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## Guide to Technical References in this data sheet

MPA Mortar Publications

Concrete Society Publications

British Cement Association (BCA)  
 Publications

British Standards Institution (BSI)  
 Publications

Building Research Establishment  
 (BRE Publications)

Brick Development Association (BDA)  
 Publications

MPA - The Concrete Centre Publications

### MPA Mortar Publications

| Reference/Publication Date   | Subject  |
|------------------------------|--|
| Data Sheet No. 1: Sept 2012  | Factory-produced lime:sand mortar for masonry                        |
| Data Sheet No. 2: May 2014   | Factory-produced ready-to-use mortar for masonry                     |
| Data Sheet No. 3: May 2014   | Factory-produced silo mortar for masonry                             |
| Data Sheet No. 4: Aug 2015   | Factory-produced mortar for external rendering                       |
| Data Sheet No. 5: Sept 2014  | Factory-produced mortar for internal plastering                      |
| Data Sheet No. 6: May 2012   | Factory-produced lime:sand mortar for paving                         |
| Data Sheet No. 7: May 2012   | Factory-produced mortar for use at low/freezing temperatures         |
| Data Sheet No. 8: May 2012   | Efflorescence and bloom on masonry                                   |
| Data Sheet No. 9: Apr 2016   | Technical references for mortar and associated topics                |
| Data Sheet No. 10: May 2012  | Guide to remedial measures associated with internal plastering       |
| Data Sheet No. 11: Aug 2015  | The benefits of factory-produced lime:sand mortar for masonry        |
| Data Sheet No. 12: June 2015 | Guide to minimising rain penetration through masonry walls           |
| Data Sheet No. 13: June 2015 | Terms, descriptions and definitions                                  |
| Data Sheet No. 14: May 2012  | Guide to best practice for external rendering                        |
| Data Sheet No. 15: May 2012  | Admixtures for mortar  |
| Data Sheet No. 16: May 2012  | The use of ground granulated blastfurnace slag and fly ash in mortar |
| Data Sheet No. 17: May 2012  | Pigments for mortar  |
| Data Sheet No. 18: May 2012  | The use of lime in mortar  |
| Data Sheet No. 19: July 2015 | New mortar standards   |
| Data Sheet No. 20: July 2013 | Health & Safety Product Data Sheet - Factory-produced Mortar         |
| Data Sheet No. 21: May 2012  | Hydraulic Lime Mortars   |
| Data Sheet No. 22: June 2013 | Screeds  |
| Data Sheet No. 23: May 2012  | The specification of an appropriate mortar                           |

## Concrete Society Publications

| Reference/Publication Date | Subject  |
|----------------------------|--|
| CS 116: 2000 (GCG3)        | Rendering - a practical handbook by W L Monks.                             |
| CS 159: 2005 (GCG4)        | 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

| Reference/Publication Date        | Subject  |
|-----------------------------------|--|
| BS 476: Part 4: 1970 (2012)       | Fire tests on building materials and structures. Non-combustibility test for materials.  |
| BS 476: Part 10: 2009             | Fire testing on building materials and structures. Guide to the principles, selection, role and application of fire testing and their outputs.     |
| BS 476: Part 20: 1987 (2012)      | 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 (2011)      | 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 (partially replaced).   |
| BS 4551: 2005 + A2 (2013)         | Mortar. Methods of test for mortar. Chemical analysis and physical testing.  |
| BS 4729: 2005 (2011)              | Clay and calcium silicate bricks of special shapes and sizes. Recommendations.   |
| BS 5502: Part 21:1990 (2014)      | Buildings and structures for agriculture. Code of practice for selection and use of construction materials.  |
| BS 5642: Part 1: 1978 + A1 (2014) | Sills and copings. Specification for window sills of precast concrete, cast stone, clayware, slate and natural stone.                              |
| BS 5642: Part 2: 1983 + A1 (2014) | Sills and copings. Specification for copings of precast concrete, cast stone, clayware, slate and natural stone.                                   |
| BS 6100-0: 2010 (2015)            | Building and civil engineering vocabulary. Introduction and index.   |
| BS 6100-6: 2008 (2013)            | Building and civil engineering vocabulary. Construction parts.   |
| BS 6100-9: 2007 (2012)            | Building and civil engineering vocabulary. Work with concrete and plaster.   |
| BS 6398: 1983 (2013)              | Specification for bitumen damp-proof courses for masonry.  |
| BS 7979: 2001 (2012)              | Specification for limestone fines for use with Portland cement.  |
| BS 8000-3 2001 (2013)             | Workmanship on building sites. Code of practice for masonry.   |
| BS 8000-9: 2003 (2012)            | Workmanship on building sites. Cementitious levelling and wearing screeds. Code of practice.   |
| BS 8103-2: 2013                   | Structural design of low-rise buildings. Code of practice for masonry walls for housing.   |
| BS 8215: 1991 (2013)              | Code of practice for design and installation of damp-proof courses in masonry construct  |
| BS 8221-1: 2012                   | Code of practice for cleaning and surface repair of buildings. Cleaning of natural stones, brick, terracotta and concrete.                         |

