

BIBLIOGRAPHY

DRAUGHTING GUIDELINES

- Atherton, Harry: *Designs on your Desktop. A Comprehensive Guide to Computer-Aided Design* (Wilmslow (England), Sigma Press, 1988)
- Bell, R.J.: *SI: The International System of Units* (London, HMSO, 1993)
- BSI: **BS 1192: Construction Drawing Practice** (London, British Standards Institution, 1984 and 1987)
- BS 1192: Part 1: 1984 Recommendations for General Principles**
- BS 1192: Part 2: 1987 Recommendations for Architectural and Engineering Drawings**
- BS 1192: Part 3: 1987 Recommendations for Symbols and Other Graphic Conventions**
- Hawkes, Barry: *Succeeding with AutoCAD. A Full Course in 2D Drafting and 3D Modelling* (London, McGraw-Hill Book Company, 1995)
- Hepler, Donald E. and Wallach Paul I.: *Architecture: Drafting and Design*, 4th edn (New York, McGraw-Hill Book Company, 1982)
- PSA, Property Services Agency: *PSA Drawing Practice Manual*, 2nd edn (Croydon, DAS/HOP, May 1989)
- Riley, Peter et al.: *Computer-Aided Engineering* (London, City and Guilds/Macmillan, 1994)
- Rodriguez, Walter: *The Modeling of Design Ideas. Graphics and Visualization Techniques for Engineers* (New York, McGraw-Hill Book Company, 1992)
- Yarwood, A.: *Technical Drawing with Design* (London, The Macmillan Press Ltd, 1994)

MEASUREMENT BASIS

- Ching, Francis D.K.: *Architecture: Form, Space, Order* (New York, Van Nostrand Reinhold Company, 1979)
- Le Corbusier, Charles-Edouard Jeanneret: *Modulor: A Harmonious Measure for the Human Scale* (London, Faber and Faber, 1954)
- Le Corbusier, Charles-Edouard Jeanneret: *The Modulor II* (London, Faber and Faber, 1958)
- Le Corbusier, Charles-Edouard Jeanneret: *Towards a New Architecture*, Translated by Frederick Etchells (London, William Clowes and Sons, 1970)
- Lenclos, Jean Philippe, Graves, Michael and Crosby, Theo (Essays by): *The Color Compendium* (New York, Augustine Hope and Margaret Walch, Van Nostrand Reinhold, 1990)
- Meiss, Piere Von: *Elements of Architecture from Form to Place*, Translated by Katherine Hanault (London, Van Nostrand Reinhold, 1990)
- Morgan, Morris H.: *Vitruvius: The Ten Books of Architecture* (New York, Dover Publications Inc., 1960)
- Murray, Peter: *The Architecture of the Italian Renaissance* (London, Thames and Hudson, 1991)
- Parsons, K.C.: *Human Thermal Environments* (London, Taylor and Francis Ltd, 1993)
- Rasmussen, Steen Eiler: *Experiencing Architecture* (Cambridge Massachusetts, The MIT Press, 1991)
- Smith, Peter: *Architecture and the Principle and Harmony* (London, RIBA Publications, 1987)
- Summerson, John: *The Classical Language of Architecture* (London, Thames and Hudson, 1991)
- Taverne, Ed and Wagenhaar Cor (eds): *The Colour of the City* (Holland, V+K Publishing, 1992)
- Tzonis, Alexander and Lefaivre, Liane: *Classical Architecture: The Poetic of Order* (Cambridge Massachusetts, MIT Press, 1986)
- Wittkower, Rudolf: *Architectural Principles in the Age of Humanism* (London, Academy Editions, St Martin Press, 1988)

DESIGN

- Cruz, Teddy and Boddington, Anne (eds): *Architecture of the Borderlands* (Chichester, Wiley, 1999)
- Franck, Karen A.: *Architecture Inside Out* (Chichester, Wiley, 1999)
- HMSO: *Accessible Thresholds in New Housing: Guidance for House Builders and Designers* (Norwich, The Stationery Office, 1999)

CONSTRUCTION MANAGEMENT

- Cleland, David I.: *Project Management: Strategic Design and Implementation*, 3rd edn (New York, London, McGraw-Hill, 1999)
- Finch, Edward: *Using the Internet in Building Design, Construction and Management* (London, Arnold, 1999)
- Franks, James: *Building Procurement Systems: a Client's Guide*, 3rd edn (Harlow, Longman, 1998)
- Halpin, Daniel W.: *Construction Management*, 2nd edn (New York, Chichester, Wiley, 1998)
- Maylor, Harvey: *Project Management*, 2nd edn (London, Financial Times/Pitman, 1999)

BUILDING COMPONENTS

- Blanc, Alan: *Internal Components* (Harlow, Longman Scientific & Technical, 1994)
- BRE: *Building Components and Materials*, Building Research Establishment Digests, Part 2: (London, HMSO, 1983)
- Everett, Alan: *Materials* (Essex, Longman Scientific & Technical, 1992)
- McEvoy, Michael: *External Components* (Harlow, Longman Scientific & Technical, 1994)
- Osborn, Derek: *Components* (London, The Mitchell Publishing Company Limited, 1989)

HEATING AND VENTILATION

- Havrella, Raymond A.: *Heating, Ventilating, and Air Conditioning Fundamentals* (New York, London, McGraw-Hill, 1981)
- McQuiston, Faye C.: *Heating, Ventilating, and Air Conditioning: Analysis and Design*, 4th edn (New York, Chichester, Wiley, 1994)
- Plumb, Derek: *Heating and Ventilating* (Cheltenham, Thornes, June 1980)
- Porges, Fred: *Handbook of Heating, Ventilating and Air Conditioning*, 8th edn (London, Butterworths, 1982)

THERMAL AND SOUND INSULATION

- BRE: *Sound Insulation: a Compilation of BRE Publications*, A Collection of BRE Digests, Defect Action Sheets and Information Papers, published between 1992 and 1994 (Watford, Building Research Establishment)
- BRE: *Thermal Insulation: Avoiding Risks: a Good Practice Guide Supporting Building Regulations Requirements*, 2nd edn (Watford, Building Research Establishment, HMSO, 1994)
- Burberry, Peter: *Environment and Services*, 8th edn (Harlow, Longman, 1997)
- Diamant, Rudolph M.E.: *Thermal and Acoustic Insulation* (London, Butterworths, 1986)
- Thomas, Randall, Fordham, Max & Partners: *Environmental Design. An Introduction for Architects and Engineers* (London, E. & F.N. Spon, 1996)

BIBLIOGRAPHY

FIRE PROTECTION AND MEANS OF ESCAPE

- Fire Protection for Structural Steel in Buildings*. Prepared by the ASFFPCM, the Fire Research Station and BSC Teeside Laboratories (Croydon, ASFFPCM, Constrado, 1983)
- Fire Safety in Health Care Premises; Fire alarm and detection systems*. Department of Health and Social Security, Welsh Office Series Health technical memorandum 82 (London, HMSO, 1982)
- Fire Safety in Health Care Premises; General fire precautions*. Department of Health and Social Security, (and) Welsh Office Series Health technical memorandum no.83 (London, HMSO, 1982)
- Billington, M.J.: *Means of Escape from Fire: An Illustrated Guide to the Law* (Oxford, Blackwell Science, 1993)
- Department of the Environment: *The Building Regulations 1985: Mandatory Rules for Means of Escape in Case of Fire* (London, HMSO, 1985)
- Jenkins and Potter: *Low Rise Domestic Construction in Brick*. Prepared for the Brick Development Association by Jenkins and Potter, consulting engineers and the National Building Agency. [2]: Means of escape Part [2] (Windsor, Brick Development Association, 1978)
- Nowak, Andrzej S. and Galambos, Ted V. (eds): *Making Buildings Safer for People: During Hurricanes, Earthquakes, and Fires* (New York, Van Nostrand Reinhold, 1990)
- Reid, Esmond: *Fire Safety Measures in Hotels*. A report prepared for the Commission of the European Communities, Directorate-General Environment, Consumer Protection and Nuclear Safety (Brussels, Bureau Européen des Unions de Consommateurs for the Commission of the European Communities, 1984)
- Smith, E. and Harmathy, T.Z. (eds): *Design of Buildings for Fire Safety*. Symposium on Design of Buildings for Fire Safety, Boston, 1978 (Philadelphia, ASTM, 1979)

ARTIFICIAL LIGHTING AND DAYLIGHT

- Guzowski, Mary: *Daylighting for Sustainable Design* (Boston Massachusetts, London, Irwin/McGraw-Hill, 1999)
- Johnson, Glenn M.: *The Art of Illumination: Residential Lighting Design* (New York, London, McGraw-Hill, 1999)
- Littlefair, P.J.: *Solar Shading of Buildings* (Garston, Construction Research Communications, 1999)
- Palmer, Scott: *Essential Guide to Stage Management, Lighting and Sound* (London, Hodder & Stoughton, 1999)
- Phillips, Derek: *Lighting Modern Buildings* (Oxford, Architectural, 1999)
- Pritchard, David C.: *Lighting*, 6th edn (Harlow, Longman, 1999)

WINDOWS AND DOORS

- Barker, Theodore Cardwell: *The Glassmakers. Pilkington: The Rise of an International Company, 1826-1976* (London, Weidenfeld and Nicolson, 1977)
- Barker, Theodore Cardwell: *Pilkington. An Age of Glass: the Illustrated History* (London, Boxtree, 1994)
- Barry, Robin: *The Construction of Buildings*, Vol. 2: Windows, Doors, Stairs, Fires, Stoves and Chimneys, Internal Finishes and External Rendering, 5th edn (Oxford, Blackwell Science, 1999)
- Beckett, H.E. and Godfrey, J.A.: *Windows. Performance, Design and Installation* (London, Crosby Lockwood Staples, 1974)
- BSI: **BS 4787: Internal and External Wood Doorsets, Door Leaves and Frames** (London, British Standards Institution, 1980)
- BS 4787: Part 1: 1980 [AMD 3] Dimensional Requirements**
- BSI: **BS 8213: Windows, Doors and Rooflights** (London,

British Standards Institution, 1991)

BS 8213: Part 1: 1991 Code of Practice for Safety in Use and During Cleaning of Windows and Doors (including Guidance on Cleaning Materials and Methods)

BS 8213: Part 4: 1990 Code of Practice for the Installation of Replacement Windows and Doorsets in Dwellings

Caudle, James: *Doors, Windows and Blinds*, Specification 93, Technical, pp.239-311 (London, Emap Business Publishing, 1993)

Collin, Ian D. and Collins, Eric J.: *Window Selection. A Guide for Architects and Designers* (London, Newnes-Butterworths, 1977)

Hoffmann, Gretl: *Doors. Excellence in International Design* (London, George Godwin Ltd, 1977)

Turner, Denis Philip: *Window Glass Design Guide* (London, The Architectural Press Ltd, 1977)

STAIRS, ESCALATORS AND LIFTS

Blanc, Alan: *Stairs, Steps and Ramps* (Oxford, Butterworth Architecture, 1996)

BSI: **BS 5395: Stairs, Ladders and Walkways** (London, British Standards Institution)

BSI: **BS 5655: Lifts and Service Lifts** (London, British Standards Institution)

BSI: **BS EN 115: 1995 Safety rules for the construction and installation of escalators and passenger conveyors** (London, British Standards Institution)

BSI: **BS 5776: 1996 Powered stairlifts** (London, British Standards Institution)

BSI: **BS 5900: 1999 Specification for powered domestic lifts with partially enclosed cars and no lift-well enclosures** (London, British Standards Institution)

Lampugnani, Vittorio Magnago and Hartwig, Lutz (General eds): *Vertical, lift escalator paternoster: a cultural of vertical transport* (Berlin, Ernst and Sohn, 1994)

Mannes, Willibald: *Designing Staircases* (New York, London, Van Nostrand Reinhold, 1982)

NHS Estates: *Lifts, Design Considerations*, Series Health technical memorandum no. 2024 (London, HMSO, 1995)

Stowe, Janet: *Guide to the Selection of Stairlifts* (Leeds, Rheumatology and Rehabilitation Research Unit, 1988)

Strakosch, George R.: *Vertical Transportation: Elevators and Escalators*, 2nd edn (New York, Chichester, Wiley, 1983)

Templer, John A.: *The Staircase, Studies of Hazards, Falls, and Safer Design* (London, MIT Press, 1992)

REFURBISHMENT, MAINTENANCE AND CHANGE OF USE

The Building Conservation Directory: a Guide to Specialist Suppliers, Consultants and Craftsmen in Traditional Building Conservation, Refurbishment and Design, (Tisbury, Cathedral Communications, 1999)

Re-roofing: a Guide to Flat Roof Maintenance and Refurbishment (Northwich, Euroroof Ltd, 1985)

Austin, Richard L.: *Adaptive Reuse. Issues and Case Studies in Building Preservation* (New York, Van Nostrand Reinhold Company, 1988)

Chandler, Ian: *Repair and Refurbishment of Modern Buildings* (London, Batsford, 1991)

Cunnington, Pamela: *Care for Old Houses* (Sherborne, Dorset, Prism Alpha, 1984)

Cunnington, Pamela: *Change of Use. The Conversion of Old Buildings* (London, Alphabooks, A & C Black, 1988)

Eley, Peter and Worthington, John: *Industrial Rehabilitation. The Use of Redundant Buildings for Small Enterprises* (London, The Architectural Press, 1984)

Highfield, David: *Rehabilitation and Re-use of Old Buildings* (London, E. & F.N. Spon, 1987)

Mack, Lorrie: *Homes by Design. Transforming Uncommon Properties into Stylish Homes* (London, Cassell, 1993)

BIBLIOGRAPHY

ROADS AND STREETS

- Making Ways for the Bicycle: a Guide to Traffic-free Path Construction* (Bristol, Sustrans Ltd, 1994)
- Walkways: Town Centre Factsheets 1-12* (London, Pedestrians Association, 1993)
- The British Road Federation: *Old Roads to Green Roads: Improving the Environmental Performance of the Existing Road Network* (London, Landor Publishing, 1999). Based on a report by Hyder Consulting.
- Burton, Anthony: *The Cotswold Way* (London, Aurum Press in association with the Ordnance Survey, 1995)
- Great Britain Countryside Commission: *Paths, Routes and Trails, Policies and Priorities* (Cheltenham, Countryside Commission, 1989)
- Hass-Klau, Carmen et al.: *Streets as Living Space: Helping Public Places Play Their Proper Role: Good Practice Guide with Examples From a Town Centre Study of European Pedestrian Behaviour* (London, Landor [for Environmental and Transport Planning], 1999)
- Moughtin, J.C.: *Urban Design: Street and Square*, 2nd edn (Oxford, Architectural, 1999)
- Sloman, Lynn: *Living Streets: a Guide to Cutting Traffic and Reclaiming Street Space* (London, Transport 2000, 1999)

GARDENS

- Asensio Cerver, Francisco: *Spectacular Pools* (New York, Hearst, 1999)
- Carr, Diane: *Paths and Patios* (London, Bloomsbury, 1994)
- Littlewood, Michael: *Landscape Detailing*, Vol.3: Structures, 3rd edn (Oxford, Architectural Press, 1997)
- Osmundson, Theodore H.: *Roof Gardens, History, Design and Construction* (W.W. Norton, May 97)
- Watkin, David: *The English Vision: the Picturesque in Architecture, Landscape and Garden Design* (London, Murray, 1982)

HOUSES AND RESIDENTIAL BUILDINGS

- Classic Homes* (Videorecording – Programme 7): The Terrace House Series (London, Channel 4, 1998)
- Static Holiday Caravans and Chalets* (London, English Tourist Board, 1973)
- Borer, Pat: *The Whole House Book, Ecological Building Design and Materials* (Powys, Centre for Alternative Technology, 1998)
- Centre on Environment for the Handicapped: *Designing Bathrooms for Disabled People*: Proceedings of a seminar held on 6 March 1985 at the King's Fund Centre, London (London, Centre on Environment for the Handicapped, 1985)
- Colquhoun, Ian: *RIBA Book of 20th Century British Housing* (Oxford, Butterworth-Heinemann, 1999)
- Department of Health and Social Security: *Laundry*, revised edn (London, HMSO, 1977)
- Dibie, Pascal: *Ethnologie de la Chambre à Coucher* (Paris, B. Grasset, 1987)
- Glendinning, Miles: *Tower Block: Modern Public Housing in England, Scotland, Wales and Northern Ireland* (New Haven, London: Yale University Press for The Paul Mellon Centre for Studies in British Art, 1994)
- Hawkesworth, Rex: *Housing Design in the Private Sector: an Architect's View Towards a Design Philosophy*, Vol.2 (Portsmouth, Serious Graphics, University of Portsmouth Enterprise, 1998)
- HMSO: *Accessible Thresholds in New Housing: Guidance for House Builders and Designers* (Norwich, The Stationery Office, 1999)
- HMSO: *Laundry* (London, HMSO, 1994)
- Hoffmann, Hubert: *One-family Housing: Solutions to an Urban Dilemma: Terrace Houses, Patio Houses, Linked Houses* (London, Thames & Hudson, 1967)

- Horsy, Miles: *Tenements and Towers: Glasgow Working-class Housing 1890-1990* (Edinburgh: Royal Commission on the Ancient and Historical Monuments of Scotland, 1990)
- IEA *Solar Heating and Cooling (SHC) Programme: Task 20*, Glazed balconies in building renovation (London, James & James, 1997)
- Kneviatt, Charles: *Shelter: Human Habitats from Around the World*; foreword by HRH the Prince of Wales (Streatley-on-Thames, Polymath Publishing, 1994)
- Lincolnshire, Planning Department: *Development on the Lincolnshire Coast: [draft] Subject Plan: Holiday Accommodation, Informal Recreation, Reclamation* (Lincoln, Lincolnshire County Council, 1981)
- Mazzurco, Phillip: *Bath Design: Concepts, Ideas, and Projects* (London, Columbus, 1986)
- Ministry of Housing and Local Government, Research and Development Group: *Designing a Low-rise Housing System: How the 5M System was Evolved: the pilot project at Sheffield* (London, HMSO, 1970)
- Murphy, James D.: *The Semi-detached House: Its Place in Suburban Housing* (Dublin, Housing Research Unit, School of Architecture, University College, Dublin: Cement-Roadstone Holdings Ltd, 1977)
- Pickles, Judith: *Housing for Varying Needs: a Design Guide*, Part 1: Houses and flats (Edinburgh, Stationery Office, 1998)
- Pickles, Judith: *Housing for Varying Needs: a Design Guide*, Part 2: Housing with integral support (Edinburgh, Stationery Office, 1999)
- Schild, Erich et al.: *Structural Failure in Residential Buildings*, Vol.1: Flat Roofs, Roof Terraces, Balconies; translated from the German by Sheila Bacon (London, Crosby Lockwood Staples, 1978)
- Stallibrass, Chloe: *Seaside Resorts and the Holiday Accommodation Industry: a Case Study of Scarborough* (Oxford, Pergamon, 1980)
- White, Gleeson: *A Note on Simplicity of Design in Furniture for Bedrooms with Special Reference to Some Recently Produced by Messrs Heal and Son* (London, Heal and Son, 1898)
- Withers, Jane: *Hot Water: Bathing and the Contemporary Bathroom* (London, Quadrille, 1999)

OLD PEOPLE'S HOMES

- Buildings Research Team, School of Architecture, Oxford Brookes University: *Buildings Design and the Delivery of Day Care Services to Elderly People* (London, HMSO, 1994)
- Stoneham, Jane and Thoday, Peter: *Landscape Design for Elderly and Disabled People* (Chichester, Packard Publishing Limited, 1994)
- Torrington, Judith: *Care Homes for Older People* (London, E. & F.N. Spon, 1996)
- Valins, Martin: *Housing for Elderly People. A Guide for Architects and Clients* (London, The Architectural Press Ltd, 1988)
- Weal, Francis and Francesca: *Housing the Elderly. Options and Design* (London, The Mitchell Publishing Company Ltd, 1988)

EDUCATIONAL AND RESEARCH FACILITIES

- DfEE, Department for Education and Employment, Architects and Building Branch: *Area Guidelines for Schools*, Building Bulletin 82 (London, HMSO, 1996)
- DfEE, Department for Education and Employment, Architects and Building Branch: *School Grounds. A Guide to Good Practice*, Building Bulletin 85 (London, HMSO, 1997)
- Dudek, Mark: *Architecture of Schools and the New Learning Environment* (Oxford, Architectural, 1999)

BIBLIOGRAPHY

- Dudek, Mark: *Kindergarten Architecture: Space for the Imagination* (London, E. & F.N. Spon, 1996)
- Galison, Peter and Thompson, Emily: *The Architecture of Science* (Cambridge Massachusetts, London, MIT, 1999)
- Griffin, Brian: *Laboratory Design Guide* (Oxford, Architectural Press, 1998)
- Hain, Walter: *Laboratories. A Briefing and Design Guide* (London, E. & F.N. Spon, 1995)
- Mills, Edward D. (ed.): *Planning. Buildings for Education, Culture and Science* (London, Butterworth and Co Ltd, 1976)
- Price, Barbara: *Technical Colleges and Colleges of Further Education* (London, B.T. Batsford Ltd, 1959)

LIBRARIES

- Brawne, Michael et al.: *Library Builders* (London, Academy Editions, 1997)
- Hargrave, R.: *Office Library Systems. A Guide for the Construction Industry* (London, The Architectural Press Ltd, 1987)
- Harrison, Dean (ed.): *Library Buildings in the United Kingdom 1990-1994* (London, Library Services Limited, 1995)
- Lushington, Nolan and Mills, Willis N. Jr.: *Libraries Designed for Users. A Planning Handbook* (Connecticut, Library Professional Publications, 1980)
- Paulhans, Peters and Friedemann Wild (eds): *Libraries for Schools and Universities* (New York, Van Nostrand Reinhold Company, 1972)
- St John Wilson, Colin: *The Design and Construction of the British* (London, British Library, 1998)
- Taylor, Sue (ed.): *Building Libraries for the Information Age*. Based on the proceedings of a symposium on the Future of Higher Educational Libraries at the King's Manor, York 11-12 April 1994 (York, Institute of Advanced Architectural Studies, The University of York, May 1995)
- Thompson, Godfrey: *Planning and Design of Library Buildings*, 3rd edn (Oxford, The Architectural Press Ltd, 1996)

MUSEUMS

- Buzas, Stefan and Bryant, Richard: *Sir John Soane's Museum, London* (Tübingen/Berlin, Ernst Wasmuth Verlag, 1994)
- Darragh, Joan and Snyder, James S.: *Museum Design. Planning and Building for Art* (Oxford, Oxford University Press, 1993)
- Davis, Douglas: *The Museum Transformed* (New York, Abbeville Press Publishers, 1990)
- Lord, Gail Dexter and Barry: *The Manual of Museum Planning* (London, HMSO, 1991)
- Matthews, Geoff: *Museums and Art Galleries. Design and Development Guides* (Oxford, Butterworth Architecture, 1991)
- Montaner, Josep Ma.: *New Museums* (London, Architecture Design and Technology Press, 1990)
- Steele, James: *Museum Builders* (London, Academy Editions, 1994)

OFFICE BUILDINGS

- Bailey, Stephen: *Offices: A Briefing and Design Guide* (London, Butterworth Architecture, 1990)
- BCO, British Council for Offices: *Specification for Urban Offices* (Reading, Publishing Business Ltd, 1994)
- Bennett, David: *Skyscrapers. The World's Tallest Buildings and How They Work* (London, Aurum Press Ltd, 1995)
- Cox, Butler: *Information Technology and Buildings: A Practical Guide for Designers* (London, Butler Cox, 1990)
- DBD, Directorate of Building Development: *Office Space: A Primer for Users and Designers* (London, HMSO, 1976)

