads, Definitions, requirements and test methods. Internal plastering.
BS EN 13658-2:2005	Metal lath and beads, Definitions, requirements and test methods. External rendering.
BS EN 13914-1:2005	Design, preparation and application of external rendering and internal plastering. External rendering.
BS EN 13914-2:2005	Design, preparation and application of external rendering and internal plastering. Design considerations and essential principles for internal plastering.
BS EN 15167-1:2006	Ground granulated blastfurnace slag for use in concrete, mortar and grout. Definitions, specifications and conformity criteria.
BS EN 15167-2:2006	Ground granulated blastfurnace slag for use in concrete, mortar and grout. Conformity evaluation.
DD 86:Part 3:1990 (2007)	Damp-proof courses. Guide to characteristic strengths of damp-proof course material used in masonry.
PD CEN/TR 15123:2005	Design, preparation and application of internal polymer plastering systems.
PD 6678:2005	Guide to the specification of masonry mortar.
PD 6682 Aggregates - Part 3:2003	Aggregates for mortar - Guidance on the use of BS EN 13139.

## Building Research Establishment (BRE) Publications

Reference/Publication Date	Subject
AP 251: July 2007	Bricks, Mortar, Render, Plaster and Stone (pack)
AP 261: August 2007	Masonry, Walls and Chimneys (pack)
Digest (DG) 163: 1973	Drying out buildings
Digest (DG) 329: 2000	Installing wall ties in existing construction
Digest (DG) 359: 1991	Repairing brick and block masonry
Digest (DG) 360: 1991	Testing bond strength of masonry
Digest (DG) 362: 1991	Building mortar
Digest (DG) 380: 1993	Damp-proof courses
Digest (DG) 401: 1995	Replacing wall ties
Digest (DG) 421: 1997	Measuring the compressive strength of masonry materials: the screw pull-out test
Digest (DG) 432: 1998	Aircrete: thin joint mortar systems
Digest (DG) 449: 2000	Part 1: Cleaning exterior masonry: Developing and implementing a strategy
Digest (DG) 449: 2000	Part 2: Cleaning exterior masonry: Methods and materials
Digest (DG) 460: 2001	Part 1: Bricks, blocks and masonry made from aggregate concrete: performance requirements
Digest (DG) 460: 2001	Part 2: Bricks, blocks and masonry made from aggregate concrete: appearance and environmental aspects
Digest (DG) 502: 2007	Principles of masonry conservation management
Special Digest 4: 2007	Masonry walls and beam-and-block floors. U-values and building regulations
Good Building Guide (GBG) 7: 1991	Replacing failed plasterwork
Good Building Guide (GBG) 18: 1994	Choosing external rendering
Good Building Guide (GBG) 23: 1995	Assessing external rendering for replacement or repair
Good Building Guide (GBG) 24: 1995	Repairing external rendering
Good Building Guide (GBG) 33: 1999	Building damp-free cavity walls
Good Building Guide (GBG) 34: 1999	Building in winter
Good Building Guide (GBG) 41: 2000	Installing wall ties
Good Building Guide (GBG) 44: 2000	Part 1: Insulating masonry cavity walls: techniques and materials
Good Building Guide (GBG) 44: 2000	Part 2: Insulating masonry cavity walls: principal risks and guidance
Good Building Guide (GBG) 50: 2002	Installing solid masonry walls
Good Building Guide (GBG) 58: 2003	Thin layer mortar masonry
Good Building Guide (GBG) 62: 2004	Retro-installation of bed joint reinforcement in masonry
Good Building Guide (GBG) 65: 2005	Part 1: Plastering and internal rendering: Design and specification
Good Building Guide (GBG) 65: 2005	Part 2: Plastering and internal rendering: Workmanship
Good Building Guide (GBG) 66: 2005	Building masonry with lime-based bedding mortars
Good Repair Guide (GR) 3: 1996	Repairing damage to brick and block walls
Good Repair Guide (GR) 4: 1996	Replacing masonry wall ties
Good Repair Guide (GR) 8: 1997	Testing rain penetration in houses
Good Repair Guide (GR) 18: 1998	Replacing plasterwork
Good Repair Guide (GR) 20: 1998	Part 2 - Repairing frost damage: Walls
Good Repair Guide (GR) 24: 1999	Repointing external brickwork walls

## Building Research Establishment (BRE) Publications (cont)

Reference/Publication Date	Subject
Good Repair Guide (GR) 28: 2000	Repairing brick and block freestanding walls
Information Paper (IP) 8/89	BREMORETEST: a rapid method of testing fresh mortars for cement content
Information Paper (IP) 2/98	Mortars for brickwork: Improved thermal performance
Information Paper (IP) 16/03	Proprietary renders
Information Paper (IP) 3/07	Modern methods of construction (MMC) in housing:
	<ul style="list-style-type: none"> <li>• Part 1: Drivers and barriers to their use</li> </ul>
	<ul style="list-style-type: none"> <li>• Part 2: Planning for manufactured housing</li> </ul>
	<ul style="list-style-type: none"> <li>• Part 3: Designing for manufacture</li> </ul>
	<ul style="list-style-type: none"> <li>• Part 4: Successful development and manufacture of MMC products</li> </ul>

## Brick Development Association (BDA) Publications

Reference/Publication Date	Subject
Site Practice BN1	Brickwork - Good Site Practice
Maintenance and Repair T1P1	The Repair and Maintenance of Brickwork
Maintenance and Repair M & R 4.1	Cleaning of Clay Brickwork
Maintenance and Repair M & R 4.3	Cleaning of Calcium Silicate Brickwork
Brick Information Sheets BIS 6.3	Colour Consistency/Causes of Inconsistency
Brick Information Sheets BIS 6.4	Repointing of Brickwork
Brick Information Sheets BIS 6.5	Bricklaying in Winter Conditions
Brick Information Sheets BIS 6.6	Tinting Brickwork Colour Variation Information
Brickwork Design & Detailing DN 7	Brickwork Durability
Brickwork Design & Detailing DN 8	Rigid Paving with Clay Pavers
Brickwork Design & Detailing DN 9	Flexible Paving with Clay Pavers
Brickwork Design & Detailing DN 16	Resisting Rain Penetration with Facing Brickwork
Properties of Bricks & Mortars T1P8	A Basic Guide to Brickwork Mortars
Properties of Bricks & Mortars PBM 1.3	Use of Traditional Lime Mortars in Modern Brickwork
Textbook (3rd Edition) BDA1	The BDA Guide to Successful Brickwork
Textbook BDA2	Creative Brickwork

## The Concrete Centre Publications

Reference/Publication Date	Subject
Design Aids	How to design masonry structures to Eurocode 6: Introduction to Eurocode 6



There is a real danger of contact dermatitis or serious burns if skin comes into contact with wet mortar. Wear suitable protective clothing and eye protection. Where skin contact occurs either directly or through saturated clothing wash immediately with soap and water. For eye contact immediately wash out eyes thoroughly with clean water. If swallowed wash out mouth and drink plenty of water.

The relevant codes of practice, standards and statutory regulations must always be observed.

The information in this data sheet may be freely copied with acknowledgement to the Mortar Industry Association. Current issue numbers of all MIA publications are available from the MIA website.



**Mortar Industry Association**

Gillingham House 38 - 44 Gillingham Street London SW1V 1HU Tel +44 (0)20 7963 8000 Fax +44 (0)20 7963 8001

Promoting quality factory-produced mortar

[www.mortar.org.uk](http://www.mortar.org.uk)