## British Standards Institution (BSI) Publications (contd)

| Reference/Publication Date       | Subject   |
|----------------------------------|---|
| BS 8221-2: 2000 (2012)           | Code of practice for cleaning and surface repair of buildings. Surface repair of natural stones, brick, terracotta and concrete.          |
| BS 8481: 2006 (2011)             | Design, preparation and application of internal gypsum, cement, cement and lime plastering systems. Specification.                        |
| BS EN 197-1: 2011                | Cement. Composition, specification and conformity criteria for common cements.  |
| BS EN 413-1: 2011                | Masonry cement. Composition, specifications and conformity criteria.  |
| BS EN 413-2: 2005                | Masonry cement: Test methods.   |
| BS 450-1: 2012                   | Fly ash for concrete. Definition, specifications and conformity criteria.   |
| BS EN 459-1: 2015                | Building lime. Definitions, specifications and conformity criteria.   |
| BS EN 459-2: 2010                | Building lime. Test methods.  |
| BS EN 459-3: 2015                | Building lime. Conformity evaluation.   |
| BS EN 480-1: 2014                | 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: 2012                | Admixtures for concrete, mortar and grout. Test methods. Determination of the conventional dry material content                           |
| BS EN 480-10: 2009               | 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: 2015               | Admixtures for concrete, mortar and grout. Test methods. Reference masonry mortar for testing mortar admixtures.                          |
| BS EN 771-1: 2011                | Specification for masonry units. Clay masonry units.  |
| BS EN 771-2: 2011                | Specification for masonry units. Calcium silicate masonry units.  |
| BS EN 771-3: 2011                | Specification for masonry units. Aggregate concrete masonry units (dense and light-weight aggregates).                                    |
| BS EN 771-4: 2011                | Specification for masonry units. Autoclaved aerated concrete masonry units.   |
| BS EN 771-5: 2011                | Specification for masonry units. Manufactured stone masonry units.  |
| BS EN 771-6: 2011                | Specification for masonry units. Natural stone masonry units.   |
| BS EN 772-1: 2011<br>+ A1 (2015) | 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                              |

## British Standards Institution (BSI) Publications (contd)

| Reference/Publication Date    | Subject  |
|-------------------------------|--|
| 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.  |
| BS EN 772-11: 2011            | 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: 2011            | Methods of test for masonry units. Determination of dimensions.  |
| BS EN 772-18: 2011            | 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: 2000            | Methods of test for masonry units. Determination of flatness of faces of masonry units.  |
| BS EN 772-21: 2011            | Methods of test for masonry units. Determination of water absorption of clay and calcium silicate masonry units by cold water absorption.  |
| BS EN 934-3: 2009 + A1 (2012) | 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: 2010             | Specification for mortar for masonry – Part 1: Rendering and plastering mortar.  |
| BS EN 998-2: 2010             | Specification for mortar for masonry – Part 2: Masonry mortar.   |
| BS EN 1015-1: 1999            | Methods of test for mortar for masonry. Definitions 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 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 (contd)

| Reference/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<br>+ A1 (2012) | 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 (2013)           | 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: 2014                   | 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 plastering  |
| 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.  |
| PD CEN/TR 15123: 2005               | Design, preparation and application of internal polymer plastering systems.  |
| PD 6678: 2005 (2012)                | Guide to the specification of masonry mortar.  |
| PD 6682 -3: 2003 ((2014)            | 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)  |
| AP 285 – (Various dates)           | Good Building Guides complete set   |
| 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   |

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

| Reference/Publication Date         | Subject   |
|------------------------------------|---|
| Good Repair Guide (GR) 8: 1997     | Treating 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: 1998    | Repointing external brickwork walls                                     |
| Good Repair Guide (GR) 28: 2000    | Repairing brick and block freestanding walls                            |
| Good Repair Guide (Various dates)  | Complete set  |
| 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 (2007) | Modern methods of construction (MM) in housing:                         |
|                                    | • Part 1: Driver and barriers to their use                              |
|                                    | • Part 2: Planning for manufactured housing                             |
|                                    | • Part 3: Designing for manufacture                                     |
|                                    | • Part 4: Successful development and manufacture of MMC products        |

## Brick Development Association (BDA) Publications

| Reference/Publication Date         | Subject  |
|------------------------------------|--|
| Site Practice BN1                  | Brickwork – Good Site Practice                   |
| 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           | Colour Consistency/Causes of Inconsistency       |
| Brick Information Sheets           | Repointing of Brickwork                          |
| Brick Information Sheets           | Bricklaying in Winter Conditions                 |
| Brick Information Sheets           | 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 |
| Textbook (3rd Edition) BDA1        | The BDA Guide to Successful Brickwork            |
| Textbook BDA2                      | Creative Brickwork                               |

## MPA - The Concrete Centre Publications

| Reference/Publication Date                    | Subject  |
|---|--|
| Design Aids                                   | How to design masonry structures to Eurocode 6: Introduction to Eurocode 6 |
| ISBN: 978-1-904818-80-9 2009                  | Achieving code level five with concrete and masonry                        |
| ISBN: 978-1-904818-80-4 2011                  | Zero Carbon Performance - cost-effective concrete and masonry homes        |
| ISBN: 978-1-904818-71-7 2012                  | Thermal Mass Explained (2012 update)                                       |
| ISBN: 978-1-904818-99-1 2011                  | Thermal Performance: Part L1A  |
| ISBN: 978-1-904818-98-4 2011                  | How to achieve good levels of airtightness in masonry homes                |
| ISBN: 978-1-904818-91-5 2010                  | How to achieve acoustic performance in masonry homes                       |
| ISBN: 978-1-904818-70-0 2009                  | How to build flood resilient homes using concrete and masonry              |
| <b>Published with Zero Carbon Hub</b><br>2010 | Masonry  |



MPA Mortar is part of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries.

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Factory produced mortar products will contain either cement or lime, both of which have properties which are hazardous to health. Please refer to the manufacturers or suppliers Material Safety Data Sheet for the specific product/grade to find more information on the nature of the hazardous properties, the risks and health effects of exposure and the recommended safe use and handling procedures.