- Kleeman, Walter B. Jr.: *Interior Design of the Electronic Office: The Comfort and Productivity Payoff* (New York, Van Nostrand Reinhold, 1991)
- Rayfield, Julie K.: *The Office Interior Design: An Introduction for Facilities Managers and Designers* (New York, John Wiley & Sons Inc., 1994)
- Reid, Esmond: *Understanding Buildings: A Multidisciplinary Approach* (Essex, Longman Scientific & Technical, 1991)
- Stocker, Paul and Howarth, Andrew: *Office Design and Planning* (London, CCTA, HMSO, 1992)

BANKS

- Boddy, Martin: *The Building Societies* (London, The Macmillan Press Ltd, 1980)
- Booker, John: *Temples of Mammon: The Architecture of Banking* (Edinburgh, Edinburgh University Press, 1990)
- The Building Societies Association: *Building Society Fact Book 1987* (London, The Building Societies Association, July 1987)
- The Building Societies Association: *The Future Constitution and Powers of Building Societies* (London, The Building Societies Association, January 1983)
- Deilmann, Harald and Thomas: *Buildings for Banking and Insurance* (Stuttgart, Karl Krämer Verlag, 1978)
- DOE, Department of the Environment: *Introduction to Energy Efficiency in Post Offices, Building Societies, Banks and Agencies* (Great Britain, Department of the Environment, March 1994)
- Gough, T.G.: *The Economics of Building Societies* (London, The Macmillan Press Ltd, 1982)
- Norkett, Paul: *Building Societies and Their Subsidiaries* (London, Routledge/Tekron Publications, 1989)
- Parissien, Steven (ed.): *Banking on Change: A Current Account of Britain's Historic Banks* (Great Britain, The Georgian Group etc, 1992)
- Sschumann-Bacia, Eva: *John Soane and the Bank of England* (London, Longman Group UK Ltd, 1991)
- Weingarden, Lauren S.: *Louis H. Sullivan: The Banks* (Cambridge, Massachusetts, The MIT Press, 1987)

ARCADES

- Geist, Johann Friedrich: *Arcades, the History of a Building Type* (Cambridge Massachusetts, MIT Press, 1983)
- MacKeith, Margaret: *Shopping Arcades: a Gazetteer of Extant British Arcades, 1817-1939* (London, Mansell, 1985)
- MacKeith, Margaret: *The History and Conservation of Shopping Arcades* (London, Mansell, 1986)

SHOPS

- Fitch, Rodney and Knobel, Lance: *Fitch on Retail Design* (Oxford, Phaidon Press Ltd, 1990)
- Green, William R.: *The Retail Store. Design and Construction*, 2nd edn (New York, Van Nostrand Reinhold, 1991)
- Israel, Lawrence J.: *Store Planning/Design. History, Theory, Process* (New York, John Wiley & Sons, Inc., 1994)
- Longstreth, Richard W.: *The Drive-in, the Supermarket, and the Transformation of Commercial Space in Los Angeles, 1914-1941* (Cambridge Massachusetts, London, MIT, 1999)
- Mun, David: *Shops. A Manual of Planning and Design* (London, The Architectural Press Ltd, 1986)
- Wawrowsky, Rhode Kellermann & Partners: *Architecture for the Retail Trade* (Basel, Birkhäuser Verlag, 1996)
- White, Ken: *Bookstore. Planning and Design* (New York, McGraw-Hill, Inc., 1982)

BIBLIOGRAPHY

WORKSHOPS AND INDUSTRIAL BUILDINGS

- Planning Commitments for Industry, Warehousing, Offices and Shops*, March 1984 (Reading, County Planning Department, 1984)
- The Effects of Retail Warehousing on a Traditional Town Centre: a Study of Chichester City Centre and the Portfield Retail Warehouse Park* (Chichester, West Sussex County Council, Planning Dept, 1992)
- Ackermann, Kurt: *Building for Industry* (UK, Watermark Publications Ltd, 1991)
- Bayliss, R.: *Carpentry and Joinery*, Book 1 (London, Hutchinson and Co. Ltd, 1981)
- Drury, Jolyon: *Factories. Planning, Design and Modernisation* (London, The Architectural Press Ltd, 1986)
- Eatwick-Field, John and Stillman, John: *The Design and Practice of Joinery* (London, The Architectural Press Ltd, 1973)
- Falconer, Peter and Drury, Jolyon: *Building and Planning for Industrial Storage and Distribution* (London, The Architectural Press Ltd, 1987)
- Grube, Oswald W.: *Industrial Buildings and Factories* (London, The Architectural Press Ltd, 1971)
- Peters, Paulhans: *Design and Planning: Factories* (New York, Van Nostrand Reinhold Company, 1972)
- Phillips, Alan: *The Best in Industrial Architecture* (London, B.T. Batsford Ltd, 1993)
- Scott, Ian: *Retail Warehousing* (London, Fletcher King, 1989)
- Tompkins, James A. et al: *Facilities Planning*, 2nd edn (New York, John Wiley & Sons, Inc., 1996)
- Törnqvist, Anders and Ullmark, Peter: *When People Matter* (Stockholm, The Swedish Council for Building Research, 1989)
- Wilkinson, Chris: *Supersheds. The Architecture of Long-Span, Large-Volume Buildings*, 2nd edn (London, The Architectural Press Ltd, 1995)

AGRICULTURAL BUILDINGS

- Environment Agency: *Farm Pollution and How to Avoid It* (leaflet)
- Environment Agency: *Farm Waste Management Plans* (leaflet)
- Environment Agency: *Farm Waste Minimisation* (leaflet)
- Environment Agency: *Farm Waste Regulations* (leaflet)
- Lake, Jeremy: *Historic Farm Buildings* (London, Blandford Press, 1989)
- Lytle, R.J.: *Farm Builder's Handbook*, 3rd edn (Farmington, Michigan, Structures Publishing Company, 1978)
- Noton, Nicholas H.: *Farm Buildings* (Reading College of Estate Management, 1982)
- Weller, John B.: *Farm Buildings. Techniques, Design, Profit*, Vol. 1 (London, Crosby Lockwood & Son Ltd, 1965)
- William, Eurwyn: *The Historical Farm Buildings of Wales* (Edinburgh, John Donald Publishers Ltd, 1986)

RAILWAYS

- European Transport Conference. Seminar A, 1999, Cambridge: *Operating Railways for Traffic Growth and Profit* (London, PTRC Education and Research Services on behalf of the Association for European Transport, 1999)
- Railway Group Standard: *Structure Gauging and Clearances*, GC/RT5204, Issue 2 (London, Safety & Standard Directorate Railtrack Plc, November 1995)
- Bertolini, Luca: *Cities on Rails, the Redevelopment of Railway Station areas* (London, E. & F.N. Spon, 1998)
- Ross, Julian: *Railway Stations: Planning, Design and Management* (Oxford, Architectural, 1999)

CAR PARKS AND GARAGES

- Multi-storey Car Parks in Shopping Centres and Office Blocks*. Report of the British Parking Association seminar held in London, 28 October 1980 in conjunction with the Royal Institute of British Architects and of the Open Meeting held on 27 March 1980 (St Albans, British Parking Association, 1980)
- Berwick-upon-Tweed (England), Borough Council: *Berwick-upon-Tweed Bus Station: Development Brief Approval*, 5 May 1994 (Berwick-upon-Tweed Borough Council, 1994)
- Chrest, Anthony P.: *Parking Structures, Planning, Design, Construction, Maintenance, and Repair*, 2nd edn (New York, London, Chapman & Hall, 1996)
- Institution of Structural Engineers: *Design Recommendations for Multi-storey and Underground Car Parks*. Revised report of a joint committee of the Institution of Structural Engineers and the Institution of Highways and Transportation, 2nd edn (London, Institution of Structural Engineers, 1984)
- McCluskey, Jim: *Parking: a Handbook of Environmental Design* (London, E. & F.N. Spon, 1987)
- Sedgwick, J.R.E.: *The Valuation and Development of Petrol Filling Stations* (1969)
- Taylor, D. H.: *Bus Station Planning and Design* (Coventry, University of Warwick, 1977)
- Wang, T.: *Workplace Parking Levy*, Prepared for the Chartered Institute of Transport and Royal Town Planning Institute (Crowthorne, Transport Research Laboratory, 1999)

AIRPORTS

- Asensio Cerver, Francisco: *Stations and Terminals* (New York, Arco for Hearst Books, 1997)
- Binney, Marcus: *Airport Builders* (London, Academy Editions, 1999)
- Blow, Christopher J.: *Airport Terminals*, 2nd edn (Oxford, Architectural Press, 1997)
- Bode, Steven et al. (eds): *Airport* (London, Photographers' Gallery, 1997)
- Edwards, Brian: *The Modern Terminal. New Approaches to Airport Architecture* (London, E. & F.N. Spon, 1998)

RESTAURANTS

- Abercrombie, Stanley: *Hospitality and Restaurant Design* (New York, Hearst, 1999)
- Baraban, Regina S. and Durocher, Joseph F.: *Successful Restaurant Design* (New York, Van Nostrand Reinhold, 1989)
- Casamassima, Christy: *Bar Excellence: Designs for Pubs and Clubs* (Glen Cove, New York, PBC International, 1999)
- Dartford, James: *Architects' Data Sheets. Dining Spaces* (London, Architecture Design and Technology Press, 1990)
- Entwistle, Jill: *Designing with Light: Bars and Restaurants* (Hove, RotoVision, 1999)
- Lawson, Fred: *Restaurants, Clubs and Bars* (London, The Architectural Press, 1987)

HOTELS AND MOTELS

- Architect's Journal (ed.): *Principles of Hotel Design* (London, The Architectural Press, 1970)
- Bangert, Albrecht and Riewoldt, Otto: *New Hotel Design* (London, Laurence King Publishing, 1993)
- Lawson, Fred R.: *Hotels and Resorts. Planning, Design and Refurbishment* (Oxford, Butterworth Architecture, 1995)
- Lawson, Fred R.: *Hotels, Motels and Condominiums: Design, Planning and Maintenance* (London, The Architectural Press Ltd, 1976)

BIBLIOGRAPHY

ZOOS AND AQUARIUMS

- Guillery, Peter: *The Buildings of London Zoo* (London, The Royal Commission on the Historical Monuments of England, 1993)
- Victorian Society: *Creature Comforts: The Problems of London Zoo*. Joint report issued by the Victorian Society and the Thirties Society, revised edn (London, Victorian Society, 1992)
- Wylson, Anthony and Patricia: *Theme Parks, Leisure Centres, Zoos and Aquaria* (Essex, Longman Group UK Ltd, 1994)

THEATRES AND CINEMAS

- Appleton, Ian: *Building for the Performing Arts. A Design and Development Guide* (Oxford, Butterworth Architecture, 1996)
- Athanasopoulos, Christos G.: *Contemporary Theater. Evolution and Design* (New York, John Wiley and Sons Inc., 1983)
- Barron, Michael: *Auditorium Acoustics and Architectural Design* (London, E. & F.N. Spon, 1993)
- Gray, Richard: *Cinemas in Britain. One Hundred Years of Cinema Architecture* (London, Lund Humphries Publishers, 1996)
- Home Office/The Scottish Office: *Guide to Fire Precautions in Existing Places of Entertainment and Like Premises* (London, HMSO, 1990)
- Izenour, George C.: *Theater Design* (New York, McGraw-Hill Book Company, 1977)
- Valentine, Maggie: *The Show Starts on the Sidewalk. An Architectural History of the Movie Theatre* (New Haven, London, Yale University Press, 1994)

SPORT AND RECREATION

- Konrath, Andrea: *Small Public Indoor Pools: Monitoring Report*, written by Andrea Konrath and Jenny King (London, Sports Council, 1994)
- Marchaj, C.A.: *Sailing Theory and Practice*, revised edn (London, Granada Publishing, 1982)
- The Sports Council, Guidance Notes: *Athletics – Outdoor* (London, Sports Council, March 1995)
- The Sports Council, Guidance Notes: *Cricket* (London, Sports Council, November 1994)
- The Sports Council, Guidance Notes: *Cricket – Indoor* (London, Sports Council, November 1994)
- The Sports Council, Guidance Notes: *Floodlighting* (London, Sports Council, November 1994)
- The Sports Council, Guidance Notes: *Shooting Ranges – Indoor* (London, Sports Council, November 1994)
- The Sports Council, Guidance Notes: *Tennis – Indoor* (London, Sports Council, November 1994)
- The Sports Council: *Handbook of Sports and Recreational Building Design, Vol. 1, Ice Rinks and Swimming Pools*. Edited by Geraint John and Helen Heard (London, Architectural Press Ltd, 1981)
- The Sports Council: *Handbook of Sports and Recreational Building Design, Vol. 2, Indoor Sports*. Edited by Geraint John and Kit Campbell (Oxford, Butterworth Architecture, 1995)
- The Sports Council: *Handbook of Sports and Recreational Building Design, Vol. 3, Outdoor Sports*. Edited by Geraint John and Helen Heard (London, Architectural Press Ltd, 1981)
- The Sports Council: *Handbook of Sports and Recreational Building Design, Vol. 4, Sports Data*. Edited by Geraint John and Helen Heard (London, Architectural Press Ltd, 1981)
- The Sports Council: *Small Public Indoor Pools: Technical Report* (London, Sports Council, 1993)
- The Sports Council: *The Small Pool Package: a Gift for*

Anyone Wanting to Build a Small Public Indoor Pool (London, Sports Council, 1995)

HEALTHCARE BUILDINGS

- Hosking, Sarah: *Healing the Hospital Environment: Design, Management and Maintenance of Healthcare Premises* (London, New York, E. & F.N. Spon, 1999)
- James, W. Paul and Tatton-Brown, William: *Hospitals. Design and Development* (London, Architectural Press Ltd, 1986)
- NHS Estates: *Accommodation for Day Care. Day Surgery Unit*. Health Building Note 52, Vol. 1 (London, HMSO, 1993)
- NHS Estates: *General Medical Practice Premises for the Provision of Primary Health Care Services*. Health Building Note 46 (London, HMSO, 1991)
- NHS Estates: *Local Healthcare Facilities*. Health Building Note 36, Vol. 1 (London, HMSO, 1995)
- Valins, Martin S.: *Primary Health Care Centres* (London, Longman Building Studies, 1993)

PLACES OF WORSHIP

- de Breffny, Brian: *The Synagogue* (London, Weidenfeld and Nicolson, 1978)
- Clowney, Paul and Tessa: *Exploring Churches* (Oxford, Lion Publishing Plc, 1993)
- Davies, J.G.: *Temples, Churches and Mosques. A Guide to the Appreciation of Religious Architecture* (Oxford, Basil Blackwell, 1982)
- Editors of Architectural Record Magazine: *Religious Buildings* (London, McGraw-Hill Book Company, 1979)
- Frishman, Martin and Khan, Hasan-Uddin: *The Mosque. History, Architectural Development and Regional Diversity* (London, Thames and Hudson Ltd, 1994)
- Gieselmann, Reinhard: *Contemporary Church Architecture* (London, Thames and Hudson Ltd, 1972)
- Heathcote, Edwin and Spens, Iona: *Church Builders* (Chichester, Academy Editions, 1997)
- Krinsky, Carol Herselle: *Synagogues of Europe. Architecture, History, Meaning* (New York, Cambridge Massachusetts, London, The Architectural History Foundation and the MIT Press, 1985)
- Serageldin, Ismail and Steele, James: *Architecture of the Contemporary Mosque* (London, Academy Editions, 1996)
- Wigoder, Geoffrey: *The Story of the Synagogue. A Diaspora Museum Book* (Jerusalem, The Domino Press, 1986)

CEMETERIES

- Colvin, Howard: *Architecture and the After-Life* (New Haven, London, Yale University Press, 1991)
- Curl, James Stevens: *A Celebration of Death* (London, B.T.Batsford Ltd, 1993)
- Hudson, Kenneth: *Churchyards and Cemeteries* (London, The Bodley Head Ltd, 1984)

GENERAL

- Adler, David (ed): *Metric Handbook. Planning and Design Data*, 2nd edn (Oxford, Architectural Press, 1999)
- Jones, Vincent: *Neufert Architects' Data*, 2nd (International) English Edition (Oxford, Blackwell Science, 1995)
- Powell-Smith, Vincent and Billington, M. J.: *The Building Regulations. Explained and Illustrated*, 9th edn (Oxford, Blackwell Science, 1992)
- Williams, Alan (ed.): *Specification 93*, Technical (London, Emap Business Publishing, 1993)

DRAUGHTING GUIDELINES

- BS ISO 128**
Technical drawings – General principles of presentation
ISO 128-23 1999
Lines on construction drawings
- BS ISO 536 1995** [AMD 1]
Paper and board – Determination of grammage
(Withdrawn, now known as BS EN ISO 536: 1997 (AMD 9309))
- BS EN ISO 1660 1996**
Technical drawings – Dimensioning and tolerancing of profiles
(Also known as BS 308: Section 2.3: 1996)
- BS ISO 3534**
Statistics – Vocabulary and symbols
ISO 3534-1 1993
Probability and general statistical terms
(Supersedes BS 5532: Part 1: 1978)
ISO 3534-2 1993
Statistical quality control
ISO 3534-3 1985
Design of experiments
(Previously known as BS 5532: Part 3: 1986)
- BS EN ISO 3766 1999**
Construction drawings – Simplified representation of concrete reinforcement
(With BS EN ISO 7518: 1999, supersedes BS 1192-3: 1987)
- BS EN ISO 4157**
Construction drawings – Designation systems
EN ISO 4157-1 1999
Buildings and parts of buildings
(Partially supersedes BS 1192-1: 1984)
EN ISO 4157-2 1999
Room names and numbers
EN ISO 4157-3 1999
Room identifiers
- BS EN ISO 4172 1997**
Technical drawings – Construction drawings – Drawings for the assembly of prefabricated structures
- BS EN ISO 5261 1999**
Technical drawings – Simplified representation of bars and profile sections
- BS EN ISO 5456**
Technical drawings – Projection methods
EN ISO 5456-1 1999
Synopsis
EN ISO 5456-2 1999
Orthographic representations
EN ISO 5456-3 1999
Axonomic representations
- BS EN ISO 5457 1999**
Technical product documentation – Sizes and layout of drawing sheets
(Supersedes BS 3429: 1984)

- BS EN ISO 6284 1999**
Construction drawings – Indication of limit deviations
(Partially supersedes BS 1192-1: 1984)
- BS EN ISO 6412**
Technical drawings – Simplified representation of pipelines
EN ISO 6412-1 1995
General rules and orthogonal representation
(Also known as BS 308: Section 4.6: 1995)
EN ISO 6412-2 1995
Isometric projection
(Also known as BS 308: Section 4.7: 1995)
EN ISO 6412-3 1996
Terminal features of ventilation and drainage systems
(Also known as BS 308: Section 4.8: 1996)
- BS EN ISO 6413 1995**
Technical drawings – Representations of spines and serrations
(Also known as BS 308: Section 1.9 1995 and part supersedes BS 308: Part 1)
- BS EN ISO 6414 1995**
Technical drawings for glassware
(Previously known as BS 2774: 1983)
- BS EN ISO 6433 1995**
Technical drawing – Item references
(Also known as BS 308: Section 1.8: 1995)
- BS EN ISO 7437 1996**
Technical drawings – Construction drawings – General rules for execution of production drawings for prefabricated structural components
- BS EN ISO 7518 1999**
Construction drawings – Simplified representation of demolition and rebuilding
(With BS EN ISO 3766: 1999, supersedes BS 1192-3: 1987)
- BS EN ISO 7519 1997**
Technical drawings – Construction drawings – General principles of presentation for general arrangement and assembly drawings
- BS EN ISO 8560 1999**
Construction drawings – Representation of modular sizes, lines and grids
(Partially supersedes BS 1192-1: 1984)
- BS EN ISO 9431 1999**
Construction drawings – Spaces for drawing and for text, and title blocks on drawing sheets
(Partially supersedes BS 1192-1: 1984)
- BS ISO/IEC 9636**
Information technology – Computer graphics – Interfacing techniques

RELATED STANDARDS

- for dialogues with graphical devices (CGI) – Functional specification*
ISO/IEC 9636-1 1991
Overview, profiles, and conformance
ISO/IEC 9636-2 1991
Control
ISO/IEC 9636-3 1991
Output
ISO/IEC 9636-4 1991
Segments
ISO/IEC 9636-5 1991
Input and echoing
ISO/IEC 9636-6 1991
Raster
- BS ISO/IEC 9637**
Information technology – Computer graphics – Interfacing techniques for dialogues with graphical devices (CGI) – Data stream binding
ISO/IEC 9637-1 1994
Character encoding
ISO/IEC 9637-2 1992
Binary encoding
- BS ISO/IEC 9638**
Information technology – Computer graphics – Interfacing techniques for dialogues with graphical devices (CGI) – Language bindings
ISO/IEC 9638-3 1994
Ada
- BS ISO/IEC 9646**
Information technology – Open Systems Interconnection – Conformance testing methodology and framework
ISO/IEC 9646-1 1991 [AMD 0]
General concepts
(Also known as BS EN 29646-1: 1992)
- BS EN ISO 11091 1999**
Construction drawings – Landscape drawing practice
(Supersedes BS 1192-3: 1987 and BS 1192-4: 1984)
- BS EN 60617**
Graphical symbols for diagrams
EN 60617-2 1996
Symbol elements, qualifying symbols and other symbols having general application
(Supersedes BS 3939: Part 2: 1985)
EN 60617-11 1997
Architectural and topographical installation plans and diagrams
(Supersedes BS 3939: Part 11: 1985)
- BS EN 81714**
Design of graphical symbols for use in the technical documentation of products
EN 81714-2 1999
Specification for graphical symbols in a computer sensible form, including graphical symbols for a reference library, and requirements for their interchange

MEASUREMENT BASIS

BS EN ISO 7250 1998

Basic human body measurements for technological design

DESIGN

BS ISO 6243 1997

Climatic data for building design – Proposed system of symbols

CONSTRUCTION MANAGEMENT

BS EN 1325

Value management, value analysis, functional analysis vocabulary

EN 1325-1 1997

Value analysis and functional analysis

BS EN ISO 9000

Quality management and quality assurance standards

EN ISO 9000-1 1994

Guidelines for selection and use (Previously known as BS 5750: Section 0.1: 1987)

BS EN 13290

Space project management – General requirements

EN 13290-1 1999

Policy and principles

BS EN ISO 14001 1996

Environmental management systems – Specification with guidance for use (Supersedes BS 7750: 1994 which remains current)

BS EN ISO 14010 1996

Guidelines for environmental auditing – General principles

BS EN ISO 14011 1996

Guidelines for environmental auditing – Audit procedures – Auditing of environmental management systems

BS EN ISO 14012 1996

Guidelines for environmental auditing – Qualification criteria for environmental auditors

BS EN ISO 14040 1997

Environmental management – Life cycle assessment – Principles and framework

BS EN ISO 14041 1998

Environmental management – Life cycle assessment – Goal and scope definition and inventory analysis

TOOLS AND EQUIPMENT

BS EN 131

Ladders

EN 131-1 1993 [AMD 2]

Terms, types, functional sizes (Incorporating Corrigendum No.1 [AMD 7873])

EN 131-2 1993

Requirements, testing, marking (Incorporating Corrigendum No.1 [AMD 7874])

BS EN 204 1991

Classification of non-structural

adhesives for joining of wood and derived timber products

(Supersedes DD 74: 1981)

BS EN 205 1991

Test methods for wood adhesives for non-structural applications – Determination of tensile shear strength of lap joints (Supersedes DD 74: 1981)

BS EN 301 1992

Adhesives, phenolic and aminoplastic, for load-bearing timber structures: classification and performance requirements (Supersedes BS 1204: Parts 1 and 2: 1979)

BS EN 302

Adhesives for load-bearing timber structures: test methods

EN 302-1 1992

Determination of bond strength in longitudinal tensile shear (Supersedes BS 1204: Parts 1 and 2: 1979)

EN 302-2 1992 [AMD 1]

Determination of resistance to delamination (Laboratory method) (Supersedes BS 1204: Parts 1 and 2: 1979)

EN 302-3 1992

Determination of the effect of acid damage to wood fibres by temperature and humidity cycling on the transverse tensile strength (Supersedes BS 1204: Parts 1 and 2: 1979)

EN 302-4 1992

Determination of the effects of wood shrinkage on the shear strength (Supersedes BS 1204: Parts 1 and 2: 1979)

BS EN 330 1993

Wood preservatives – Field test method for determining the relative protective effectiveness of a wood preservative for use under a coating and exposed out of ground contact: L-joint method

BS ISO 445 1996 [AMD 1]

Pallets for materials handling – Vocabulary (Withdrawn, now known as BS EN ISO 445: 1999)

BS EN ISO 445 1999

Pallets for materials handling – Vocabulary (Previously known as BS ISO 445: 1999)

BS EN 474

Earth-moving machinery – Safety

EN 474-1 1995 [AMD 2]

General requirements

EN 474-2 1996

Requirements for tractor-dozers

EN 474-3 1996

Requirements for loaders

EN 474-4 1996

Requirements for backhoe loaders

EN 474-5 1996 [AMD 1]

RELATED STANDARDS

Requirements for hydraulic excavators

EN 474-6 1997 [AMD 1]

Requirements for dumpers

EN 474-7 1998

Requirements for scrapers

EN 474-8 1998

Requirements for graders

EN 474-9 1998

Requirements for pipelayers

EN 474-10 1998

Requirements for trenchers

EN 474-11 1998

Requirements for earth and landfill compactors

BS ISO 509 1996

Pallet trucks – Principal dimensions (Supersedes BS 4155: 1967)

BS EN 847

Tools for woodworking – Safety requirements

EN 847-1 1997

Milling tools and circular saw blades

BS EN 848

Safety of woodworking machines

– One side moulding machines with rotating tool

EN 848-1 1999

Single spindle vertical moulding machines

EN 848-2 1999

Single spindle handfed/integrated fed routing machines

EN 848-3 1999

CNC woodworking machines

BS EN 859 1998

Safety of woodworking machines – Handfed surface planing machines

BS EN 860 1997

Safety of woodworking machines – One side thickness planing machines

BS EN 861 1998

Safety of woodworking machines – Surface planing and thicknessing machines

BS EN 873 1997

Light conveyor belts – Principal characteristics and applications

BS EN 940 1997

Safety of woodworking machines – Combined woodworking machines

PD 1000 1999

Universal Decimal Classification – Pocket Edition

BS EN 1493 1999

Vehicle lifts

(Supersedes BS AU 161-1b and BS AU 161-2: 1989)

BS EN 1495 1998

Lifting platforms – Mast climbing work platforms

BS EN 1554 1999

Conveyor belts – Drum friction testing

(Supersedes BS 490: Section 11.3: 1991)

- BS EN 1570** 1999
Safety requirements for lifting tables
(Supersedes BS 5323: 1980)
- BS EN 1870**
Safety of woodworking machines – Circular sawing machines
EN 1870-1 1999
Circular saw benches (with and without sliding table) and dimension saws
(Incorporating Corrigendum No.1)
EN 1870-2 1999
Horizontal beam panel saws and vertical panel saws
- BS ISO 2328** 1993
Fork lift trucks – Hook-on type fork arms and fork arm carriages – Mounting dimensions
- BS ISO 2330** 1995
Fork-lift trucks – Fork arms – Technical characteristics and testing
(Supersedes BS 5639: Part 4: 1978)
- BS ISO 8566**
Cranes – Cabins
ISO 8566-4 1998
Jib cranes
- BS ISO 10972**
Cranes – Requirements for mechanisms
ISO 10972-1 1998
General
- BS ISO 11994** 1997
Cranes – Availability – Vocabulary
- BS EN 60417**
Graphical symbols for use on equipment
EN 60417-1 1999
Overview and application
EN 60417-2 1999
Symbol originals
- BS EN 61010**
Safety requirements for electrical equipment for measurement, control and laboratory use

BUILDING COMPONENTS

- BS EN 196**
Methods of testing cement
EN 196-5 1995
Pozzolanicity test for pozzolanic cements
(Supersedes BS 4550: Part 2: 1970)
EN 196-6 1992
Determination of fineness
(Supersedes BS 4550: Sections 3.2 and 3.3: 1978)
EN 196-7 1992
Methods of taking and preparing samples of cement
(Supersedes BS 4550: Part 1: 1978)
EN 196-21 1992
Determination of the chloride, carbon dioxide and alkali content of cement
- BS EN 233** 1999
Wallcoverings in roll form – Specification for finished

- wallpapers, wall vinyls and plastics wallcoverings*
- BS EN 234** 1997
Wallcoverings in roll form – Specification for wallcoverings for subsequent decoration
(Supersedes BS 1248: Part 3: 1990)
- BS EN 253** 1995
Preinsulated bonded pipe systems for underground hot water networks – pipe assembly of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene
(Supersedes BS 4508: Part 3: 1977)
- BS EN 259** 1997
Wallcoverings in roll form – Specification for heavy duty wallcoverings
(Supersedes BS EN 259: 1992)
- BS EN 266** 1992
Textile wallcoverings
- BS EN 295**
Vitrified clay pipes and fittings and pipe joints for drains and sewers
EN 295-5 1994 [AMD 1]
Requirements for perforated vitrified clay pipes and fittings
EN 295-6 1996
Requirements for vitrified clay manholes
EN 295-7 1996
Requirements for vitrified clay pipes and joints for pipe jacking
- BS EN 300** 1997
Oriented Strand Boards (OSB) – Definitions, classification and specifications
(Supersedes BS 5669: Part 3 which remains current)
- BS EN 309** 1992
Wood particleboards – Definition and classification
- BS EN 310** 1993
Wood based panels – Determination of modulus of elasticity in bending and of bending strength
- BS EN 311** 1992
Particleboards – Surface soundness of particleboards, test method
- BS EN 312**
Particleboards – Specifications
EN 312-1 1997
General requirements for all board types
(With BS EN 312-2, 3, 4, 5, 6, 7, supersedes BS 5669: Parts 1 and 2: 1989)
EN 312-2 1997
Requirements for general purpose boards for use in dry conditions
(With BS EN 312-1, 3, 4, 5, 6, 7, supersedes BS 5669: Parts 1 and 2: 1989)
EN 312-3 1997

RELATED STANDARDS

- Requirements for boards for interior fitments (including furniture) for use in dry conditions*
(With BS EN 312-1, 2, 4, 5, 6, 7, supersedes BS 5669: Parts 1 and 2: 1989)
- EN 312-4** 1997
Requirements for load-bearing boards for use in dry conditions
(With BS EN 312-1, 2, 3, 5, 6, 7, supersedes BS 5669: Parts 1 and 2: 1989)
- EN 312-5** 1997
Requirements for load-bearing boards for use in humid conditions
(With BS EN 312-1 to -4 and -6, will supersede BS 5669: Part 2: 1989)
- EN 312-6** 1997
Requirements for heavy duty load-bearing boards for use in dry conditions
(With BS EN 312-1, 2, 3, 4, 5, 7 will supersede BS 5669: Parts 1 and 2: 1989)
- EN 312-7** 1997
Requirements for heavy-duty load-bearing boards for use in humid conditions
(With BS EN 312-1 to -6 will supersede BS 5669: Part 2: 1989)
- BS EN 313**
Plywood – Classification and terminology
EN 313-1 1996
Classification
EN 313-2 1995
Terminology
- BS EN 314**
Plywood – Bonding quality
EN 314-1 1993
Test methods
EN 314-2 1993
Requirements
- BS EN 315** 1993
Plywood – Tolerances for dimensions
- BS EN 316** 1999
Wood fibreboards – Definition, classification and symbols
- BS EN 317** 1993
Particleboards and fibreboards – Determination of swelling in thickness after immersion in water
- BS EN 318** 1993
Fibreboards – Determination of dimensional changes associated with changes in relative humidity
- BS EN 319** 1993
Particleboards and fibreboards – Determination of tensile strength perpendicular to the plane of the board
- BS EN 320** 1993
Fibreboards – Determination of resistance to axial withdrawal of screws
- BS EN 321** 1993 [AMD 1]
Fibreboards – Cyclic tests in

humid conditions
BS EN 322 1993
Wood based panels – Determination of moisture content
BS EN 323 1993
Wood based panels – Determination of density
BS EN 324
Wood based panels – Determination of dimensions of boards
EN 324-1 1993
Determination of thickness, width and length
EN 324-2 1993
Determination of squareness and edge straightness
BS EN 325 1993
Wood based panels – Determination of dimensions of test pieces
BS EN 326
Wood based panels – Sampling, cutting and inspection
EN 326-1 1994
Sampling and cutting of test pieces and expression of test results
EN 326-3 1998
Inspection of a consignment of panels
BS EN 336 1995 [AMD 1]
Structural timber – Coniferous and poplar – Sizes – Permissible deviations
BS EN 338 1995
Structural timber – Strength classes
BS EN 380 1993
Timber structures – Test methods – General principles for static load testing
BS EN 382
Fibreboards – Determination of surface absorption
EN 382-1 1993
Test method for dry process fibreboards
EN 382-2 1994
Test method for hardboards
BS EN 383 1993
Timber structures – Test methods – Determination of embedding strength and foundation values for dowel type fasteners
BS EN 384 1995
Structural timber – Determination of characteristic properties and density
BS EN 385 1995
Finger jointed structural timber – Performance requirements and minimum production requirements
 (Supersedes BS 5291: 1984)
BS EN 386 1995
Glue laminated timber – Performance requirements and minimum production requirements

(Partially supersedes BS 4169: 1988)
BS EN 390 1995
Glued laminated timber – Sizes – Permissible deviations
BS EN 391 1995
Glued laminated timber – Delamination test of glue lines
 (Partially supersedes BS 4169: 1988)
BS EN 392 1995
Glued laminated timber – Shear test of glue lines
 (Partially supersedes BS 4169: 1988)
BS EN 408 1995
Timber structures – Structural timber and glued laminated timber – Determination of some physical and mechanical properties
 (Supersedes BS 5820: 1979)
BS EN 409 1993
Timber structures – Test methods – Determination of the yield moment of dowel-type fasteners – Nails
BS EN 413
Masonry cement
EN 413-2 1995
Test methods
BS EN 423 1993
Resilient floor coverings – Determination of the effect of stains
BS EN 424 1993
Resilient floor coverings – Determination of the effect of the simulated movement of a furniture leg
BS EN 425 1994
Resilient floor coverings – Determination of the effect of a castor chair
BS EN 426 1993
Resilient floor coverings – Determination of width, length, straightness and flatness of sheet material
BS EN 427 1994
Resilient floor coverings – Determination of the side length, squareness and straightness of tiles
BS EN 428 1993
Resilient floor coverings – Determination of overall thickness
BS EN 429 1993
Resilient floor coverings – Determination of the thickness of layers
BS EN 430 1994
Resilient floor coverings – Determination of mass per unit area
BS EN 431 1994
Resilient floor coverings – Determination of peel resistance
BS EN 432 1994
Resilient floor coverings –

RELATED STANDARDS

Determination of shear force
BS EN 433 1994
Resilient floor coverings – Determination of residual indentation after static loading
BS EN 434 1994
Resilient floor coverings – Determination of dimensional stability and curling after exposure to heat
BS EN 435 1994
Resilient floor coverings – Determination of flexibility
BS EN 436 1994
Resilient floor coverings – Determination of density
BS EN 459
Building lime
EN 459-2 1995
Test methods
BS EN 460 1994
Durability of wood and wood based products – Natural durability of solid wood – Guide to the durability requirements for wood to be used in hazard classes
BS EN 480
Admixtures for concrete, mortar and grout – Test methods
EN 480-1 1998
Reference concrete and reference mortar for testing
EN 480-2 1997
Determination of setting time
EN 480-4 1997
Determination of bleeding of concrete
EN 480-5 1997
Determination of capillary absorption
EN 480-6 1997
Infrared analysis
EN 480-8 1997
Determination of the conventional dry material content
EN 480-10 1997
Determination of water soluble chloride content
EN 480-11 1999
Determination of air void characteristics in hardened concrete
EN 480-12 1998
Determination of the alkali content of admixtures
BS EN 490 1994
Concrete roofing tiles and fittings – Product specifications
 (Supersedes BS 473, 550: 1990)
BS EN 491 1994
Concrete roofing tiles and fittings – Test methods
 (Supersedes BS 473, 550: 1990)
BS EN 492 1994 [AMD 3]
Fibre-cement slates and their fittings for roofing – Product specification and test methods
 (Supersedes BS 690: Part 4: 1974)
BS EN 494 1994 [AMD 3]
Fibre-cement profiled sheets and

fittings for roofing – Product specification and test methods (Supersedes BS 690: Part 3: 1973, Part 6, 1976 and BS 4624: Section 2: 1981)

BS EN 501 1994
Roofing products from metal sheet – Specification for fully supported roofing products of zinc sheet

BS EN 516 1995
Prefabricated accessories for roofing – Installations for roof access – Walkways, treads and steps

BS EN 517 1995
Prefabricated accessories for roofing – Roof safety hooks

BS EN 518 1995
Structural timber – Grading – Requirements for visual strength grading standards

BS EN 519 1995
Structural timber – Grading – Requirements for machine strength graded timber and grading machines

BS EN 538 1994
Clay roofing tiles for discontinuous laying – Flexural strength test

BS EN 539
Clay roofing tiles for discontinuous laying – Determination of physical characteristics

EN 539-1 1994
Impermeability test

EN 539-2 1998
Test for frost resistance

BS EN 548 1997
Resilient floor coverings – Specification for plain and decorative linoleum

BS EN 588
Fibre-cement pipes for sewers and drains

EN 588-1 1997
Pipes, joints and fittings for gravity systems (Supersedes BS 3656: 1981)

BS EN 594 1996
Timber structures – Test methods – Racking strength and stiffness of timber frame wall panels

BS EN 595 1995
Timber structures – Test methods – Test trusses for the determination of strength and deformation behaviour

EN ISO 595-2 1995
Design performance requirements and tests (Previously known as BS 1263: Part 2: 1989)

BS EN 596 1995
Timber structures – Test methods – Soft body impact test of timber framed walls

BS EN 598 1995
Ductile iron pipes, fittings,

accessories and their joints for sewerage applications – Requirements and test methods

BS EN 607 1996
Eaves gutters and fittings made of PVC-U – Definitions, requirements and testing (Partially supersedes BS 4576: Part 1: 1989)

BS EN 612 1996 [AMD 1]
Eaves gutters and rainwater downpipes of metal sheet – Definitions, classifications and requirements (Supersedes BS 1431: 1969, BS 1091: Section 1:1: 1963, BS 2997: Sections C and D:1958)

BS EN 622
Fibreboards – Specifications

EN 622-1 1997
General requirements (Together with BS EN 622-2 to -5 partially supersedes BS 1142: 1989)

EN 622-2 1997
Requirements for hardboards (With BS EN 622-1, -3 to -5, will supersede BS 1142: 1989)

EN 622-3 1997
Requirements for medium boards (With BS EN 622-1 and 2, and -4 to -5 partially supersedes BS 1142: 1989)

EN 622-4 1997
Requirements for softboards (With BS EN 622-1 to -3 and -5 partially supersedes BS 1142: 1989)

EN 622-5 1997
Requirements for dry process boards (MDF) (With BS EN 622-1 to -4 partially supersedes BS 1142: 1989)

BS EN 633 1994
Cement-bonded particleboards – Definition and classification

BS EN 634
Cement-bonded particle-boards – Specification

EN 634-1 1995
General requirements

EN 634-2 1997
Requirements for OPC bonded particleboards for use in dry, humid and exterior conditions (Partially supersedes BS 5669: Part 4: 1989)

BS EN 635
Plywood – Classification by surface appearance

EN 635-1 1995
General

EN 635-2 1995 [AMD 1]
Hardwood (Partially supersedes BS 6566: Part 6: 1985)

EN 635-3 1995 [AMD 1]
Softwood (Partially supersedes BS 6566: Part 6: 1985)

RELATED STANDARDS

EN 635-5 1999
Methods of measuring and expressing characteristics and defects

BS EN 636
Plywood – Specifications

EN 636-1 1997
Requirements for plywood for use in dry conditions

EN 636-2 1997
Requirements for plywood for use in humid conditions

EN 636-3 1997
Requirements for plywood for use in exterior conditions

BS EN 637 1995
Plastics piping systems – Glass-reinforced plastics components – Determination of the amounts of constituents using the gravimetric method (Incorporated in BS 2782: Part 12: Method 1205A: 1995)

BS EN 649 1997
Resilient floor coverings – Homogeneous and heterogeneous polyvinyl chloride floor coverings – Specification (Supersedes BS 2592: 1973 and BS 3261: Part 1: 1973)

BS EN 650 1997
Resilient floor coverings – Polyvinyl chloride floor coverings on jute backing or on polyester felt backing or on polyester felt with polyvinyl chloride backing – Specification (Supersedes BS 5085: Part 1: 1974)

BS EN 651 1997 [AMD 1]
Resilient floor coverings – Polyvinyl chloride floor coverings with foam layer – Specification (Supersedes BS 5085: Part 2: 1976)

BS EN 652 1997
Resilient floor coverings – Polyvinyl chloride floor coverings with cork-based backing – Specification

BS EN 653 1997
Resilient floor coverings – Expanded (cushioned) polyvinyl chloride floor coverings – Specification

BS EN 654 1997
Resilient floor coverings – Semi-flexible polyvinyl chloride tiles – Specification (Supersedes BS 3260:1969)

BS EN 655 1997
Resilient floor coverings – Tiles of agglomerated composition cork with polyvinyl chloride wear layer – Specification

BS EN 660
Resilient floor coverings – Determination of wear resistance

EN 660-1 1999
Stuttgart test

EN 660-2 1999
Frick-Taber test

BS EN 661 1995
Resilient floor coverings – Determination of the spreading of water

BS EN 662 1995
Resilient floor coverings – Determination of curling on exposure to moisture

BS EN 663 1995
Resilient floor coverings – Determination of conventional pattern depth

BS EN 664 1995
Resilient floor coverings – Determination of volatile loss

BS EN 665 1995
Resilient floor coverings – Determination of exudation of plasticizers

BS EN 666 1995
Resilient floor coverings – Determination of gelling

BS EN 669 1998
Resilient floor coverings – Determination of dimensional stability of linoleum tiles caused by changes in atmospheric humidity

BS EN 670 1998
Resilient floor coverings – Identification of linoleum and determination of cement content and ash residue

BS EN 672 1997
Resilient floor coverings – Determination of apparent density of agglomerated cork

BS EN 678 1994
Determination of the dry density of autoclaved aerated concrete

BS EN 679 1994
Determination of the compressive strength of autoclaved aerated concrete

BS EN 680 1994
Determination of the drying shrinkage of autoclaved aerated concrete

BS EN 685 1996
Resilient floor coverings – Classification

BS EN 686 1997
Resilient floor coverings – Specification for plain and decorative linoleum on a foam backing

BS EN 687 1997 [AMD 1]
Resilient floor coverings – Specification for plain and decorative linoleum on a corkment backing

BS EN 688 1997
Resilient floor coverings – Specification for cork linoleum

BS EN 695 1997
Kitchen sinks – Connecting dimensions

BS EN 712 1995
Thermoplastics piping systems – End load bearing mechanical joints between pressure pipes and fittings – Test method for resistance to pull-out under constant longitudinal force (Also known as BS 2782: Method 112311: 1995)

BS EN 713 1995 [AMD 1]
Plastics piping systems – Mechanical joints between fittings and polyolefin pressure pipes – Test method for leak tightness under internal pressure of assemblies subjected to bending (Also known as BS 2782: Method 1123B: 1995)

BS EN 714 1995
Thermoplastics piping systems – Non-end load bearing elastomeric sealing ring type joints between pressure pipes and moulded fittings – Test method for leak tightness under internal hydrostatic pressure without end thrust (Also known as BS 2782: Method 1123F: 1995)

BS EN 715 1995
Thermoplastics piping systems – End load bearing joints between small diameter pressure pipes and fittings – Test method for leak tightness under internal water pressure, including end thrust (Also known as BS 2782: Method 1123G: 1995)

BS EN 752
Drains and sewer systems outside buildings

EN 752-1 1996
Generalities and definitions (Supersedes BS 8005: Part 0: 1987 and clause 4 of BS 8301: 1985)

EN 752-2 1997
Performance requirements

EN 752-3 1997
Planning

EN 752-4 1998
Hydraulic design and environmental considerations (Supersedes BS 8005-1-5 and BS 8301: 1985)

EN 752-5 1998
Rehabilitation

EN 752-6 1998
Pumping installations

EN 752-7 1998
Maintenance and operations (Incorporating Corrigendum No.1)

BS EN 772
Methods of test for masonry units

EN 772-2 1998
Determination of percentage area of voids in aggregate concrete masonry units (by paper indentation)

EN 772-3 1998
Determination of net volume and

RELATED STANDARDS

percentage of voids of clay masonry units by hydrostatic weighing

EN 772-4 1998
Determination of real and bulk density and of total and open porosity for natural stone masonry units

EN 772-7 1998
Determination of water absorption of clay masonry damp proof course units by boiling in water (Will partially supersede BS 3921: 1985)

EN 772-9 1998
Determination of volume and percentage of voids and net volume of calcium silicate masonry units by sand filling

EN 772-10 1999
Determination of moisture content of calcium silicate and autoclaved aerated concrete units

BS EN 789 1996
Timber structures – Test methods – Determination of mechanical properties of wood-based panels

BS EN 877 1999
Cast iron pipes and fittings, their joints and accessories for the evacuation of water from buildings – Requirements, test methods and quality assurance (Supersedes BS 416-2: 1990)

BS EN 911 1996
Plastics piping systems – Elastomeric sealing ring type joints and mechanical joints for thermoplastics pressure piping – Test method for leak tightness under external hydrostatic pressure (Also known as BS 2782: Part 11: Method 1123W: 1996)

BS EN 942 1996
Timber in joinery – General classification of timber quality (Supersedes BS 1186: Part 1: 1991)

BS EN 971
Paints and varnishes – Terms and definitions for coating materials

EN 971-1 1996
General terms (Supersedes some terms in BS 2015: 1992)

BS EN 975
Sawn timber – Appearance grading of hardwoods

BS EN 989 1996
Determination of the bond behaviour between reinforcing bars and autoclaved aerated concrete by the 'push-out' test

BS EN 990 1996
Test methods for verification of corrosion protection of reinforcement in autoclaved aerated concrete and lightweight

aggregate concrete with open structure

BS EN 991 1996
Determination of the dimensions of prefabricated reinforced components made of autoclaved aerated concrete, or lightweight aggregate concrete with open structure

BS EN 1015
Methods of test for mortar for masonry

EN 1015-1 1999
Determination of particle size distribution (by sieve analysis)
 (Will partially supersede BS 4551-1: 1998)

EN 1015-2 1999
Bulk sampling of mortars and preparation of test mortars
 (Will partially supersede BS 4551-1: 1998)

EN 1015-3 1999
Determination of consistence of fresh mortar (by flow table)

EN 1015-4 1999
Determination of consistence of fresh mortar (by plunger penetration)
 (Will partially supersede BS 4551-1: 1998)

EN 1015-6 1999
Determination of bulk density of fresh mortar
 (Will partially supersede BS 4551-1: 1998)

EN 1015-7 1999
Determination of air content of fresh mortar
 (Will partially supersede BS 4551-1: 1998)

EN 1015-9 1999
Determination of workable life and correction time of fresh mortar

EN 1015-10 1999
Determination of dry bulk density of hardened mortar

EN 1015-11 1999
Determination of flexural and compressive strength of hardened mortar

EN 1015-19 1999
Determination of water vapour permeability of hardened rendering and plastering mortars
 (Partially supersedes BS 4551-1: 1998)

BS EN 1024 1997
Clay roofing tiles for discontinuous laying – Determination of geometric characteristics

BS EN 1036 1999
Glass in building – Mirrors from silver-coated float glass for internal use

BS EN ISO 1043
Plastics – Symbols and

abbreviated terms

BS EN 1052
Methods of test for masonry

EN 1052-1 1999
Determination of compressive strength
 (Partially supersedes BS 5628-1: 1992)

EN 1052-2 1999
Determination of flexural strength

BS EN 1053 1996
Plastics piping systems – Thermoplastics piping systems for non-pressure applications – Test method for watertightness
 (Also known as BS 2782: Method 1112B: 1996, supersedes BS 2782: Method 1112A: 1989)

BS EN 1054 1996
Plastics piping systems – Thermoplastics piping systems for soil and waste discharge – Test method for airtightness of joints
 (Also known as BS 2782: Method 1112C: 1996)

BS EN 1055 1996
Plastics piping systems – Thermoplastics piping systems for soil and waste discharge inside buildings – Test method for resistance to elevated temperature cycling
 (Also known as BS 2782: Method 1111A: 1996)

BS EN 1056 1996
Plastics piping and ducting systems – Plastics pipes and fittings – Method for exposure to direct (natural) weathering
 (Also known as BS 2782: Method 1107A: 1996)

BS EN 1058 1996
Wood-based panels – Determination of characteristic values of mechanical properties and density

BS EN 1059 1999
Timber structures – Product requirements for prefabricated trusses using punched metal plate fasteners

BS EN 1072 1995
Plywood – Description of bending properties for structural plywood

BS EN 1091 1997
Vacuum sewerage systems outside buildings

BS EN 1125 1997
Building hardware – Panic exit devices operated by a horizontal bar – Requirements and test methods
 (Replaces BS 5725: Part 1: 1981)

BS EN 1128 1996
Cement-bonded particleboards – Determination of hard body impact resistance

BS EN 1169 1999
Precast concrete products –

RELATED STANDARDS

General rules for factory production control of glass-fibre reinforced cement

BS EN 1170
Precast concrete products – Test method for glass-fibre reinforced cement

EN 1170-1 1998
Measuring the consistency of the matrix – ‘Slump test’ method
 (With BS EN 1170: Parts 2-7 supersede BS 6432: 1984)

EN 1170-2 1998
Measuring the fibre content in fresh GRC, ‘Wash out test’

EN 1170-3 1998
Measuring the fibre content of sprayed GRC
 (With BS EN 1170: Parts 1, 2 and 4 to 7 supersedes BS 6432: 1984)

BS EN 1193 1998
Timber structures – Structural timber and glued laminated timber – Determination of shear strength and mechanical properties perpendicular to the grain

BS EN 1194 1999
Timber structures – Glued laminated timber – Strength classes and determination of characteristic values

BS EN 1195 1998 [AMD 1]
Timber structures – Test methods – Performance of structural floor decking

BS EN 1253
Gullies for buildings

EN 1253-1 1999
Requirements

EN 1253-2 1999
Test methods

EN 1253-3
Quality control

BS EN 1295
Structural design of buried pipelines under various conditions of loading

EN 1295-1 1998
General requirements

BS EN 1304 1998
Clay roofing tiles for discontinuous laying – Products definitions and specifications
 (Supersedes BS 402-1: 1990)

BS EN 1307 1997
Textile floor coverings – Classification of pile carpets
 (Supersedes BS 7131: Part 1: 1989)

BS EN 1309
Round and sawn timber – Method of measurement of dimensions

EN 1309-1 1997
Sawn timber

BS EN 1310 1997
Round and sawn timber – Method of measurement of features

BS EN 1311 1997
Round and sawn timber – Method

of measurement of biological degrade

BS EN 1312 1997
Round and sawn timber – Determination of the batch volume of sawn timber

BS EN 1313
Round and sawn timber – Permitted deviations and preferred sizes
EN 1313-1 1997
Softwood sawn timber (Supersedes BS 4471: 1987)
EN 1313-2 1999
Hardwood sawn timber (Supersedes BS 5450: 1977)

BS EN 1315
Dimensional classification
EN 1315-1 1997
Hardwood round timber
EN 1315-2 1997
Softwood round timber

BS EN 1316
Hardwood round timber – Qualitative classification
EN 1316-1 1997
Oak and beech
EN 1316-2 1997
Poplar
EN 1316-3 1998
Ash and maples and sycamore

BS EN 1356 1997
Performance test for prefabricated reinforced-components of autoclaved aerated concrete or lightweight aggregate concrete with open structure under transverse load

BS EN 1380 1999
Timber structures – Test methods – Load bearing nailed joints (Together with BS EN 1381, 1382 and 1383: 1999, partially supersedes BS 6948: 1989)

BS EN 1381 1999
Timber structures – Test methods – Load bearing stapled joints (Together with BS EN 1380, 1382 and 1383: 1999, partially supersedes BS 6948: 1989)

BS EN 1383 1999
Timber structures – Test methods – Pull-through resistance of timber fasteners (Together with BS EN 1380, 1381 and 1382: 1999, supersedes BS 6948: 1989)

BS EN 1399 1998
Resilient floor coverings – Determination of resistance to stubbed and burning cigarettes

BS EN 1401
Plastics piping systems for non-pressure underground drainage and sewerage – Unplasticized poly(vinyl chloride) (PVC-U)
EN 1401-1 1998
Specifications for pipes, fittings and the system

(Supersedes BS 5481: 1977 and partially supersedes BS 4660: 1989)

BS EN 1438 1998
Symbols for timber and wood-based products

BS EN 1443 1999
Chimneys – General requirements

BS EN 1457 1999
Chimneys – Clay/ceramic flue liners – Requirements and test methods (Supersedes BS 1181: 1989, which remains current)

BS EN 1470 1998
Textile floor coverings – Classification of needed floor coverings except for needed pile floor coverings

BS EN 1504
Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity
EN 1504-1 1998
Definitions

BS EN 1508 1999
Water supply – Requirements for systems and components for the storage of water

BS EN ISO 1513 1995
Paints and varnishes – Examination and preparation of samples testing (Also known as BS 3900: Part A2: 1993)

BS EN ISO 1517 1995 [AMD 1]
Paints and varnishes – Surface-drying test – Ballotini method (Also known as BS 3900: Part C2: 1994)

BS EN 1521 1997
Determination of flexural strength of lightweight aggregate concrete with open structure

BS EN 1524
Copper and copper alloys – Plumbing fittings

BS EN 1542 1999
Products and systems for the protection and repair of concrete structures – Test methods – Measurement of bond strength by pull-off

BS EN 1543 1998
Products and systems for the protection and repair of concrete structures – Test methods – Determination of tensile strength development for polymers

BS EN 1610 1998
Construction and testing of drains and sewers

BS EN 1671 1997
Pressure sewerage systems outside buildings

BS EN 1767 1999
Products and systems for the protection and repair of concrete

RELATED STANDARDS

structures – Test methods – Infrared analysis

BS EN 1770 1998
Products and systems for the protection and repair of concrete structures – Test methods – Determination of the coefficient of thermal expansion

BS EN 1775 1998
Gas supply – Gas pipework in buildings – Maximum operating pressure ≤ 5 bar – Functional recommendations

BS EN 1776 1999
Gas supply – Natural gas measuring stations – Functional requirements

BS EN 1799 1999
Products and systems for the protection and repair of concrete structures – Test methods – Tests to measure the suitability of structural bonding agents for application to concrete surface

BS ISO 1803 1997
Building construction – Tolerances – Expression of dimensional accuracy – Principles and terminology

BS EN 1818 1999
Resilient floor coverings – Determination of the effect of loaded heavy duty castors

BS EN 1852
Plastics piping systems for non-pressure underground drainage and sewerage – Polypropylene
EN 1852-1 1998
Specifications for pipes, fittings and the system

BS EN 1925 1999
Natural stone test methods – Determination of water absorption coefficient by capillarity

BS EN 1926 1999
Natural stone test methods – Determination of compressive strength

BS EN 1936 1999
Natural stone test methods – Determination of real density and apparent density, and of total and open porosity

BS EN ISO 2812
Paints and varnishes – Determination of resistance to liquids
EN ISO 2812-1 1995 [AMD 1]
General methods (Also known as BS 3900: Part G5: 1993)
EN ISO 2812-2 1995 [AMD 1]
Water immersion method (Also known as BS 3900: Part G8: 1993)

BS EN ISO 2815 1998
Paints and varnishes – Buchholz indentation test (Also known as BS 3900: Part E9: 1976 (AMD 10176 October 1998))

- products – Sealants – Determination of tensile properties
- BS EN 28340** 1991
Building construction – Jointing products – Sealants – Determination of tensile properties at maintained extension
- BS EN 28394** 1991
Building construction – Jointing products – Determination of extrudability of one-component sealants
- BS EN 29046** 1991
Building construction – Sealants – Determination of adhesion/cohesion properties at constant temperature
- BS EN 29048** 1991
Building construction – Jointing products – Determination of extrudability of sealants using standardized apparatus
- BS EN 61277** 1998
Terrestrial photovoltaic (PV) power generating systems – General and guide

HEATING AND VENTILATION

- BS EN 215**
Thermostatic radiator valves
EN 215-1 1991
Requirements and test methods
- BS EN 247** 1997
Heat exchangers – Terminology
- BS EN 255**
Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors – Heating mode
EN 255-1 1997
Terms, definitions and designations
EN 255-2 1997
Testing and requirements for marking for space heating units
EN 255-3 1997
Testing and requirements for marking for sanitary hot water units
EN 255-4 1997
Requirements for space heating and sanitary hot water units
- BS EN 297** 1994 [AMD 3]
Gas-fired central heating boilers – Type B₁₁ and B_{11BS} boilers fitted with atmospheric burners of nominal heat input not exceeding 70 kW
- BS EN 303**
Heating boilers
EN 303-1 1999
Heating boilers with forced draught burners – Terminology, general requirements, testing and marking
EN 303-2 1999
Heating boilers with forced

- draught burners – Special requirements for boilers with atomizing oil burners
EN 303-3 1999
Gas-fired central heating boilers – Assembly comprising a boiler body and a forced draught burner
EN 303-4 1999
Heating boilers with forced draught burners – Special requirements for boilers with forced draught oil burners with outputs up to 70 kW and a maximum operating pressure of 3 bar – Terminology, special requirements, testing and marking (Partially supersedes BS 779: 1989 and BS 855: 1990)
EN 303-5 1999
Heating boilers for solid fuels, hand and automatically fired, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking
- BS EN 304** 1992 [AMD 1]
Heating boilers – Test code for heating boilers for atomizing oil burners
- BS EN 442**
Specification for radiators and convectors
EN 442-1 1996
Technical specifications and requirements
(With BS EN 442-2 will supersede BS 3528: 1977)
EN 442-2 1997
Test methods and rating
EN 442-3 1997
Evaluation of conformity
(With BS EN 442-1 and -2 supersedes BS 3528: 1977)
- BS EN 625** 1996
Gas-fired central heating boilers – Specific requirements for the domestic hot water operation of combination boilers of nominal heat input not exceeding 70 kW
- BS EN 778** 1998
Domestic gas-fired forced convection air heaters for space heating not exceeding a net heat input of 70 kW, without a fan to assist transportation of combustion air and/or combustion products
(Supersedes BS 5258-4: 1987 and BS 6332-5: 1986)
- BS EN 779** 1993 [AMD 1]
Particulate air filters for general ventilation – Requirements, testing, marking
(Supersedes BS 6540: Part 1: 1985)
- BS EN 814**
Air conditioners and heat pumps with electrically driven compressors – Cooling mode
EN 814-1 1997
Terms, definitions and

RELATED STANDARDS

- designations
EN 814-2 1997
Testing requirements for marking
EN 814-3 1997
Requirements
- BS EN 834** 1995
Heat cost allocators for the determination of the consumption of room heating radiators – Appliances with electrical energy supply
- BS EN 835** 1995
Heat cost allocators for the determination of the consumption of room heating radiators – Appliances without an electrical energy supply, based on the evaporation principle
- BS EN 1264**
Floor heating – Systems and components
EN 1264-1 1998
Definitions and symbols
EN 1264-2 1998
Determination of the thermal output
EN 1264-3 1998
Dimensioning
- BS EN 1505** 1998
Ventilation for buildings – Sheet metal air ducts and fittings with rectangular cross-section – Dimensions
- BS EN 1506** 1998
Ventilation for buildings – Sheet metal air ducts and fittings with circular cross-section – Dimensions
- BS EN 1751** 1999
Ventilation for buildings – Air terminal devices – Aerodynamic testing of dampers and valves
(Supersedes BS 6821: 1988)
- BS EN 1886** 1998
Ventilation for buildings – Air handling units – Mechanical performance
- BS EN 12220** 1998
Ventilation for buildings – Ductwork – Dimensions of circular flanges for general ventilation

THERMAL AND SOUND INSULATION

- BS EN ISO 140**
Acoustics – Measurement of sound insulation in buildings and of building elements
EN ISO 140-1 1998
Requirements for laboratory test facilities with suppressed flanking transmission
(Supersedes BS 2750: Part 1: 1980)
EN ISO 140-3 1995
Laboratory measurement of airborne sound insulation of building elements
(Supersedes BS 2750: Part 3:

1980. Also known as BS 2750: Part 3: 1995)
EN ISO 140-4 1998
Field measurements of airborne sound insulation between rooms (Supersedes BS 2750-4: 1980)
EN ISO 140-5 1998
Field measurements of airborne sound insulation of façade elements and façades (Supersedes BS 2750-5: 1980)
EN ISO 140-6 1998
Laboratory measurements of impact sound insulation of floors (Supersedes BS 2750-6: 1980)
EN ISO 140-7 1998
Field measurements of impact sound insulation of floors (Supersedes BS 2750-7: 1980)
EN ISO 140-8 1998
Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor (Supersedes BS 2750: Part 8: 1980)
BS EN ISO 266 1997
Acoustics – Preferred frequencies (Supersedes BS 3593: 1963)
BS EN ISO 717
Acoustics – Rating of sound insulation in buildings and of building elements
EN ISO 717-1 1997
Airborne sound insulation
EN 717-2 1995
Formaldehyde release by the gas analysis method
EN ISO 717-2 1997
Impact sound insulation
EN 717-3 1996
Formaldehyde release by the flask method
BS EN 822 1995
Thermal insulating products for building applications – Determination of length and width
BS EN 823 1995
Thermal insulating products for building applications – Determination of thickness
BS EN 824 1995
Thermal insulating products for building applications – Determination of squareness
BS EN 825 1995
Thermal insulating products for building applications – Determination of flatness
BS EN 826 1996
Thermal insulating products for building applications – Determination of compression behaviour
BS EN 832 1999
Thermal performance of buildings – Calculation of energy use for heating – Residential buildings
BS EN 1602 1997 [AMD 1]
Thermal insulating products for

building applications – Determination of the apparent density
BS EN 1603 1997
Thermal insulating products for building applications – Determination of dimensional stability under constant normal laboratory conditions (23°C/50% relative humidity)
BS EN 1604 1997 [AMD 1]
Thermal insulating products for building applications – Determination of dimensional stability under specified temperature and humidity conditions
BS EN 1605 1997 [AMD 1]
Thermal insulating products for building applications – Determination of deformation under specified compressive load and temperature conditions
BS EN 1606 1997 [AMD 1]
Thermal insulating products for building applications – Determination of compressive creep
BS EN 1607 1997 [AMD 1]
Thermal insulating products for building applications – Determination of tensile strength perpendicular to faces
BS EN 1608 1997 [AMD 1]
Thermal insulating products for building applications – Determination of tensile strength parallel to faces
BS EN 1609 1997 [AMD 1]
Thermal insulating products for building applications – Determination of short term water absorption by partial immersion
BS EN 1934 1998
Thermal performance of buildings – Determination of thermal resistance by hot box method using heat flow meter – Masonry
BS EN 1946
Thermal performance of building products and components – Specific criteria for the assessment of laboratories measuring heat transfer properties
EN 1946-1 1999
Common criteria
EN 1946-2 1999
Measurements by guarded hot plate method
EN 1946-3 1999
Measurements by heat flow meter method
BS ISO 3743
Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering methods for small, movable sources in reverberant

RELATED STANDARDS

fields
ISO 3743-2 1994 [AMD 1]
Methods for special reverberation test rooms (Now known as BS EN ISO 3743-2: 1997 (AMD 9426))
BS EN ISO 3743
Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering methods for small, movable sources in reverberant fields
EN ISO 3743-1 1995 [AMD 1]
Comparison for hard-walled test rooms (Previously known as BS ISO 3743-1: 1994)
EN ISO 3743-2 1997
Methods for special reverberation test rooms (Previously known as BS ISO 3743-2: 1994 (AMD 9426))
BS EN ISO 3744 1995 [AMD 1]
Acoustics – Determination of sound levels of noise sources using sound pressure – Engineering method in an essentially free field over a reflecting plane (Previously known as BS ISO 3744: 1994)
BS EN ISO 3746 1996
Acoustics – Determination of sound power levels of noise sources using sound pressure – Survey method using an enveloping measurement surface over a reflecting plane (Supersedes BS 4196: Part 5: 1981)
BS EN ISO 5135 1999
Acoustics – Determination of sound power levels of noise from air-terminal devices, air-terminal units, dampers and valves by measurement in a reverberation room (Supersedes BS 4773-2: 1989)
BS EN ISO 7345 1996
Thermal insulation – Physical quantities and definitions
BS EN ISO 9251 1996
Thermal insulation – Heat transfer conditions and properties of materials – Vocabulary
BS EN ISO 9288 1996
Thermal insulation – Heat transfer by radiation – Physical quantities and definitions
BS EN ISO 9346 1996
Thermal insulation – Mass transfer – Physical quantities and definitions
BS ISO 9611 1996
Acoustics – Characterization of sources of structure-borne sound with respect to sound radiation from connected structures –

- Measurement of velocity at the contact points of machinery when resiliently mounted*
- BS EN ISO 10211**
Thermal bridges in building construction – Heat flows and surface temperatures
- BS ISO 10551** 1995
Ergonomics of the thermal environment – Assessment of the influence of the thermal environment using subjective judgement scales
- BS ISO 11399** 1995
Ergonomics of the thermal environment – Principles and application of relevant International Standards
- BS EN ISO 11546**
Acoustics – Determination of sound insulation performances of enclosures
- EN ISO 11546-1** 1996
Measurements under laboratory conditions (for declaration purposes)
- EN ISO 11546-2** 1996
Measurements in situ (for acceptance and verification purposes)
- BS EN ISO 11654** 1997
Acoustics – Sound absorbers for use in buildings – Rating of sound absorption
- BS EN 12085** 1997
Thermal insulating products for building applications – Determination of linear dimensions of test specimens
- BS EN 12086** 1997
Thermal insulating products for building applications – Determination of water vapour transmission properties
- BS EN 12087** 1997
Thermal insulating products for building applications – Determination of long term water absorption by immersion
- BS EN 12088** 1997
Thermal insulating products for building applications – Determination of long term water absorption diffusion
- BS EN 12089** 1997
Thermal insulating products for building applications – Determination of bending behaviour
- BS EN 12090** 1997
Thermal insulating products for building applications – Determination of shear behaviour
- BS EN 12091** 1997
Thermal insulating products for building applications – Determination of freeze-thaw resistance
- BS EN 12429** 1998
Thermal insulating products for

- building applications – Conditioning to moisture equilibrium under specified temperature and humidity conditions*
- BS EN 12430** 1998
Thermal insulating products for building applications – Determination of behaviour under point load
- BS EN 12431** 1998
Thermal insulating products for building applications – Determination of thickness for floating floor insulating products
- BS EN 13187** 1999
Thermal performance of buildings – Qualitative detection of thermal irregularities in building envelopes – Infrared method
- BS EN ISO 13370** 1998
Thermal performance of buildings – Heat transfer via the ground – Calculation methods
- BS EN ISO 13786** 1999
Thermal performance of building components – Dynamic thermal characteristics – Calculation methods
- BS EN ISO 13789** 1999
Thermal performance of buildings – Transmission heat loss coefficient – Calculation method
- BS EN ISO 14683** 1999
Thermal bridges in building construction – Linear thermal transmittance – Simplified methods and default values
- BS EN 20140**
Acoustics – Measurement of sound insulation in buildings and of building elements
- EN 20140-2** 1993
Determination, verification and application of precision data (Also known as BS 2750: Part 2: 1993. Supersedes BS 2750: Part 2: 1980)
- EN 20140-9** 1994
Laboratory measurement of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it (Also known as BS 2750: Part 9: 1987)
- EN 20140-10** 1992
Laboratory measurement of airborne sound insulation of small building elements
- BS EN 20354** 1993 [AMD 2]
Acoustics – Measurement of sound absorption in a reverberation room (Previously known as BS 3638: 1987)
- BS EN 21683** 1994
Acoustics – Preferred reference quantities for acoustic levels
- BS EN 29052**

RELATED STANDARDS

- Acoustics – Method for the determination of dynamic stiffness*
- EN 29052-1** 1992
Materials used under floating floors in dwellings
- BS EN 29053** 1993
Acoustics – Materials for acoustical applications – Determination of airflow resistance
- FIRE PROTECTION AND MEANS OF ESCAPE**
- BS EN 54**
Fire detection and fire alarm systems
- EN 54-1** 1996
Introduction (Supersedes BS 5445: Part 1: 1977)
- EN 54-2** 1998
Control and indicating equipment (With BS EN 54-4: 1997 supersedes BS 5839: Part 4: 1998 which remains current)
- EN 54-4** 1998
Power supply equipment (With BS EN-54-2: 1997 supersedes BS 5839: Part 4: 1988 which remains current)
- BS EN 179** 1998
Building hardware – Emergency exit devices operated by a lever handle or push pad – Requirements and test methods
- BS EN 615** 1995
Fire protection – Fire extinguishing media – Specifications for powders (other than class D powders) (Supersedes BS 6535: Part 3: 1989)
- BS EN 1363**
Fire resistance tests
- EN 1363-1** 1999
General requirements
- EN 1363-2** 1999
Alternative and additional procedures
- BS EN 1364**
Fire resistance tests for non-loadbearing elements
- EN 1364-1** 1999
Walls
- EN 1364-2** 1999
Ceilings
- BS EN 1365**
Fire resistance tests for loadbearing elements
- EN 1365-1** 1999
Walls
- EN 1365-4** 1999
Columns
- BS EN 1366**
Fire resistance tests for service installations
- EN 1366-1** 1999
Ducts

EN 1366-2 1999
Fire dampers

BS ISO TR 5925
Fire tests – Smoke control door and shutter assemblies

ISO TR 5925-2 1997
Commentary on test method and test data application

BS ISO 7203
Fire extinguishing media – Foam concentrates

ISO 7203-1 1995
Specification for low expansion foam concentrates for top application to water-immiscible liquids

ISO 7203-2 1995
Specification for medium and high expansion foam concentrates for top application to water-immiscible liquids

BS ISO 10294
Fire resistance tests – Fire dampers for air distribution systems

ISO 10294-1 1996
Test method

ISO 10294-2 1999
Classification, criteria and field of application of test results

ISO 10294-3 1999
Guidance on the test method

BS ISO 11925
Reaction to fire tests – Ignitability of building products subjected to direct impingement of flame

BS ISO TR 11925
Reaction to fire tests – Ignitability of building products subjected to direct impingement of flame

ISO TR 11925-1 1999
Guidance on ignitability

ISO 11925-2 1997 [AMD 1]
Single flame source test

ISO 11925-3 1997 [AMD 1]
Multi-source test

BS EN 12094
Fixed firefighting systems – Components for gas extinguishing systems

EN 12094-8 1998
Requirements and test methods for flexible connectors for CO₂ systems

BS EN 12259
Fixed fire fighting systems – Components for sprinkler and water spray systems

EN 12259-1 1999
Sprinklers

EN 12259-2 1999
Wet alarm valve assemblies

BS ISO/TR 12470 1998
Fire resistance tests – Guidance on the application and extenuation of results

BS ISO TR 14697 1997
Fire tests – Guidance on the choice of substrates for building

products

BS EN 25923 1994
Fire protection – Fire extinguishing media – Carbon dioxide
(Previously known as BS 6535: Part 1: 1990)

BS EN 27201
Fire protection – Fire extinguishing media – Halogenated hydrocarbons

EN 27201-1 1994
Halon 1211 and halon 1301
(Previously known as BS 6535: Section 2.1: 1990)

EN 27201-2 1994
Code of practice for safe handling and transfer procedures
(Supersedes BS 6535: Section 2.2: 1989)

BS EN 50130
Alarm systems

EN 50130-4 1996 [AMD 1]
Electromagnetic compatibility – Product family standard: Immunity requirements for components of fire, intruder and social alarm systems

EN 50130-5 1999
Environmental test methods

BS EN 50131
Alarm systems – Intrusion systems

EN 50131-1 1997 [AMD 1]
General requirements

EN 50131-6 1998 [AMD 1]
Power supplies

BS EN 50134
Alarm systems – Social alarm systems

EN 50134-7 1996
Application guidelines
(Supersedes BS 6084: 1986)

ARTIFICIAL LIGHTING AND DAYLIGHT

BS EN 40
Lighting columns

EN 40-1 1992
Definitions and terms
(Supersedes BS 5649: Part 1: 1978)

BS EN 410 1998
Glass in building – Determination of luminous and solar characteristics of glazing

BS EN 572
Glass in building – Basic soda lime silicate glass products

EN 572-1 1995
Definitions and general physical and mechanical properties

EN 572-2 1995
Float glass

EN 572-3 1995
Polished wired glass

EN 572-4 1995
Drawn sheet glass

EN 572-5 1995

RELATED STANDARDS

Patterned glass

EN 572-6 1995
Wired patterned glass

EN 572-7 1995
Wired or unwired channel shaped glass

BS EN 673 1998
Glass in building – Determination of thermal transmittance (U value) – Calculation method

BS EN 674 1998
Glass in building – Determination of thermal transmittance (U value) – Guarded hot plate method

BS EN 675 1998
Glass in building – Determination of thermal transmittance (U value) – Heat flow meter method

BS EN 1096
Glass in building – Coated glass

EN 1096-1 1999
Definitions and classification

BS EN 1748
Glass in building – Special basic products

EN 1748-1 1998
Borosilicate glasses

EN 1748-2 1998
Glass ceramics

BS EN ISO 12543
Glass in building – Laminated glass and laminated safety glass

BS ISO 15469 1997
Spatial distribution of daylight – CIE standard overcast sky and clear sky

BS EN 60064 1996
Tungsten filament lamps for domestic and similar general lighting purposes – Performance requirements
(Supersedes BS 161: 1990)

BS EN 60081 1998
Double-capped fluorescent lamps – Performance specifications

BS EN 60432
Safety specification for incandescent lamps

EN 60432-1 1995 [AMD 1]
Tungsten filament lamps for domestic and similar general lighting purposes

EN 60432-2 1995 [AMD 2]
Tungsten halogen lamps for domestic and similar general lighting purposes

BS EN 60598
Luminaires

EN 60598-1 1997 [AMD 1]
General requirements and tests

EN 60598-2
Particular requirements

EN 60598-2-2 1997
Recessed luminaires
(Supersedes BS 4533: Section 102.2: 1990 which remains current)

EN 60598-2-3 1994 [AMD 2]
Luminaires for road and street

lighting
(Supersedes BS 4533: Section 102.3: 1990)
EN 60598-2-4 1998
Portable general purpose luminaires
(Supersedes BS 4533: Section 102.4: 1990)
EN 60598-2-5 1998
Floodlights
(Incorporating Corrigendum No.1, supersedes BS 4533-102.5: 1990 which remains current)
EN 60598-2-6 1995 [AMD 1]
Luminaires with built-in transformers or converters for filament lamps
EN 60598-2-7 1997 [AMD 1]
Portable luminaires for garden use
(Incorporating Corrigendum No.1 (10563) Previously known as BS 4533: Section 102.7: 1990 (including AMD 1-3))
EN 60598-2-8 1997
Headlamps
EN 60598-2-18 1994 [AMD 1]
Luminaires for swimming pools and similar applications
(Supersedes BS 4533: Section 102.18: 1990)
EN 60598-2-20 1998 [AMD 1]
Lighting chains
(Incorporating Corrigendum No.1 (AMD 10561))
EN 60598-2-22 1999
Particular requirements – Luminaires for emergency lighting
(Incorporating Corrigendum No.1 supersedes BS 4533: Section 102.22: 1990, which remains current)
EN 60598-2-23 1997
Extra low voltage lighting systems for filament lamps
EN 60598-2-24 1999
Luminaires with limited surface temperatures
EN 60598-2-25 1995
Luminaires for use in clinical areas of hospitals and health care buildings
BS EN 60630 1999
Maximum lamp outlines for incandescent lamps
BS EN 61195 1994 [AMD 1]
Double-capped fluorescent lamps – Safety specifications
BS EN 61199 1994 [AMD 2]
Single-capped fluorescent lamps – Safety specifications
BS EN 61725 1997
Analytical expression for daily solar profiles

WINDOWS AND DOORS

BS EN 477 1999
Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication

of windows and doors – Determination of the resistance to impact of main profiles by falling mass
BS EN 478 1999
Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Appearance after exposure at 150 degrees centegrade – Test method
BS EN 479 1999
Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Determination of heat reversion
BS EN 513 1999
Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Determination of the resistance to artificial weathering
BS EN 947 1999
Hinged or pivoted doors – Determination of the resistance to vertical load
BS EN 948 1999
Hinged or pivoted doors – Determination of the resistance to static torsion
BS EN 949 1999
Windows and curtain walling, doors, blinds and shutters – Determination of the resistance to soft and heavy body impact for doors
BS EN 950 1999
Door leaves – Determination of the resistance to hard body impact
BS EN 951 1999
Door leaves – Method for measurement of height, width, thickness and squareness
BS EN 952 1999
Door leaves – General and local flatness – Measurement method
BS EN 1154 1997
Building hardware – Controlled door closing devices – Requirements and test methods
(Supersedes BS 6459: Part 1: 1984)
BS EN 1155 1997
Building hardware – Electrically powered hold-open devices for swing doors – Requirements and test methods
BS EN 1158 1997
Building hardware – Door coordinator devices – Requirements and test methods
BS EN 1522 1999
Windows, doors, shutters and blinds – Bullet resistance – Requirements and classification
BS EN 1523 1999
Windows, doors, shutters and blinds – Bullet resistance – Test method

RELATED STANDARDS

BS EN 1527 1998
Building hardware – Hardware for sliding doors and folding doors – Requirements and test methods

STAIRS, ESCALATORS AND LIFTS

BS EN 81
Safety rules for the construction and installation of lifts
EN 81-1 1998
Electric lifts
(Supersedes BS 5655-1: 1986)
EN 81-2 1998
Hydraulic lifts ((29))
(Supersedes BS 5655-2: 1988)
BS EN 115 1995 [AMD 1]
Safety rules for the construction and installation of escalators and passenger conveyors
(Supersedes BS 5656: 1983)
BS 5395:
Stairs, Ladders and Walkways
BS 5395: Part 1: 1977 [AMD 2]
Code of practice for the design of straight stairs
BS 5395: Part 2: 1984 [AMD 1]
Code of practice for the design of helical and spiral stairs
BS 5395: Part 3: 1985
Code of Practice for the design of industrial type stairs, permanent ladders and walkways
BS 5655:
Lifts and Service Lifts
BS 5655: Part 1: 1979 [AMD 2]
Safety rules for the construction and installation of electric lifts
(Remains current)
BS 5655: Part 1: 1986 [AMD 1]
Safety rules for the construction and installation of electric lifts
(Superseded by BS EN 81-1: 1998 but remains current)
PD 6500: 1986
Explanatory supplement to BS 5655: Part 1 Safety rules for the construction and installation of electric lifts (EN 81 Part 1) (Withdrawn)
BS 5655: Part 2: 1988 [AMD 1]
Hydraulic lifts
(Withdrawn, superseded by BS EN 81-2: 1998 but remains current)
BS 5655: Part 3: 1989 [AMD 1]
Electric service lifts
BS 5655: Part 5: 1989
Dimensions of standard lift arrangement
BS 5655: Part 6: 1990
Code of practice for selection and installation
(Supersedes BS 2655: Part 2: 1959)
BS 5655: Part 7: 1983 [AMD 1]
Manual control devices, indicators and additional fittings

BS 5655: Part 8: 1983
Eyebolts for lift suspension

BS 5655: Part 9: 1985 [AMD 2]
Guide rails

BS 5655: Part 10: 1986
Testing and inspection of electric and hydraulic lifts
(Revised and replaces BS 2655: Part 7: 1970)

BS 5655: Subsection 10.1.1: 1995
Commissioning tests for new lifts

BS 5655: Subsection 10.2.1: 1995
Commissioning tests for new lifts

BS 5655: Part 11: 1989 [AMD 1]
Recommendations for the installation of new, and the modernization of, electric lifts in existing buildings

BS 5655: Part 12: 1989 [AMD 2]
Recommendations for the installation of new, and the modernization of, electric lifts in existing buildings

BS 5655: Part 13: 1995
Recommendations for vandal resistant lifts
(Supersedes DD 197:1990)

BS 5655: Part 14: 1995
Specification for hand-powered service lifts and platform hoists

BS EN 115: 1995
Safety rules for the construction and installation of escalators and passenger conveyors

BS 5776: 1996
Powered stairlifts

BS 5900: 1999
Specification for powered domestic lifts with partially enclosed cars and no lift-well enclosures

HOUSES AND RESIDENTIAL BUILDINGS

BS EN 1116 1996
Kitchen furniture – Co-ordinating sizes for kitchen furniture and kitchen appliances
(Supersedes BS 6222: Part 1: 1982)

BS EN 1153 1996
Kitchen furniture – Safety requirements and test methods for built-in and free standing kitchen cabinets and worktops
(Partially supersedes BS 6222: Part 2: 1992)

BS EN 12182 1999
Technical aids for disabled persons – General requirements and test methods

EDUCATIONAL AND RESEARCH FACILITIES

BS EN 1176
Playground equipment
EN 1176-1 1998
General safety requirements and

test methods
(Incorporating Corrigendum No.1. Partially supersedes BS 5696-1: 1997 and BS 5696-1 and 2: 1986)

EN 1176-7 1997
Guidance on installation, inspection, maintenance and operation
(Partially supersedes BS 5696: Part 3: 1979)

BS EN 1177 1998
Impact absorbing playground surfacing – Safety requirements and test
(Partially supersedes BS 7188: 1989)

OFFICE BUILDINGS

BS EN 1023
Office furniture – Screens
EN 1023-1 1997
Dimensions

BS EN ISO 9241
Ergonomic requirements for office work with visual display terminals (VDTs)

EN ISO 9241-1 1997
General introduction

EN ISO 9241-4 1998
Keyboard requirements
(Supersedes BS 7179-4: 1990)

EN ISO 9241-5 1999
Workstation layout and postural requirements
(Supersedes BS 7179-5: 1990)

EN ISO 9241-7 1998
Requirements for display with reflections

EN ISO 9241-8 1998
Requirements for displayed colours

EN ISO 9241-10 1996
Dialogue principles

EN ISO 9241-11 1998 [AMD 1]
Guidance on usability

EN ISO 9241-12 1999
Presentation of information

EN ISO 9241-13 1999
User guidance

EN ISO 9241-15 1998
Command dialogues

EN ISO 9241-16 1999
Direct manipulation dialogues

EN ISO 9241-17 1998 [AMD 1]
Form-filling dialogues

BS ISO 9241
Ergonomic requirements for office work with visual display terminals (VDTs)

ISO 9241-14 1997
Menu dialogues

BS EN 29241
Ergonomic requirements for office work with visual display terminals (VDTs)

EN 29241-1 1993
General introduction
(Withdrawn, superseded by BS EN ISO 9241-1: 1997)

RELATED STANDARDS

EN 29241-2 1993
Guidance on task requirements
(Supersedes BS 7179: Part 2: 1990)

EN 29241-3 1993
Visual display requirements
(Supersedes BS 7179: Part 3: 1990)

SANITARY AND WASHING FACILITIES

BS EN 31 1999
Pedestal wash basins – Connecting dimensions
(Supersedes BS 5506-1:1977)

BS EN 32 1999
Wall-hung wash basins – Connecting dimensions
(Supersedes BS 5506-2:1977 which is withdrawn)

BS EN 33 1999
Pedestal WC pans with close-coupled flushing cistern – Connecting dimensions
(With BS EN 37:1999 supersedes BS 5503-1:1977)

BS EN 36 1999
Wall-hung bidets with over-rim supply – Connecting dimensions
(Supersedes BS 5505-2:1977)

BS EN 37 1999
Pedestal WC pans with independent water supply – Connecting dimensions
(With BS EN 33:1999 supersedes BS 5503-1:1977)

BS EN 111 1999
Wall-hung hand rinse basins – Connecting dimensions
(Supersedes BS 6731-1: 1988)

BS EN 200 1992
Sanitary tapware: General technical specifications for single taps and mixer taps (nominal size 1/2) PN 10: Minimum flow pressure of 0.05 Mpa (0.5 bar)

BS EN 232 1992
Baths – connecting dimensions

BS EN 246 1992
Sanitary tapware: General specifications for flow rate regulators

BS EN 251 1992
Shower trays – Connecting dimensions

BS EN 274 1993
Sanitary tapware – Waste fittings for basins, bidets and baths – General technical specifications

BS EN 329 1997
Sanitary tapware – Waste fittings for shower trays – general technical specifications

BS EN 411 1995
Sanitary tapware – Waste fittings for sinks – General technical specifications

PUBLIC TRANSPORT**BS EN 50125**

*Railway applications –
Environmental conditions for
equipment*

EN 50125-1 1999

Equipment on board rolling stock

BS EN 50126 1999

*Railway applications – The
specification and demonstration
of Reliability, Availability,
Maintain-ability and Safety
(RAMS)*

RESTAURANTS**BS EN 203**

Gas heated catering equipment

EN 203-1 1993 [AMD 2]

Safety requirements

(Supersedes BS 5314: Parts 1, 2, 3,
4, 5, 6, 7: 1976, 8, 9, 11, 12: 1979,
10, 13: 1982)

EN 203-1 1993 [AMD 1]

*Specification for gas heated
catering equipment*

EN 203-2 1995

Rational use of energy

SPORT AND RECREATION**BS EN 748** 1996 [AMD 2]

*Playing field equipment – Football
goals – Functional and safety
requirements, test methods*

BS EN 749 1996 [AMD 1]

*Playing field equipment –
Handball goals – Functional and
safety requirements, test methods*

BS EN 750 1996 [AMD 1]

*Playing field equipment – Hockey
goals – Functional and safety
requirements, test methods*

BS EN 913 1996

*Gymnastic equipment – General
safety requirements and test
methods*

(Supersedes BS 1892: Part 1:
1986)

BS EN 914 1996

*Gymnastic equipment – Parallel
bars and combination asymmetric
/parallel bars – Functional and
safety requirements, test methods*

BS EN 915 1996

*Gymnastic equipment –
Asymmetric bars – Functional and
safety requirements, test methods*
(Supplement the general standard
BS EN 913: 1996)

BS EN 916 1996

*Gymnastic equipment – Vaulting
boxes – Functional and safety
requirements, test methods*
(Supersedes BS 1892: Section 2.3:
1986)

BS EN 1270 1998

*Playing field equipment –
Basketball equipment – Functional
and safety requirements, test
methods*

(Supersedes BS 1892-2.7: 1986)

BS EN 1271 1998

*Playing field equipment –
Volleyball equipment – Functional
and safety requirements, test
methods*

BS EN 1509 1997

*Playing field equipment –
Badminton equipment –
Functional and safety
requirements, test methods*

BS EN 1510 1997

*Playing field equipment – Tennis
equipment – Functional and safety
requirements, test methods*

BS EN 1516 1999

*Surfaces for sports areas –
Determination of resistance to
indentation*
(Incorporating Corrigendum No.1)

BS EN 1569 1999

*Surfaces for sports areas –
Determination of the behaviour
under a rolling load*

BS EN 12193 1999

*Light and lighting – Sports
lighting*

BS EN 12196 1997

*Gymnastics equipment – Horses
and bucks – Functional and safety
requirements, test methods*

BS EN 12197 1997

*Gymnastics equipment –
Horizontal bars – Safety
requirements and test methods*

BS EN 12346 1999

*Gymnastic equipment – Wall bars,
lattice ladders and climbing
frames – Safety requirements and
test methods*

BS EN 12432 1998

*Gymnastic equipment – Balancing
beams – Functional and safety
requirements, test methods*

BS EN 12655 1998

*Gymnastic equipment – Hanging
rings – Functional and safety
requirements, test methods*

CONVERSION OF UNITS

(pp. 811–27)

Conversion factors**Conversion tables**

1	millimetres to inches
2	decimals of inch to millimetres
3	inches and fractions of inch to millimetres
4	feet and inches to metres
5	metres to feet
6	feet to metres
7	metres to yards
8	yards to metres
9	kilometres to miles
10	miles to kilometres
11	square centimetres to square inches
12	square inches to square centimetres
13	square metres to square feet
14	square feet to square metres
15	square metres to square yards
16	square yards to square metres
17	hectares to acres
18	acres to hectares
19	cubic centimetres to cubic inches
20	cubic inches to cubic centimetres
21	cubic metres to cubic feet
22	cubic feet to cubic metres
23	litres to cubic feet
24	cubic feet to litres
25	litres to imperial gallons
26	imperial gallons to litres
27	litres to US gallons
28	US gallons to litres
29	kilograms to pounds
30	pounds to kilograms
31	kilograms per cubic metre to pounds per cubic foot
32	pounds per cubic foot to kilograms per cubic metre
33	metres per second to miles per hour
34	miles per hour to metres per second
35	kilograms force per square centimetre to pounds force per square inch
36	pounds force per square inch to kilograms force per square centimetre
37	kilonewtons per square metre to pounds force per square inch
38	pounds force per square inch to kilonewtons per square metre
39	watts to British thermal units per hour
40	British thermal units per hour to watts
41	watts per square metre kelvin to British thermal units per square foot hour degree F
42	British thermal units per square foot hour degree F to watts per square metre kelvin

CONVERSION FACTORS

metric	'imperial'/US	metric	'imperial'/US
length		mass/unit area	
1.0 mm	0.039 in	1.0 g/m ²	0.003 oz/ft ²
25.4 mm (2.54 cm)	1 in	33.91 g/m ²	1 oz/yd ²
304.8 mm (30.48 cm)	1 ft	305.15 g/m ²	1 oz/ft ²
914.4 mm	1 yd	0.011 kg/m ²	1 cwt US/acre
1000.0 mm (1.0 m)	1 yd 3.4 in (1.093 yd)	0.013 kg/m ²	1 cwt imp/acre
20.117 m	1 chain	0.224 kg/m ²	1 ton US/acre
1000.00 m (1 km)	0.621 mile	0.251 kg/m ²	1 ton imp/acre
1609.31 m	1 mile	1.0 kg/m ²	29.5 oz/yd ²
		4.882 kg/m ²	1 lb/ft ²
area		703.07 kg/m ²	1 lb/in ²
100 mm ² (1.0 cm ²)	0.155 in ²	350.3 kg/km ² (3.503 kg/ha);	1 ton US/mile ²
645.2 mm ² (6.452 cm ²)	1 in ²	0.35 g/m ²	
929.03 cm ² (0.093 m ²)	1 ft ²	392.3 kg/km ² (3.923 kg/ha);	
0.836 m ²	1 yd ²	0.392 g/m ²	
1.0 m ²	1.196 yd ² (10.764 ft ²)		
0.405 ha (4046.9 m ²)	1 acre	density (mass/volume)	
1.0 ha (10000 m ²)	2.471 acre	0.593 kg/m ³	1 lb/yd ³
1.0 km ²	0.386 mile ²	1.0 kg/m ³	0.062 lb/ft ³
2.59 km ² (259 ha)	1 mile ²	16.02 kg/m ³	1 lb/ft
		1186.7 kg/m ³ (1.187 t/m ³)	1 ton US/yd ³
volume		1328.9 kg/m ³ (1.329 t/m ³)	1 ton imp/yd ³
1000 mm ³ (1.0 cm ³ ; 1.0 ml)	0.061 in ³	27680.0 kg/m ³ (27.68 t/m ³);	1 lb/in ³
16387 mm ³ (16.387 cm ³ ; 0.0164 l; 16.387 ml)	1 in ³	27.68 g/cm ³)	
1.0 l (1.0 dm ³ ; 1000 cm ³)	61.025 in ³ (0.035 ft ³)	specific surface (area/unit mass)	
0.028 m ³ (28.32 l)	1 ft ³	0.823 m ² /t	1 yd ² /ton
0.765 m ³	1 yd ³	1.0 m ² /kg	0.034 yd ² /oz
1.0 m ³	1.308 yd ³ (35.314 ft ³)	29.493 m ² /kg	1 yd ² /oz
capacity		area/unit capacity	
1.0 ml	0.034 fl oz US	0.184 m ² /l	1 yd ² /gal
1.0 ml	0.035 fl oz imp	1.0 m ² /l	5.437 yd ² /gal
28.41 ml	1 fl oz imp		
29.57 ml	1 fl oz US	concentration	
0.473 litre	1 pint (liquid) US	0.014 kg/m ³	1 grain/gal imp
0.568 litre	1 pint imp	0.017 kg/m ³	1 grain/gal US
1.0 litre	1.76 pint imp	1.0 kg/m ³ (1.0 g/l)	58.42 grain/gal US
1.0 litre	2.113 pint US	1.0 kg/m ³ (1.0 g/l)	70.16 grain/gal imp
3.785 litre	1 gal US	6.236 kg/m ³	1 oz/gal imp
4.546 litre	1 gal imp	7.489 kg/m ³	1 oz/gal US
100.0 litre	21.99 gal imp		
100.0 litre	26.42 gal US	mass rate of flow	
159.0 litre	1 barrel US	0.454 kg/s	1 lb/s
164.0 litre	1 barrel imp	1.0 kg/s	2.204 lb/s
mass		volume rate of flow	
1.0 g	0.035 oz (avoirdupois)	0.063 l/s	1 gal US/minute
28.35 g	1 oz (avoirdupois)	0.076 l/s	1 gal imp/minute
454.0 g (0.454 kg)	1 lb	0.472 l/s	1 ft ³ /minute
1000.0 g (1 kg)	2.205 lb	1.0 l/s (86.4 m ³ /day)	13.2 gal imp/s
45.36 kg	1 cwt US	1.0 l/s	0.264 gal US/s
50.8 kg	1 cwt imp	1.0 l/min	0.22 gal imp/min
907.2 kg (0.907 t)	1 ton US	1.0 l/min	0.264 gal US/min
1000.0 kg (1.0 t)	0.984 ton imp	3.785 l/s	1 gal US/s
1000.0 kg (1.0 t)	1.102 ton US	4.546 l/s	1 gal imp/s
1016.0 kg (1.016 t)	1 ton imp	28.32 l/s	1 ft ³ /s
		0.0038 m ³ /min	1 gal US/min
mass/unit length		0.0045 m ³ /min	1 gal imp/min
0.496 kg/m	1 lb/yd	1.0 m ³ /s	183.162 gal US/s
0.564 kg/m (0.564 t/km)	1 ton US/mile	1.0 m ³ /s	219.969 gal imp/s
0.631 kg/m (0.631 t/km)	1 ton imp/mile	1.0 m ³ /h	35.31 ft ³ /h
1.0 kg/m	0.056 lb/in (0.896 oz/in)	0.0283 m ³ /s	1 ft ³ /s
1.116 kg/m	1 oz/in		
1.488 kg/m	1 lb/ft	velocity	
17.86 kg/m	1 lb/in	0.005 m/s	1 ft/minute
		0.025 m/s	1 in/s
length/unit mass		0.305 m/s	1 ft/s
1.0 m/kg	0.496 yd/lb	1.0 m/s	3.28 ft/s
2.016 m/kg	1 yd/lb	1000.0 m/hr (1 km/hr)	0.621 mile/hr
		1609.0 m/hr (0.447 m/s)	1 mile/hr

CONVERSION FACTORS

metric	'imperial'/US	metric	'imperial'/US
fuel consumption 1.0 l/km 1.0 l/km 2.352 l/km 2.824 l/km	0.354 gal imp/mile 0.425 gal US/mile 1 gal US/mile 1 gal imp/mile	refrigeration 3.517 kW	12 000 Btu/hr = 'ton of refrigeration'
acceleration 0.305 m/s ² 1.0 m/s ² 9.806 m/s ² = g (standard acceleration due to gravity)	1 ft/s ² 3.28 ft/s ² g = 32.172 ft/s ²	illumination 1 lx (1 lumen/m ²) 10.764 lx	0.093 ft-candle (0.093 lumen/ft ²) 1.0 ft-candle (1 lumen/ft ²)
temperature X°C $\frac{5}{9} \times (X - 32) \text{ } ^\circ\text{C}$	$(\frac{9}{5}X + 32) \text{ } ^\circ\text{F}$ X°F	luminance 0.3183 cd/m ² 1.0 cd/m ² 10.764 cd/m ² 1550.0 cd/m ²	1 apostilb 0.000645 cd/ft ² 1 cd/ft ² 1.0 cd/in ²
temperature interval 0.5556 K 1 K = 1°C	1°F 1.8°F	force 1.0 N 1.0 kgf (9.807 N; 1.0 kilopond) 4.448 kN 8.897 kN 9.964 kN	0.225 lbf 2.205 lbf 1.0 kipf (1 000 lbf) 1.0 tonf US 1.0 tonf imp
energy 1.0 J 1.356 J 4.187 J 9.807 J (1 kgf m) 1055.06 J 3.6 MJ 105.5 MJ	0.239 calorie 1 ft lbf 1.0 calorie 7.233 ft lbf 1 Btu 1 kilowatt-hr 1 therm (100 000 Btu)	force/unit length 1.0 N/m 14.59 N/m 32.69 kN/m 175.1 kN/m (175.1 N/mm)	0.067 lbf/ft 1.0 lbf/ft 1.0 tonf/ft 1.0 lbf/in
power (energy/time) 0.293 W 1.0 W 1.163 W 1.356 W 4.187 W 1 kgf m/s (9.807 W) 745.7 W 1 metric horsepower (75 kgf m/s)	1 Btu/hr 0.738 ft lbf/s 1.0 kilocalorie/hr 1 ft lbf/s 1 calorie/s 7.233 ft lbf/s 1 horsepower 0.986 horsepower	moment of force (torque) 0.113 Nm (113.0 Nmm) 1.0 Nm 1.356 Nm 113.0 Nm 253.1 Nm 1356.0 Nm 3037.0 Nm	1.0 lbf in 0.738 lbf ft 1.0 lbf ft 1.0 kipf in 1.0 tonf in 1.0 kipf ft 1.0 tonf ft
intensity of heat flow rate 1 W/m ² 3.155 W/m ²	0.317 Btu/(ft ² hr) 1.0 Btu/(ft ² hr)	pressure 1.0 Pa (1.0 N/m ²) 1.0 kPa 100.0 Pa 2.99 kPa 3.39 kPa 6.9 kPa 100.0 kPa 101.33 kPa 107.25 kPa 15.44 MPa	0.021 lbf/ft ² 0.145 lbf/in ² 1.0 millibar 1 ft water 1 in mercury 1.0 lbf/in ² 1.0 bar 1.0 standard atmosphere 1.0 tonf/ft ² 1.0 tonf/in ²
thermal conductivity 0.144 W/(m.K) 1.0 W/(m.K)	1 Btu in/(ft ² hr °F) 6.933 Btu in/(ft ² hr °F)		
thermal conductance 1.0 W/(m ² .K) 5.678 W/(m ² .K)	0.176 Btu/(ft ² hr °F) 1.0 Btu/(ft ² hr °F)		
thermal resistivity 1.0 m K/W 6.933 m K/W	0.144 ft ² hr °F/(Btu in) 1.0 ft ² hr °F/(Btu in)		
specific heat capacity 1.0 kJ/(kg.K) 4.187 kJ/(kg.K) 1.0 kJ/(m ³ .K) 67.07 kJ/(m ³ .K)	0.239 Btu/(lb °F) 1.0 Btu/(lb °F) 0.015 Btu/(ft ³ °F) 1.0 Btu/(ft ³ °F)		
specific energy 1.0 kJ/kg 2.326 kJ/kg 1.0 kJ/m ³ (1 kJ/l) 1.0 J/l 232.1 J/l	0.43 Btu/lb 1.0 Btu/lb 0.027 Btu/ft ³ 0.004 Btu/gal 1.0 Btu/gal		

CONVERSIONS

mm	0	1	2	3	4	5	6	7	8	9
in										
0		0.04	0.08	0.11	0.16	0.2	0.24	0.28	0.31	0.35
10	0.39	0.43	0.47	0.51	0.55	0.59	0.63	0.67	0.71	0.75
20	0.79	0.83	0.87	0.91	0.94	0.98	1.02	1.06	1.1	1.14
30	1.18	1.22	1.25	1.3	1.34	1.38	1.41	1.46	1.5	1.57
40	1.57	1.61	1.65	1.69	1.73	1.77	1.81	1.85	1.89	1.93
50	1.97	2.00	2.05	2.09	2.13	2.17	2.21	2.24	2.28	2.32
60	2.36	2.4	2.44	2.48	2.52	2.56	2.6	2.64	2.68	2.72
70	2.76	2.8	2.83	2.87	2.91	2.95	3.0	3.03	3.07	3.11
80	3.15	3.19	3.23	3.27	3.31	3.35	3.39	3.42	3.46	3.5
90	3.54	3.58	3.62	3.66	3.7	3.74	3.78	3.82	3.86	3.9
100	3.94	3.98	4.02	4.06	4.09	4.13	4.17	4.21	4.25	4.29
110	4.33	4.37	4.41	4.45	4.49	4.53	4.57	4.61	4.65	4.69
120	4.72	4.76	4.8	4.84	4.88	4.92	4.96	5.0	5.04	5.08
130	5.12	5.16	5.2	5.24	5.28	5.31	5.35	5.39	5.43	5.47
140	5.51	5.55	5.59	5.63	5.67	5.71	5.75	5.79	5.83	5.87
150	5.91	5.94	5.98	6.02	6.06	6.1	6.14	6.18	6.22	6.26
160	6.3	6.34	6.38	6.42	6.46	6.5	6.54	6.57	6.61	6.65
170	6.69	6.73	6.77	6.81	6.85	6.89	6.93	6.97	7.01	7.05
180	7.09	7.13	7.17	7.21	7.24	7.28	7.32	7.36	7.4	7.44
190	7.48	7.52	7.56	7.6	7.64	7.68	7.72	7.76	7.8	7.83
200	7.87	7.91	7.95	7.99	8.03	8.07	8.11	8.15	8.19	8.23
210	8.27	8.31	8.35	8.39	8.43	8.46	8.5	8.54	8.58	8.62
220	8.66	8.7	8.74	8.78	8.82	8.86	8.9	8.94	8.98	9.02
230	9.06	9.09	9.13	9.17	9.21	9.25	9.29	9.33	9.37	9.41
240	9.45	9.49	9.53	9.57	9.61	9.65	9.69	9.72	9.76	9.8
250	9.84									

Length
1
millimetres
to inches

in	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
mm										
0.0		0.0254	0.0508	0.0762	0.1016	0.127	0.1524	0.1778	0.2032	0.2286
0.01	0.254	0.2794	0.3048	0.3302	0.3556	0.381	0.4064	0.4318	0.4572	0.4826
0.02	0.508	0.5334	0.5588	0.5842	0.6096	0.635	0.6604	0.6858	0.7112	0.7366
0.03	0.762	0.7874	0.8128	0.8382	0.8636	0.889	0.9144	0.9398	0.9652	0.9906
0.04	1.016	1.0414	1.0668	1.0922	1.1176	1.143	1.1684	1.1938	1.2192	1.2446
0.05	1.27	1.2954	1.3208	1.3462	1.3716	1.397	1.4224	1.4478	1.4732	1.4986
0.06	1.524	1.5494	1.5748	1.6002	1.6256	1.651	1.6764	1.7018	1.7272	1.7526
0.07	1.778	1.8034	1.8288	1.8542	1.8796	1.905	1.9304	1.9558	1.9812	2.0066
0.08	2.032	2.0574	2.0828	2.1082	2.1336	2.159	2.1844	2.2098	2.2352	2.2606
0.09	2.286	2.3114	2.3368	2.3622	2.3876	2.413	2.4384	2.4638	2.4892	2.5146
0.1	2.54									

2
decimals of
inch to
millimetres

in	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16
mm															
1	25.4	27.0	28.6	30.2	31.8	33.3	34.9	36.5	38.1	39.7	41.3	42.9	44.5	46.0	47.6
2	50.8	52.4	54.0	55.6	57.2	58.7	60.3	61.9	63.5	65.1	66.7	68.3	69.9	71.4	73.0
3	76.2	77.8	79.4	81.0	82.6	84.1	85.7	87.3	88.9	90.5	92.1	93.7	95.3	96.8	98.4
4	101.6	103.2	104.8	106.4	108.0	109.5	111.1	112.7	114.3	115.9	117.5	119.1	120.7	122.2	123.8
5	127.0	128.6	130.2	131.8	133.4	134.9	136.5	138.1	139.7	141.3	142.9	144.5	146.1	147.6	149.2
6	152.4	154.0	155.6	157.2	158.8	160.3	161.9	163.5	165.1	166.7	168.3	169.9	171.5	173.0	174.6
7	177.8	179.4	181.0	182.6	184.2	185.7	187.3	188.9	190.5	192.1	193.7	195.3	196.9	198.4	200.0
8	203.2	204.8	206.4	208.0	209.6	211.1	212.7	214.3	215.9	217.5	219.1	220.7	222.3	223.8	225.4
9	228.6	230.2	231.8	233.4	235.0	236.5	238.1	239.7	241.3	242.9	244.5	246.1	247.7	249.2	250.8
10	254.0	255.6	257.2	258.8	260.4	261.9	263.5	265.1	266.7	268.3	269.9	271.5	273.1	274.6	276.2

3
inches and
fractions of
inch to
millimetres

in	0	1	2	3	4	5	6	7	8	9	10	11
m												
0		0.0254	0.0508	0.0762	0.1016	0.127	0.1524	0.1778	0.2032	0.2286	0.254	0.2794
1	0.3048	0.3302	0.3556	0.381	0.4064	0.4318	0.4572	0.4826	0.508	0.5334	0.5588	0.5842
2	0.6096	0.635	0.6604	0.6858	0.7112	0.7366	0.762	0.7874	0.8128	0.8382	0.8636	0.889
3	0.9144	0.9398	0.9652	0.9906	1.016	1.0414	1.0668	1.0922	1.1176	1.143	1.1684	1.1938
4	1.2192	1.2446	1.27	1.2954	1.3208	1.3462	1.3716	1.397	1.4224	1.4478	1.4732	1.4986
5	1.524	1.5494	1.5748	1.6002	1.6256	1.651	1.6764	1.7018	1.7272	1.7526	1.778	1.8034
6	1.8288	1.8542	1.8796	1.905	1.9304	1.9558	1.9812	2.0066	2.032	2.0574	2.0828	2.1082
7	2.1336	2.159	2.1844	2.2098	2.2352	2.2606	2.286	2.3114	2.3368	2.3622	2.3876	2.413
8	2.4384	2.4638	2.4892	2.5146	2.54	2.5654	2.5908	2.6162	2.6416	2.667	2.6924	2.7178
9	2.7432	2.7686	2.794	2.8194	2.8448	2.8702	2.8956	2.921	2.9464	2.9718	2.9972	3.0226
10	3.048											

4
feet and
inches to
metres

5
metres to
feet

m	0	1	2	3	4	5	6	7	8	9
	ft									
0		3.28	6.56	9.84	13.12	16.40	19.69	22.97	26.25	29.53
10	32.8	36.09	39.37	42.65	45.93	49.21	52.49	55.77	59.06	62.34
20	65.62	68.9	72.17	75.45	78.74	82.02	85.3	88.58	91.86	95.14
30	98.43	101.7	104.99	108.27	111.55	114.82	118.11	121.39	124.67	127.95
40	131.23	134.51	137.8	141.08	144.36	147.63	150.91	154.2	157.48	160.76
50	164.04	167.32	170.6	173.89	177.17	180.45	183.73	187.01	190.29	193.57
60	196.85	200.13	203.41	206.69	209.97	213.25	216.54	219.82	223.1	226.38
70	229.66	232.94	236.22	239.5	242.78	246.06	249.34	252.63	255.91	259.19
80	262.46	265.75	269.03	272.31	275.59	278.87	282.15	285.43	288.71	292.0
90	295.28	298.56	301.84	305.12	308.4	311.68	314.96	318.24	321.52	324.8
100	328.08	331.37	334.65	337.93	341.21	344.49	347.77	351.05	354.33	357.61
110	360.89	364.17	367.45	370.74	374.02	377.3	380.58	383.86	387.14	390.42
120	393.7	396.98	400.26	403.54	406.82	410.1	413.39	416.67	419.95	423.23
130	426.51	429.79	433.07	436.35	439.63	442.91	446.19	449.48	452.76	456.04
140	459.32	462.6	465.88	469.16	472.44	475.72	479.0	482.28	485.56	488.85
150	492.13	495.41	498.69	502.0	505.25	508.53	511.81	515.09	518.37	521.65
160	524.93	528.22	531.5	534.78	538.06	541.34	544.62	547.9	551.18	554.46
170	557.74	561.02	564.3	567.59	570.87	574.15	577.43	580.71	583.99	587.27
180	590.55	593.83	597.11	600.39	603.68	606.96	610.24	613.52	616.8	620.08
190	623.36	626.64	629.92	633.2	636.48	639.76	643.05	646.33	649.6	652.89
200	656.17	659.45	662.73	666.01	669.29	672.57	675.85	679.13	682.42	685.7
210	688.98	692.26	695.54	698.82	702.1	705.38	708.66	711.94	715.22	718.5
220	721.79	725.07	728.35	731.63	734.91	738.19	741.47	744.75	748.03	751.31
230	754.59	757.87	761.16	764.44	767.72	771.0	774.28	777.56	780.84	784.12
240	787.4	790.68	793.96	797.24	800.53	803.81	807.09	810.37	813.65	816.93
250	820.21									

7
metres to
yards

m	0	1	2	3	4	5	6	7	8	9
	yd									
0		1.09	2.19	3.28	4.37	5.47	6.56	7.66	8.75	9.84
10	10.94	12.03	13.12	14.22	15.31	16.4	17.5	18.59	19.69	20.78
20	21.87	22.97	24.06	25.15	26.25	27.34	28.43	29.53	30.62	31.71
30	32.8	33.9	35.0	36.09	37.18	38.28	39.37	40.46	41.56	42.65
40	43.74	44.84	45.93	47.03	48.12	49.21	50.31	51.4	52.49	53.59
50	54.68	55.77	56.87	57.96	59.06	60.15	61.24	62.34	63.43	64.52
60	65.62	66.71	67.8	68.9	69.99	71.08	72.18	73.27	74.37	75.46
70	76.55	77.65	78.74	79.83	80.93	82.02	83.11	84.21	85.3	86.4
80	87.49	88.58	89.68	90.77	91.86	92.96	94.05	95.14	96.24	97.33
90	98.43	99.52	100.61	101.71	102.8	103.89	104.99	106.08	107.17	108.27
100	109.36	110.46	111.55	112.64	113.74	114.83	115.92	117.02	118.11	119.2
110	120.3	121.39	122.49	123.58	124.67	125.74	126.86	127.95	129.05	130.14
120	131.23	132.33	133.42	134.51	135.61	136.7	137.8	138.89	139.99	141.08
130	142.17	143.26	144.36	145.45	146.54	147.64	148.73	149.83	150.92	152.01
140	153.1	154.2	155.29	156.39	157.48	158.57	159.67	160.76	161.86	162.95
150	164.04	165.14	166.23	167.32	168.42	169.51	170.6	171.7	172.79	173.89
160	174.98	176.07	177.17	178.26	179.35	180.45	181.54	182.63	183.73	184.82
170	185.91	187.0	188.1	189.2	190.29	191.38	192.48	193.57	194.66	195.76
180	196.85	197.94	199.04	200.13	201.23	202.32	203.41	204.51	205.6	206.69
190	207.79	208.88	209.97	211.07	212.16	213.26	214.35	215.44	216.53	217.63
200	218.72	219.82	220.91	222.0	223.1	224.19	225.28	226.38	227.47	228.57
210	229.66	230.75	231.85	232.94	234.03	235.13	236.22	237.31	238.41	239.5
220	240.56	241.69	242.78	243.88	244.97	246.06	247.16	248.25	249.34	250.44
230	251.53	252.63	253.72	254.81	255.91	257.0	258.09	259.19	260.28	261.37
240	262.47	263.56	264.65	265.75	266.84	267.94	269.03	270.12	271.22	272.31
250	273.4									

9
kilometres
to miles

km	0	1	2	3	4	5	6	7	8	9
	mile									
0		0.62	1.24	1.86	2.49	3.11	3.73	4.35	4.98	5.59
10	6.21	6.84	7.46	8.08	8.7	9.32	9.94	10.56	11.18	11.81
20	12.43	13.05	13.67	14.29	14.91	15.53	16.16	16.78	17.4	18.02
30	18.64	19.29	19.88	20.5	21.13	21.75	22.37	22.99	23.61	24.23
40	24.85	25.47	26.1	26.72	27.34	27.96	28.58	29.2	29.83	30.45
50	31.07	31.69	32.31	32.93	33.55	34.18	34.8	35.42	36.04	36.66
60	37.28	37.9	38.53	39.15	39.77	40.39	41.01	41.63	42.25	42.87
70	43.5	44.12	44.74	45.36	45.98	46.6	47.22	47.85	48.47	49.09
80	49.7	50.33	50.95	51.57	52.2	52.82	53.44	54.06	54.68	55.3
90	55.92	56.54	57.17	57.79	58.41	59.03	59.65	60.27	60.89	61.52
100	62.14									

CONVERSIONS

ft	0	1	2	3	4	5	6	7	8	9
	m									
0		0.31	0.6	0.91	1.22	1.52	1.83	2.13	2.44	2.74
10	3.05	3.35	3.66	3.96	4.27	4.57	4.88	5.18	5.49	5.79
20	6.1	6.4	6.71	7.01	7.31	7.62	7.92	8.23	8.53	8.84
30	9.14	9.45	9.75	10.06	10.36	10.67	10.97	11.28	11.58	11.89
40	12.19	12.5	12.80	13.1	13.41	13.72	14.02	14.36	14.63	14.94
50	15.24	15.54	15.85	16.15	16.46	16.76	17.07	17.37	17.68	17.98
60	18.29	18.59	18.9	19.2	19.58	19.81	20.12	20.42	20.73	21.03
70	21.33	21.64	21.95	22.25	22.56	22.86	23.16	23.47	23.77	24.08
80	24.38	24.69	24.99	25.3	25.6	25.91	26.21	26.52	26.82	27.13
90	27.43	27.74	28.04	28.35	28.65	28.96	29.26	29.57	29.87	30.18
100	30.48	30.78	31.09	31.39	31.7	32.0	32.31	32.61	32.92	33.22
110	33.53	33.83	34.14	34.44	34.75	35.05	35.37	35.67	36.0	36.3
120	36.58	36.88	37.19	37.49	37.8	38.1	38.41	38.7	39.01	39.32
130	39.62	39.93	40.23	40.54	40.84	41.15	41.45	41.76	42.06	42.37
140	42.67	42.98	43.28	43.59	43.89	44.2	44.5	44.81	45.11	45.46
150	45.72	46.02	46.33	46.63	46.94	47.24	47.55	47.85	48.16	48.46
160	48.77	49.07	49.38	49.68	49.99	50.29	50.6	50.9	51.21	51.51
170	51.82	52.12	52.43	52.73	53.04	53.34	53.64	53.95	54.25	54.56
180	54.86	55.17	55.47	55.78	56.08	56.39	56.69	57.0	57.3	57.61
190	57.91	58.22	58.52	58.83	59.13	59.44	59.74	60.05	60.35	60.66
200	60.96	61.26	61.57	61.87	62.18	62.48	62.79	63.09	63.4	63.7
210	64.01	64.31	64.62	64.92	65.23	65.53	65.84	66.14	66.45	66.75
220	67.06	67.36	67.67	67.97	68.28	68.58	68.89	69.19	69.49	69.79
230	70.1	70.41	70.71	71.02	71.32	71.63	71.93	72.24	72.54	72.85
240	73.15	73.46	73.76	74.07	74.37	74.68	74.98	75.29	75.59	75.9
250	76.2									

6
feet to
metres

yd	0	1	2	3	4	5	6	7	8	9
	m									
0		0.91	1.83	2.74	3.65	4.57	5.49	6.4	7.32	8.23
10	9.14	10.06	10.97	11.89	12.8	13.71	14.63	15.54	16.46	17.37
20	18.29	19.2	20.12	21.03	21.95	22.86	23.77	24.69	25.6	26.52
30	27.43	28.35	29.26	30.18	31.09	32.0	32.92	33.83	34.75	35.66
40	36.58	37.49	38.4	39.32	40.23	41.15	42.06	42.98	43.89	44.81
50	45.72	46.63	47.55	48.46	49.38	50.29	51.21	52.12	53.04	53.95
60	54.86	55.78	56.69	57.61	58.52	59.44	60.35	61.27	62.18	63.09
70	64.0	64.92	65.84	66.75	67.67	68.58	69.49	70.41	71.32	72.24
80	73.15	74.07	74.98	75.9	76.81	77.72	78.64	79.55	80.47	81.38
90	82.3	83.21	84.12	85.04	85.95	86.87	87.78	88.7	89.61	90.53
100	91.44	92.35	93.27	94.18	95.1	96.01	96.93	97.84	98.76	99.67
110	100.58	101.5	102.41	103.33	104.24	105.16	106.07	106.99	107.9	108.81
120	109.73	110.64	111.56	112.47	113.39	114.3	115.21	116.13	117.04	117.96
130	118.87	119.79	120.7	121.61	122.53	123.44	124.36	125.27	126.19	127.1
140	128.02	128.93	129.85	130.76	131.67	132.59	133.5	134.42	135.33	136.25
150	137.16	138.07	138.99	139.9	140.82	141.73	142.65	143.56	144.48	145.39
160	146.3	147.22	148.13	149.05	149.96	150.88	151.79	152.71	153.62	154.53
170	155.45	156.36	157.28	158.19	159.11	160.02	160.93	161.85	162.76	163.68
180	164.59	165.51	166.42	167.34	168.25	169.16	170.08	170.99	171.9	172.82
190	173.74	174.65	175.57	176.48	177.39	178.31	179.22	180.14	181.05	181.97
200	182.88	183.79	184.71	185.62	186.54	187.45	188.37	189.28	190.2	191.11
210	192.02	192.94	193.85	194.77	195.68	196.6	197.51	198.43	199.34	200.25
220	201.17	202.08	203.0	203.91	204.83	205.74	206.65	207.57	208.48	209.4
230	210.31	211.23	212.14	213.06	213.97	214.88	215.8	216.71	217.63	218.54
240	219.46	220.37	221.29	222.2	223.11	224.03	224.94	225.86	226.77	227.69
250	228.6									

8
yards to
metres

mile	0	1	2	3	4	5	6	7	8	9
	km									
0		1.61	3.22	4.83	6.44	8.05	9.66	11.27	12.87	14.48
10	16.09	17.7	19.31	20.92	22.53	24.14	25.75	27.36	28.97	30.58
20	32.19	33.8	35.41	37.01	38.62	40.23	41.84	43.45	45.06	46.67
30	48.28	49.89	51.5	53.11	54.72	56.33	57.94	59.55	61.16	62.76
40	64.37	65.98	67.59	69.2	70.81	72.42	74.03	75.64	77.25	78.86
50	80.47	82.08	83.69	85.3	86.9	88.51	90.12	91.73	93.34	94.95
60	96.56	98.17	99.78	101.39	103.0	104.61	106.22	107.83	109.44	111.05
70	112.65	114.26	115.87	117.48	119.09	120.7	122.31	123.92	125.53	127.14
80	128.75	130.36	131.97	133.58	135.19	136.79	138.4	140.01	141.62	143.23
90	144.84	146.45	148.06	149.67	151.28	152.89	154.5	156.11	157.72	159.33
100	160.93									

10
miles to
kilometres

Area	cm ²	0	1	2	3	4	5	6	7	8	9
	in ²										
11 square centimetres to square inches	0		0.16	0.31	0.47	0.62	0.78	0.93	1.09	1.24	1.4
	10	1.6	1.71	1.86	2.02	2.17	2.33	2.48	2.64	2.79	2.95
	20	3.1	3.26	3.41	3.57	3.72	3.88	4.03	4.19	4.34	4.5
	30	4.65	4.81	4.96	5.12	5.27	5.43	5.58	5.74	5.9	6.05
	40	6.2	6.36	6.51	6.67	6.82	6.98	7.13	7.29	7.44	7.6
	50	7.75	7.91	8.06	8.22	8.37	8.53	8.68	8.84	9.0	9.15
	60	9.3	9.46	9.61	9.77	9.92	10.08	10.23	10.39	10.54	10.7
	70	10.85	11.01	11.16	11.32	11.47	11.63	11.78	11.94	12.09	12.25
	80	12.4	12.56	12.71	12.87	13.02	13.18	13.33	13.49	13.64	13.8
	90	13.95	14.11	14.26	14.42	14.57	14.73	14.88	15.04	15.19	15.35
	100	15.5	15.66	15.81	15.97	16.12	16.28	16.43	16.59	16.74	16.9
	110	17.05	17.21	17.36	17.52	17.67	17.83	17.98	18.14	18.29	18.45
	120	18.6	18.76	18.91	19.07	19.22	19.38	19.53	19.69	19.84	20.0
	130	20.15	20.31	20.46	20.62	20.77	20.93	21.08	21.24	21.39	21.55
	140	21.7	21.86	22.01	22.17	22.32	22.48	22.63	22.79	22.94	23.1
	150	23.25	23.41	23.56	23.72	23.87	24.03	24.18	24.34	24.49	24.65
	160	24.8	24.96	25.11	25.27	25.42	25.58	25.73	25.89	26.04	26.2
	170	26.35	26.51	26.66	26.82	26.97	27.13	27.28	27.44	27.59	27.75
	180	27.9	28.06	28.21	28.37	28.52	28.68	28.83	28.99	29.14	29.3
	190	29.45	29.61	29.76	29.92	30.07	30.23	30.38	30.54	30.69	30.85
	200	31.0	31.16	31.31	31.47	31.62	31.78	31.93	32.09	32.24	32.4
	210	32.55	32.71	32.86	33.02	33.17	33.33	33.48	33.64	33.79	33.95
	220	34.1	34.26	34.41	34.57	34.72	34.88	35.03	35.19	35.34	35.5
	230	35.65	35.81	35.96	36.12	36.27	36.43	36.58	36.75	36.89	37.05
	240	37.20	37.36	37.51	37.67	37.82	37.98	38.13	38.29	38.44	38.6
	250	38.75									
13 square metres to square feet	m ²	0	1	2	3	4	5	6	7	8	9
	ft ²										
	0		10.76	21.53	32.29	43.06	53.82	64.58	75.35	86.11	96.88
	10	107.64	118.4	129.17	139.93	150.66	161.46	172.22	182.97	193.75	204.51
	20	215.29	226.01	236.81	247.57	258.33	269.1	279.86	290.63	301.39	312.15
	30	322.92	333.68	344.45	355.21	365.97	376.74	387.5	398.27	409.03	419.79
	40	430.56	441.32	452.08	462.85	473.61	484.38	495.14	505.91	516.67	527.43
	50	538.2	548.96	559.72	570.49	581.25	592.02	602.78	613.54	624.31	635.07
	60	645.84	656.6	667.36	678.13	688.89	699.65	710.42	721.18	731.95	742.71
	70	753.47	764.24	775.0	785.77	796.53	807.29	818.06	828.82	839.59	850.35
	80	861.11	871.88	882.64	893.41	904.17	914.93	925.7	936.46	947.22	957.99
	90	968.75	979.52	990.28	1001.04	1011.81	1022.57	1033.34	1044.1	1054.86	1065.63
	100	1076.39	1087.15	1097.92	1108.68	1119.45	1130.21	1140.97	1151.74	1162.5	1173.27
	110	1184.03	1194.79	1205.56	1216.32	1227.09	1237.85	1248.61	1259.38	1270.14	1280.91
	120	1291.67	1302.43	1313.2	1323.96	1334.72	1345.49	1356.25	1367.02	1377.78	1388.54
	130	1399.31	1410.07	1420.84	1431.6	1442.36	1453.13	1463.89	1474.66	1485.42	1496.18
	140	1506.95	1517.71	1528.48	1539.24	1550.0	1560.77	1571.53	1582.29	1593.06	1603.82
	150	1614.59	1625.35	1636.11	1646.88	1657.64	1668.41	1679.17	1689.93	1700.7	1711.46
	160	1722.23	1732.99	1743.75	1754.52	1765.28	1776.05	1786.81	1797.57	1808.34	1819.1
	170	1829.86	1840.63	1851.39	1862.16	1872.92	1883.68	1894.45	1905.21	1915.98	1926.74
	180	1937.5	1948.27	1959.03	1969.8	1980.56	1991.32	2002.09	2012.85	2023.62	2034.38
	190	2045.14	2055.91	2066.67	2077.43	2088.2	2098.96	2109.73	2120.49	2131.25	2142.02
	200	2152.78	2163.55	2174.31	2185.07	2195.84	2206.6	2217.37	2228.13	2238.89	2249.66
	210	2260.42	2271.19	2281.95	2292.71	2303.48	2314.24	2325.0	2335.77	2346.53	2357.3
	220	2368.06	2378.82	2389.59	2400.35	2411.12	2421.88	2432.64	2443.41	2454.17	2464.94
	230	2475.7	2486.46	2497.23	2507.99	2518.76	2529.52	2540.28	2551.05	2561.81	2572.57
	240	2583.34	2594.1	2604.87	2615.63	2626.39	2637.16	2647.92	2658.69	2669.45	2680.21
	250	2690.98	2701.74	2712.51	2723.27	2734.03	2744.8	2755.56	2766.32	2777.09	2787.85
	260	2798.62	2809.38	2820.14	2830.91	2841.67	2852.44	2863.2	2873.96	2884.73	2895.49
	270	2906.26	2917.02	2927.78	2938.55	2949.31	2960.08	2970.84	2981.6	2992.37	3003.13
	280	3013.89	3024.66	3035.42	3046.19	3056.95	3067.71	3078.48	3089.24	3100.01	3110.77
	290	3121.53	3132.3	3143.06	3153.83	3164.59	3175.35	3186.12	3196.88	3207.65	3218.41
	300	3229.17	3239.94	3250.7	3261.46	3272.23	3282.99	3293.76	3304.52	3315.28	3326.05
	310	3336.81	3347.58	3358.34	3369.1	3379.87	3390.63	3401.4	3412.16	3422.92	3433.69
	320	3444.45	3455.22	3465.98	3476.74	3487.51	3498.27	3509.03	3519.8	3530.56	3541.33
	330	3552.09	3562.85	3573.62	3584.38	3595.15	3605.91	3616.67	3627.44	3638.2	3648.97
	340	3659.73	3670.49	3681.26	3692.02	3702.79	3713.55	3724.31	3735.08	3745.84	3756.6
	350	3767.37	3778.13	3788.9	3799.66	3810.42	3821.19	3831.95	3842.72	3853.48	3864.24
	360	3875.01	3885.77	3896.54	3907.3	3918.06	3928.83	3939.59	3950.36	3961.12	3971.88
	370	3982.65	3993.41	4004.17	4014.94	4025.7	4036.47	4047.23	4057.99	4068.76	4079.52
	380	4090.29	4101.05	4111.81	4122.58	4133.34	4144.11	4154.87	4165.63	4176.4	4187.16
	390	4197.93	4208.69	4219.45	4230.22	4240.98	4251.74	4262.51	4273.27	4284.04	4294.8
	400	4305.56	4316.33	4327.09	4337.86	4348.62	4359.38	4370.15	4380.91	4391.68	4402.44
	410	4413.2	4423.97	4434.73	4445.49	4456.26	4467.02	4477.79	4488.55	4499.31	4510.08
	420	4520.84	4531.61	4542.37	4553.13	4563.9	4574.66	4585.43	4596.19	4606.95	4617.72
	430	4628.48	4639.25	4650.01	4660.77	4671.54	4682.3	4693.06	4703.83	4714.59	4725.36
	440	4736.12	4746.88	4757.65	4768.41	4779.18	4789.94	4800.7	4811.47	4822.23	4833.0
	450	4843.76	4854.52	4865.29	4876.05	4886.82	4897.58	4908.34	4919.11	4929.87	4940.63
	460	4951.4	4962.16	4972.93	4983.69	4994.45	5005.22	5015.98	5026.75	5037.51	5048.27
	470	5059.04	5069.8	5080.57	5091.33	5102.09	5112.86	5123.62	5134.39	5145.15	5155.91
	480	5166.68	5177.44	5188.2	5198.97	5209.73	5220.5	5231.26	5242.02	5252.79	5263.55
	490	5274.32	5285.08	5295.84	5306.61	5317.37	5328.14	5338.9	5349.66	5360.43	5371.19
	500	5381.96									

CONVERSIONS

in ²	0	1	2	3	4	5	6	7	8	9
	cm ²									
0		6.45	12.9	19.36	25.81	32.26	38.71	45.16	51.61	58.06
10	64.52	70.97	77.41	83.87	90.32	96.77	103.23	109.68	116.13	122.58
20	129.03	135.48	141.94	148.39	154.84	161.29	167.74	174.19	180.65	187.1
30	193.55	200.0	206.45	212.9	219.35	225.8	232.26	238.71	245.16	251.61
40	258.06	264.52	270.97	277.42	283.87	290.32	296.77	303.23	309.68	316.13
50	322.58	329.03	335.48	341.94	348.4	354.84	361.29	367.74	374.19	380.64
60	387.1	393.55	400.0	406.45	412.91	419.35	425.81	432.26	438.71	445.16
70	451.61	458.06	464.52	470.97	477.42	483.87	490.32	496.77	503.23	509.68
80	516.13	522.58	529.03	535.48	541.93	548.39	554.84	561.29	567.74	574.19
90	580.64	587.1	593.55	600.0	606.45	612.91	619.35	625.81	632.26	638.71
100	645.16	651.61	658.06	664.51	670.97	677.42	683.87	690.32	696.77	703.22
110	709.6	716.13	722.58	729.03	735.48	741.93	748.39	754.84	761.29	767.74
120	774.19	780.64	787.1	793.55	800.0	806.45	812.9	819.35	825.81	832.26
130	838.71	845.16	851.61	858.06	864.51	870.97	877.42	883.87	890.32	896.77
140	903.22	909.68	916.13	922.58	929.03	935.48	941.93	948.39	954.84	961.29
150	967.74	974.19	980.64	987.1	993.55	1000.00	1006.45	1012.9	1019.35	1025.8
160	1032.26	1038.71	1045.16	1051.61	1058.06	1064.51	1070.97	1077.42	1083.87	1090.32
170	1096.77	1103.22	1109.68	1116.13	1122.58	1129.03	1135.48	1141.93	1148.38	1154.84
180	1161.29	1167.74	1174.19	1180.64	1187.09	1193.55	1200.0	1206.45	1212.9	1219.35
190	1225.8	1232.26	1238.71	1245.16	1251.61	1258.06	1264.51	1270.97	1277.42	1283.87
200	1290.32	1296.77	1303.22	1309.67	1316.13	1322.58	1329.03	1335.48	1341.93	1348.38
210	1354.84	1361.29	1367.74	1374.19	1380.64	1387.09	1393.55	1400.0	1406.45	1412.9
220	1419.35	1425.8	1432.26	1438.71	1445.16	1451.61	1458.06	1464.51	1470.96	1477.42
230	1483.87	1490.32	1496.77	1503.22	1509.67	1516.13	1522.58	1529.03	1535.48	1541.93
240	1548.38	1554.84	1561.29	1567.74	1574.19	1580.64	1587.09	1593.55	1600.0	1606.45
250	1612.9									

12
square
inches
to square
centimetres

ft ²	0	1	2	3	4	5	6	7	8	9
	m ²									
0		0.09	0.19	0.28	0.37	0.46	0.56	0.65	0.74	0.84
10	0.93	1.02	1.11	1.21	1.3	1.39	1.49	1.58	1.67	1.77
20	1.86	1.95	2.04	2.14	2.23	2.32	2.42	2.51	2.6	2.69
30	2.79	2.88	2.97	3.07	3.16	3.25	3.34	3.44	3.53	3.62
40	3.72	3.81	3.9	3.99	4.09	4.18	4.27	4.37	4.46	4.55
50	4.65	4.74	4.83	4.92	5.02	5.11	5.2	5.3	5.39	5.48
60	5.57	5.67	5.76	5.85	5.95	6.04	6.13	6.22	6.32	6.41
70	6.5	6.6	6.69	6.78	6.87	6.97	7.06	7.15	7.25	7.34
80	7.43	7.53	7.62	7.71	7.8	7.9	7.99	8.08	8.18	8.27
90	8.36	8.45	8.55	8.64	8.73	8.83	8.92	9.01	9.1	9.2
100	9.29	9.38	9.48	9.57	9.66	9.75	9.85	9.94	10.03	10.13
110	10.22	10.31	10.41	10.5	10.59	10.68	10.78	10.87	10.96	11.06
120	11.15	11.24	11.33	11.43	11.52	11.61	11.71	11.8	11.89	11.98
130	12.08	12.17	12.26	12.36	12.45	12.54	12.63	12.73	12.82	12.91
140	13.01	13.1	13.19	13.29	13.38	13.47	13.56	13.66	13.75	13.84
150	13.94	14.03	14.12	14.21	14.31	14.4	14.49	14.59	14.68	14.77
160	14.86	14.96	15.05	15.14	15.24	15.33	15.42	15.51	15.61	15.7
170	15.79	15.89	15.98	16.07	16.17	16.26	16.35	16.44	16.54	16.63
180	16.72	16.82	16.91	17.0	17.09	17.19	17.28	17.37	17.47	17.56
190	17.65	17.74	17.84	17.93	18.02	18.12	18.21	18.3	18.39	18.49
200	18.58	18.67	18.77	18.86	18.95	19.05	19.14	19.23	19.32	19.42
210	19.51	19.6	19.7	19.79	19.88	19.97	20.07	20.16	20.25	20.35
220	20.44	20.53	20.62	20.72	20.81	20.9	21.0	21.09	21.18	21.27
230	21.37	21.46	21.55	21.65	21.74	21.83	21.93	22.02	22.11	22.2
240	22.3	22.39	22.48	22.58	22.67	22.76	22.85	22.95	23.04	23.13
250	23.23	23.32	23.41	23.5	23.6	23.69	23.78	23.88	23.97	24.06
260	24.15	24.25	24.34	24.43	24.53	24.62	24.71	24.81	24.9	24.99
270	25.08	25.18	25.27	25.36	25.46	25.55	25.64	25.73	25.83	25.92
280	26.01	26.11	26.2	26.29	26.38	26.48	26.57	26.66	26.76	26.85
290	26.94	27.03	27.13	27.22	27.31	27.41	27.5	27.59	27.69	27.78
300	27.87	27.96	28.06	28.15	28.24	28.34	28.43	28.52	28.61	28.71
310	28.8	28.89	28.99	29.08	29.17	29.26	29.36	29.45	29.54	29.64
320	29.73	29.82	29.91	30.01	30.1	30.19	30.29	30.38	30.47	30.57
330	30.66	30.75	30.84	30.94	31.03	31.12	31.22	31.31	31.4	31.49
340	31.59	31.68	31.77	31.87	31.96	32.05	32.14	32.24	32.33	32.42
350	32.52	32.61	32.7	32.79	32.89	32.98	33.07	33.17	33.26	33.35
360	33.45	33.54	33.63	33.72	33.82	33.91	34.0	34.1	34.19	34.28
370	34.37	34.47	34.56	34.65	34.75	34.84	34.93	35.02	35.12	35.21
380	35.3	35.4	35.49	35.58	35.67	35.77	35.86	35.95	36.05	36.14
390	36.23	36.33	36.42	36.51	36.6	36.7	36.79	36.88	36.98	37.07
400	37.16	37.25	37.35	37.44	37.53	37.63	37.72	37.81	37.9	38.0
410	38.09	38.18	38.28	38.37	38.46	38.55	38.65	38.74	38.83	38.93
420	39.02	39.11	39.21	39.3	39.39	39.48	39.58	39.67	39.76	39.86
430	39.95	40.04	40.13	40.23	40.32	40.41	40.51	40.6	40.69	40.78
440	40.88	40.97	41.06	41.16	41.25	41.34	41.43	41.53	41.62	41.71
450	41.81	41.9	41.99	42.09	42.18	42.27	42.36	42.46	42.55	42.64
460	42.74	42.83	42.92	43.01	43.11	43.2	43.29	43.39	43.48	43.57
470	43.66	43.76	43.85	43.94	44.04	44.13	44.22	44.31	44.41	44.5
480	44.59	44.69	44.78	44.87	44.97	45.06	45.15	45.24	45.34	45.43
490	45.52	45.62	45.71	45.8	45.89	45.99	46.08	46.17	46.27	46.36
500	46.45									

14
square feet
to square
metres

15
square
metres
to square
yards

m ²	0	1	2	3	4	5	6	7	8	9
	yd ²									
0		1.2	2.39	3.58	4.78	5.98	7.18	8.37	9.57	10.76
10	11.96	13.16	14.35	15.55	16.74	17.94	19.14	20.33	21.53	22.72
20	23.92	25.12	26.31	27.51	28.7	29.9	31.1	32.29	33.49	34.68
30	35.88	37.08	38.27	39.47	40.66	41.86	43.06	44.25	45.45	46.64
40	47.84	49.04	50.23	51.43	52.62	53.82	55.02	56.21	57.41	58.6
50	59.8	61.0	62.19	63.39	64.58	65.78	66.98	68.17	69.37	70.56
60	71.76	72.96	74.15	75.35	76.54	77.74	78.94	80.13	81.33	82.52
70	83.72	84.92	86.11	87.31	88.5	89.7	90.9	92.09	93.29	94.48
80	95.68	96.88	98.07	99.27	100.46	101.66	102.86	104.05	105.25	106.44
90	107.64	108.84	110.03	111.23	112.42	113.62	114.82	116.01	117.21	118.4
100	119.6	120.8	121.99	123.19	124.38	125.58	126.78	127.97	129.17	130.36
110	131.56	132.76	133.95	135.15	136.34	137.54	138.74	139.93	141.13	142.32
120	143.52	144.72	145.91	147.11	148.31	149.5	150.7	151.89	153.09	154.28
130	155.48	156.68	157.87	159.07	160.26	161.46	162.66	163.85	165.05	166.24
140	167.44	168.64	169.83	171.03	172.22	173.41	174.62	175.81	177.01	178.2
150	179.34	180.59	181.79	182.99	184.18	185.38	186.57	187.77	188.97	190.16
160	191.36	192.55	193.75	194.95	196.14	197.34	198.53	199.73	200.93	202.12
170	203.32	204.51	205.71	206.91	208.1	209.3	210.49	211.69	212.89	214.08
180	215.28	216.47	217.67	218.87	220.06	221.26	222.45	223.65	224.85	226.04
190	227.24	228.43	229.63	230.83	232.02	233.22	234.41	235.61	236.81	238.0
200	239.2	240.39	241.59	242.79	243.98	245.18	246.37	247.57	248.77	249.96
210	251.16	252.35	253.55	254.75	255.94	257.14	258.33	259.53	260.73	261.92
220	263.12	264.31	265.51	266.71	267.9	269.1	270.29	271.49	272.69	273.88
230	275.08	276.27	277.47	278.67	279.86	281.06	282.25	283.45	284.65	285.84
240	287.04	288.23	289.43	290.63	291.82	293.02	294.21	295.41	296.61	297.8
250	299.0	300.19	301.39	302.59	303.78	304.98	306.17	307.37	308.57	309.76
260	310.96	312.15	313.35	314.55	315.74	316.94	318.13	319.33	320.53	321.72
270	322.92	324.11	325.31	326.51	327.7	328.9	330.09	331.29	332.49	333.68
280	334.88	336.07	337.27	338.47	339.66	340.86	342.05	343.25	344.45	345.64
290	346.84	348.03	349.23	350.43	351.62	352.82	354.02	355.21	356.41	357.6
300	358.78	359.99	361.19	362.39	363.58	364.78	365.97	367.17	368.37	369.56
310	370.76	371.95	373.15	374.35	375.54	376.74	377.94	379.13	380.33	381.52
320	382.72	383.91	385.11	386.31	387.5	388.7	389.89	391.09	392.29	393.48
330	394.68	395.87	397.07	398.27	399.46	400.66	401.85	403.05	404.25	405.44
340	406.64	407.83	409.03	410.23	411.42	412.62	413.81	415.01	416.21	417.4
350	418.6	419.79	420.99	422.18	423.38	424.58	425.77	426.97	428.16	429.36
360	430.56	431.75	432.95	434.14	435.34	436.54	437.73	438.93	440.12	441.32
370	442.52	443.71	444.91	446.11	447.3	448.5	449.69	450.89	452.08	453.28
380	454.48	455.67	456.87	458.06	459.26	460.46	461.65	462.84	464.04	465.24
390	466.44	467.63	468.83	470.02	471.22	472.42	473.61	474.81	476.0	477.2
400	478.4	479.59	480.79	481.98	483.18	484.38	485.57	486.77	487.96	489.16
410	490.36	491.55	492.75	493.94	495.14	496.34	497.53	498.73	499.92	501.12
420	502.32	503.51	504.71	505.9	507.1	508.3	509.49	510.69	511.88	513.08
430	514.28	515.47	516.67	517.86	519.06	520.26	521.45	522.65	523.84	525.04
440	526.24	527.43	528.63	529.82	531.02	532.22	533.41	534.61	535.8	537.0
450	538.2	539.39	540.59	541.78	542.98	544.18	545.37	546.57	547.76	548.96
460	550.16	551.35	552.55	553.74	554.94	556.14	557.33	558.53	559.72	560.92
470	562.12	563.31	564.5	565.71	566.9	568.1	569.29	570.49	571.68	572.88
480	574.08	575.27	576.47	577.66	578.86	580.06	581.25	582.45	583.64	584.84
490	586.04	587.23	588.43	589.62	590.82	592.02	593.21	594.41	595.6	596.8
500	598.0									

17
hectares
to acres

ha	0	1	2	3	4	5	6	7	8	9
	acre									
		2.47	4.94	7.41	9.88	12.36	14.83	17.3	19.77	22.24
100	247.11	271.82	296.53	321.24	345.95	370.66	395.37	420.08	444.8	469.5
200	494.21	518.92	543.63	568.34	593.05	617.76	642.47	667.19	691.9	716.61
300	741.32	766.03	790.74	815.45	840.16	864.87	889.58	914.29	939.0	963.71
400	988.42	1 013.13	1 037.84	1 062.55	1 087.26	1 111.97	1 136.68	1 161.4	1 186.11	1 210.82
500	1 235.53	1 260.24	1 284.95	1 309.66	1 334.37	1 359.08	1 383.79	1 408.5	1 433.21	1 457.92
600	1 482.63	1 507.34	1 532.05	1 556.76	1 581.47	1 606.18	1 630.9	1 655.61	1 680.32	1 705.03
700	1 729.74	1 754.45	1 779.16	1 803.87	1 828.58	1 853.29	1 878.0	1 902.71	1 927.42	1 952.13
800	1 976.84	2 001.55	2 026.26	2 050.97	2 075.69	2 100.4	2 125.11	2 149.82	2 174.53	2 199.24
900	2 223.95	2 248.66	2 273.37	2 298.08	2 322.79	2 347.5	2 372.21	2 396.92	2 421.63	2 446.34
1 000	2 471.05									

CONVERSIONS

yd ²	0	1	2	3	4	5	6	7	8	9
	m ²									
0		0.84	1.67	2.51	3.34	4.18	5.02	5.85	6.69	7.53
10	8.36	9.2	10.03	10.87	11.71	12.54	13.38	14.21	15.05	15.89
20	16.72	17.56	18.39	19.23	20.07	20.9	21.74	22.58	23.41	24.25
30	25.08	25.92	26.76	27.59	28.43	29.26	30.1	30.94	31.77	32.61
40	33.45	34.28	35.12	35.95	36.79	37.63	38.46	39.3	40.13	40.97
50	41.81	42.64	43.48	44.31	45.15	45.99	46.82	47.66	48.5	49.33
60	50.17	51.0	51.84	52.68	53.51	54.35	55.18	56.02	56.86	57.69
70	58.53	59.37	60.2	61.04	61.87	62.71	63.55	64.38	65.22	66.05
80	66.89	67.7	68.56	69.3	70.23	71.07	71.9	72.74	73.5	74.4
90	75.25	76.09	76.92	77.76	78.6	79.43	80.27	81.10	81.94	82.78
100	83.61	84.45	85.29	86.12	86.96	87.79	88.62	89.47	90.3	91.14
110	91.97	92.81	93.65	94.48	95.32	96.15	96.99	97.83	98.66	99.5
120	100.34	101.17	102.0	102.84	103.68	104.52	105.35	106.19	107.02	107.86
130	108.7	109.53	110.37	111.21	112.04	112.88	113.71	114.55	115.39	116.22
140	117.06	117.89	118.73	119.57	120.41	121.24	122.08	122.91	123.75	124.58
150	125.42	126.26	127.09	127.93	128.76	129.6	130.44	131.27	132.11	132.94
160	133.78	134.62	135.45	136.29	137.13	137.96	138.8	139.63	140.47	141.31
170	142.14	142.98	143.81	144.65	145.49	146.32	147.16	148.0	148.83	149.67
180	150.5	151.34	152.18	153.01	153.85	154.68	155.52	156.36	157.19	158.03
190	158.86	159.7	160.54	161.37	162.21	163.05	163.88	164.72	165.55	166.39
200	167.23	168.06	168.9	169.73	170.57	171.41	172.24	173.08	173.91	174.75
210	175.59	176.42	177.26	178.1	178.93	179.77	180.61	181.44	182.28	183.11
220	183.95	184.78	185.62	186.46	187.29	188.13	188.97	189.80	190.64	191.47
230	192.31	193.15	193.98	194.82	195.65	196.49	197.33	198.16	199.0	199.83
240	200.67	201.51	202.34	203.18	204.02	204.85	205.69	206.52	207.36	208.2
250	209.03	209.87	210.7	211.54	212.38	213.21	214.1	214.89	215.72	216.56
260	217.39	218.3	219.07	219.9	220.74	221.57	222.41	223.25	224.08	224.92
270	225.75	226.59	227.43	228.26	229.1	229.94	230.77	231.61	232.44	233.28
280	234.12	234.95	235.79	236.62	237.46	238.3	239.13	239.97	240.81	241.64
290	242.48	243.31	244.15	244.99	245.82	246.66	247.49	248.33	249.17	250.0
300	250.84	251.67	252.51	253.35	254.18	255.02	255.86	256.69	257.53	258.36
310	259.2	260.04	260.87	261.71	262.54	263.38	264.22	265.05	265.89	266.73
320	267.56	268.4	269.23	270.07	270.91	271.74	272.58	273.41	274.25	275.09
330	275.92	276.76	277.59	278.43	279.27	280.11	280.94	281.78	282.61	283.45
340	284.28	285.12	285.96	286.79	287.63	288.46	289.3	290.14	290.97	291.81
350	292.65	293.48	294.32	295.15	295.99	296.83	297.66	298.5	299.33	300.17
360	301.0	301.84	302.68	303.51	304.35	305.19	306.02	306.86	307.7	308.53
370	309.37	310.2	311.04	311.88	312.71	313.55	314.38	315.22	316.06	316.89
380	317.73	318.57	319.4	320.24	321.07	321.91	322.75	323.58	324.42	325.25
390	326.09	326.93	327.76	328.6	329.43	330.27	331.11	331.94	332.78	333.62
400	334.45	335.29	336.12	336.96	337.8	338.63	339.47	340.31	341.14	341.98
410	342.81	343.65	344.48	345.32	346.16	346.99	347.83	348.67	349.51	350.34
420	351.17	352.01	352.85	353.68	354.52	355.35	356.19	357.03	357.86	358.7
430	359.54	360.37	361.21	362.04	362.88	363.72	364.55	365.39	366.22	367.06
440	367.9	368.73	369.57	370.41	371.24	372.08	372.91	373.75	374.59	375.42
450	376.26	377.09	377.93	378.77	379.6	380.44	381.27	382.11	382.95	383.78
460	384.62	385.46	386.29	387.13	387.96	388.8	389.64	390.47	391.31	392.14
470	392.98	393.82	394.65	395.49	396.32	397.16	398.0	398.83	399.67	400.51
480	401.34	402.18	403.01	403.85	404.69	405.52	406.36	407.19	408.03	408.87
490	409.7	410.54	411.38	412.21	413.05	413.88	414.72	415.56	416.39	417.23
500	418.0									

16
square
yards
to square
metres

acre	0	1	2	3	4	5	6	7	8	9
	ha									
		0.4	0.81	1.21	1.62	2.02	2.42	2.83	3.23	3.64
acre	0	10	20	30	40	50	60	70	80	90
	ha									
0		4.05	8.09	12.14	16.19	20.23	24.28	28.33	32.37	36.42
100	40.47	44.52	48.56	52.6	56.66	60.71	64.75	68.8	72.84	76.89
200	80.94	84.98	89.03	93.08	97.12	101.17	105.22	109.26	113.31	117.36
300	121.41	125.46	129.5	133.55	137.59	141.64	145.69	149.73	153.78	157.83
400	161.87	165.92	169.97	174.02	178.06	182.11	186.16	190.20	194.25	198.3
500	202.34	206.39	210.44	214.48	218.53	222.58	226.62	230.67	234.71	238.77
600	242.81	246.86	250.91	254.95	259.0	263.05	267.09	271.14	275.19	279.23
700	283.28	287.33	291.37	295.42	299.47	303.51	307.56	311.61	315.66	319.7
800	323.75	327.8	331.84	335.84	339.94	343.98	348.03	352.07	356.12	360.17
900	364.22	368.26	372.31	376.36	380.41	384.45	388.5	392.55	396.59	400.64
1 000	404.69									

18
acres to
hectares

Volume

19
cubic
centimetres
to cubic
inches

cm ³	0	1	2	3	4	5	6	7	8	9
in ³										
		0.06	0.12	0.18	0.24	0.31	0.37	0.43	0.49	0.55
in ³										
cm ³	0	10	20	30	40	50	60	70	80	90
0		0.61	1.22	1.83	2.44	3.05	3.66	4.27	4.88	5.49
100	6.1	6.71	7.32	7.93	8.54	9.15	9.76	10.37	10.98	11.59
200	12.2	12.82	13.43	14.04	14.65	15.26	15.87	16.48	17.09	17.7
300	18.31	18.92	19.53	20.14	20.75	21.36	21.97	22.58	23.19	23.8
400	24.41	25.02	25.63	26.24	26.85	27.46	28.07	28.68	29.29	29.9
500	30.51	31.12	31.73	32.34	32.95	33.56	34.17	34.78	35.39	36.0
600	36.61	37.22	37.83	38.45	39.06	39.67	40.28	40.89	41.5	42.11
700	42.72	43.38	43.94	44.55	45.16	45.77	46.38	46.99	47.6	48.21
800	48.82	49.43	50.04	50.65	51.26	51.87	52.48	53.09	53.7	54.31
900	54.92	55.53	56.14	56.75	57.36	57.97	58.58	59.19	59.8	60.41
1 000	61.02									

21
cubic
metres to
cubic feet

m ³	0	1	2	3	4	5	6	7	8	9
ft ³										
0		35.31	70.63	105.94	141.26	176.57	211.89	247.2	282.52	317.83
10	353.15	388.46	423.78	459.09	494.41	529.72	565.04	600.35	635.67	670.98
20	706.29	741.61	776.92	812.24	847.55	882.87	918.18	953.5	988.81	1 024.13
30	1 059.44	1 094.75	1 130.07	1 165.38	1 200.7	1 236.01	1 271.33	1 306.64	1 341.96	1 377.27
40	1 412.59	1 447.9	1 483.22	1 518.53	1 553.85	1 589.16	1 624.47	1 659.79	1 695.1	1 730.42
50	1 765.73	1 801.05	1 836.36	1 871.68	1 906.99	1 942.31	1 977.62	2 012.94	2 048.25	2 083.57
60	2 118.88	2 154.19	2 189.51	2 224.82	2 260.14	2 295.45	2 330.77	2 366.08	2 401.4	2 436.71
70	2 472.03	2 507.34	2 542.66	2 577.97	2 613.29	2 648.6	2 683.91	2 719.23	2 754.54	2 789.86
80	2 825.17	2 860.49	2 895.8	2 931.12	2 966.43	3 001.75	3 037.06	3 072.38	3 107.69	3 143.01
90	3 178.32	3 213.63	3 248.95	3 284.26	3 319.58	3 354.89	3 390.21	3 425.52	3 460.84	3 496.15
100	3 531.47	3 566.78	3 602.1	3 637.41	3 672.73	3 708.04	3 743.35	3 778.67	3 813.98	3 849.3
110	3 884.61	3 919.93	3 955.24	3 990.56	4 025.87	4 061.19	4 096.5	4 131.82	4 167.13	4 202.45
120	4 237.76	4 273.07	4 308.39	4 343.7	4 379.02	4 414.33	4 449.65	4 484.96	4 520.28	4 555.59
130	4 590.91	4 626.22	4 661.54	4 696.85	4 732.17	4 767.48	4 802.79	4 838.11	4 873.42	4 908.74
140	4 944.05	4 979.37	5 014.68	5 050.0	5 085.31	5 120.63	5 155.94	5 191.26	5 226.57	5 261.89
150	5 297.2	5 332.51	5 367.83	5 403.14	5 438.46	5 473.77	5 509.09	5 544.4	5 579.72	5 615.03
160	5 650.35	5 685.66	5 720.98	5 756.29	5 791.61	5 826.92	5 862.23	5 897.55	5 932.86	5 968.18
170	6 003.49	6 038.81	6 074.12	6 109.44	6 144.75	6 180.07	6 215.38	6 250.7	6 286.01	6 321.33
180	6 356.64	6 391.95	6 427.27	6 462.58	6 497.9	6 533.21	6 568.53	6 603.84	6 639.16	6 674.47
190	6 709.79	6 745.1	6 780.42	6 815.73	6 851.05	6 886.36	6 921.67	6 956.99	6 992.3	7 027.62
200	7 062.93	7 098.25	7 133.56	7 168.88	7 204.19	7 239.51	7 274.82	7 310.14	7 345.45	7 380.77
210	7 416.08	7 451.39	7 486.71	7 522.02	7 557.34	7 592.65	7 627.97	7 663.28	7 698.6	7 733.91
220	7 769.23	7 804.54	7 839.86	7 875.17	7 910.49	7 945.8	7 981.11	8 016.43	8 051.74	8 087.06
230	8 122.37	8 157.69	8 193.0	8 228.32	8 263.63	8 298.95	8 334.26	8 369.58	8 404.89	8 440.21
240	8 475.52	8 510.83	8 546.15	8 581.46	8 616.78	8 652.09	8 687.41	8 722.72	8 758.04	8 793.35
250	8 828.67									

23
litres to
cubic feet

litre	0	1	2	3	4	5	6	7	8	9
ft ³										
0		0.04	0.07	0.11	0.14	0.18	0.21	0.25	0.28	0.32
10	0.35	0.39	0.42	0.46	0.49	0.53	0.57	0.60	0.64	0.67
20	0.71	0.74	0.78	0.81	0.85	0.88	0.92	0.95	0.99	1.02
30	1.06	1.09	1.13	1.17	1.2	1.24	1.27	1.31	1.34	1.38
40	1.41	1.45	1.48	1.52	1.55	1.59	1.62	1.66	1.7	1.73
50	1.77	1.8	1.84	1.87	1.91	1.94	1.98	2.01	2.05	2.08
60	2.12	2.15	2.19	2.22	2.26	2.3	2.33	2.37	2.4	2.44
70	2.47	2.51	2.54	2.58	2.61	2.65	2.68	2.72	2.75	2.79
80	2.83	2.86	2.9	2.93	2.97	3.0	3.04	3.07	3.11	3.14
90	3.18	3.21	3.25	3.28	3.32	3.35	3.39	3.42	3.46	3.5
100	3.53									

CONVERSIONS

in ³	0	1	2	3	4	5	6	7	8	9
cm³										
		163.9	327.77	491.16	655.55	819.94	983.32	1147.71	1311.1	1474.8
0		163.87	327.74	491.61	655.48	819.35	983.22	1 147.09	1 310.97	1 474.84
100	1 638.71	1 802.58	1 966.45	2 130.32	2 294.19	2 458.06	2 621.93	2 785.8	2 949.67	3 113.54
200	3 277.41	3 441.28	3 605.15	3 769.02	3 932.9	4 096.77	4 260.64	4 424.51	4 588.38	4 752.25
300	4 916.12	5 079.99	5 243.86	5 407.73	5 571.6	5 735.47	5 899.34	6 063.21	6 227.08	6 390.95
400	6 554.83	6 718.7	6 882.57	7 046.44	7 210.31	7 374.18	7 538.05	7 701.92	7 865.79	8 029.66
500	8 193.53	8 357.4	8 521.27	8 685.14	8 849.01	9 012.89	9 176.76	9 340.63	9 504.5	9 668.37
600	9 832.24	9 996.11	10 160.0	10 323.9	10 487.7	10 651.6	10 815.5	10 979.3	11 143.2	11 307.1
700	11 470.9	11 634.8	11 798.7	11 962.6	12 126.4	12 290.3	12 454.2	12 618.0	12 781.9	12 945.8
800	13 109.7	13 273.5	13 437.4	13 601.3	13 765.1	13 929.0	14 092.9	14 256.7	14 420.6	14 584.5
900	14 748.4	14 912.2	15 076.1	15 240.0	15 403.8	15 567.7	15 731.6	15 895.5	16 059.3	16 223.2
1 000	16 387.1									

20
cubic inches
to cubic
centimetres

ft ³	0	1	2	3	4	5	6	7	8	9
m³										
0		0.03	0.06	0.08	0.11	0.14	0.17	0.2	0.23	0.25
10	0.28	0.31	0.34	0.37	0.4	0.42	0.45	0.48	0.51	0.54
20	0.57	0.59	0.62	0.65	0.68	0.71	0.74	0.77	0.79	0.82
30	0.85	0.88	0.91	0.93	0.96	0.99	1.02	1.05	1.08	1.1
40	1.13	1.16	1.19	1.22	1.25	1.27	1.3	1.33	1.36	1.39
50	1.42	1.44	1.47	1.5	1.53	1.56	1.59	1.61	1.64	1.67
60	1.7	1.73	1.76	1.78	1.81	1.84	1.87	1.9	1.93	1.95
70	1.98	2.01	2.04	2.07	2.1	2.12	2.15	2.18	2.21	2.24
80	2.27	2.29	2.32	2.35	2.38	2.41	2.44	2.46	2.49	2.52
90	2.55	2.58	2.61	2.63	2.66	2.69	2.71	2.75	2.78	2.8
100	2.83	2.86	2.89	2.92	2.94	2.97	3.01	3.03	3.06	3.09
110	3.11	3.14	3.17	3.2	3.23	3.26	3.28	3.31	3.34	3.37
120	3.4	3.43	3.46	3.48	3.51	3.54	3.57	3.6	3.62	3.65
130	3.68	3.71	3.74	3.77	3.79	3.82	3.85	3.88	3.91	3.94
140	3.96	4.0	4.02	4.05	4.08	4.11	4.13	4.16	4.19	4.22
150	4.26	4.28	4.3	4.33	4.36	4.39	4.42	4.45	4.47	4.51
160	4.53	4.56	4.59	4.62	4.64	4.67	4.7	4.73	4.76	4.79
170	4.81	4.84	4.87	4.9	4.93	4.96	4.99	5.01	5.04	5.07
180	5.1	5.13	5.15	5.18	5.21	5.24	5.27	5.3	5.32	5.35
190	5.38	5.41	5.44	5.47	5.49	5.52	5.55	5.58	5.61	5.64
200	5.66	5.69	5.72	5.75	5.78	5.8	5.83	5.86	5.89	5.92
210	5.95	5.98	6.0	6.03	6.06	6.09	6.12	6.14	6.17	6.2
220	6.23	6.26	6.29	6.31	6.34	6.37	6.4	6.43	6.46	6.48
230	6.51	6.54	6.57	6.6	6.63	6.65	6.69	6.71	6.74	6.77
240	6.8	6.82	6.85	6.88	6.91	6.94	6.97	6.99	7.02	7.05
250	7.08									

22
cubic feet
to cubic
metres

ft ³	0	1	2	3	4	5	6	7	8	9
litre										
0		28.32	56.63	84.95	113.26	141.58	169.9	198.21	226.53	254.84
10	283.16	311.48	339.79	368.11	396.42	424.74	453.06	481.37	509.69	538.01
20	566.32	594.64	622.95	651.27	679.59	707.9	736.22	764.53	792.85	821.17
30	849.48	877.8	906.11	934.43	962.75	991.06	1 019.38	1 047.69	1 076.01	1 104.33
40	1 132.64	1 160.96	1 189.27	1 217.59	1 245.91	1 274.22	1 302.54	1 330.85	1 359.17	1 387.49
50	1 415.8	1 444.12	1 472.43	1 500.75	1 529.07	1 557.38	1 585.7	1 614.02	1 642.33	1 670.65
60	1 698.96	1 727.28	1 755.6	1 783.91	1 812.23	1 840.54	1 868.86	1 897.18	1 925.49	1 953.81
70	1 982.12	2 010.44	2 038.76	2 067.07	2 095.39	2 123.7	2 152.02	2 180.34	2 208.65	2 236.97
80	2 265.28	2 293.6	2 321.92	2 350.23	2 378.55	2 406.86	2 435.18	2 463.5	2 491.81	2 520.13
90	2 548.44	2 576.76	2 605.08	2 633.39	2 661.71	2 690.03	2 718.34	2 746.66	2 774.97	2 803.29
100	2 831.61									

24
cubic feet
to litres

25
litres to
imperial
gallons

litre	0	1	2	3	4	5	6	7	8	9
gal imp										
0		0.22	0.44	0.66	0.88	1.1	1.32	1.54	1.76	1.98
10	2.2	2.42	2.64	2.86	3.08	3.3	3.52	3.74	3.96	4.18
20	4.4	4.62	4.84	5.06	5.28	5.5	5.72	5.94	6.16	6.38
30	6.6	6.82	7.04	7.26	7.48	7.7	7.92	8.14	8.36	8.58
40	8.8	9.02	9.24	9.46	9.68	9.9	10.12	10.34	10.56	10.78
50	11.0	11.22	11.44	11.66	11.88	12.1	12.32	12.54	12.76	12.98
60	13.2	13.42	13.64	13.86	14.08	14.3	14.52	14.74	14.96	15.18
70	15.4	15.62	15.84	16.06	16.28	16.5	16.72	16.94	17.16	17.38
80	17.6	17.82	18.04	18.26	18.48	18.7	18.92	19.14	19.36	19.58
90	19.8	20.02	20.24	20.46	20.68	20.9	21.12	21.34	21.56	21.78
100	22.0									

27
litres to
US gallons

litre	0	1	2	3	4	5	6	7	8	9
gal US										
10	2.64	0.26	0.53	0.79	1.06	1.32	1.59	1.85	2.11	2.38
20	5.28	5.55	5.81	6.08	6.34	6.61	6.87	7.13	7.4	7.66
30	7.93	8.19	8.45	8.72	8.98	9.25	9.51	9.78	10.04	10.3
40	10.57	10.83	11.1	11.36	11.62	11.89	12.15	12.42	12.68	12.95
50	13.21	13.47	13.74	14.0	14.27	14.53	14.8	15.06	15.32	15.59
60	15.85	16.12	16.38	16.64	16.91	17.17	17.44	17.7	17.97	18.23
70	18.49	18.76	19.02	19.29	19.55	19.82	20.08	20.34	20.61	20.87
80	21.14	21.4	21.66	21.93	22.19	22.46	22.72	22.98	23.25	23.51
90	23.78	24.04	24.31	24.57	24.83	25.1	25.36	25.63	25.89	26.16
100	26.42									

Mass

29
kilograms
to pounds

kg	0	1	2	3	4	5	6	7	8	9
lb										
0		2.21	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.47	39.68	41.89
20	44.09	46.3	48.5	50.71	52.91	55.12	57.32	59.52	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.78	85.98
40	88.18	90.39	92.59	94.8	97.0	99.2	101.41	103.61	105.82	108.03
50	110.23	112.44	114.64	116.85	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.1	143.3	145.51	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17
80	176.37	178.57	180.78	182.98	185.19	187.39	189.6	191.8	194.01	196.21
90	198.42	200.62	202.83	205.03	207.24	209.44	211.64	213.85	216.05	218.26
100	220.46	222.67	224.87	227.08	229.28	231.49	233.69	235.9	238.1	240.3
110	242.51	244.71	246.92	249.12	251.33	253.53	255.74	257.94	260.15	262.35
120	264.56	266.76	268.96	271.17	273.37	275.58	277.78	279.99	282.19	284.4
130	286.6	288.81	291.01	293.22	295.42	297.62	299.83	302.03	304.24	306.44
140	308.65	310.85	313.06	315.26	317.47	319.67	321.88	324.08	326.28	328.49
150	330.69	332.9	335.1	337.31	339.51	341.72	343.92	346.13	348.33	350.54
160	352.74	354.94	357.15	359.35	361.56	363.76	365.97	368.17	370.38	372.58
170	374.79	377.0	379.2	381.4	383.6	385.81	388.01	390.22	392.42	394.68
180	396.83	399.04	401.24	403.45	405.65	407.86	410.06	412.26	414.47	416.67
190	418.88	421.08	423.29	425.49	427.68	429.9	432.11	434.31	436.52	438.72
200	440.93	443.13	445.33	447.54	449.74	451.95	454.15	456.36	458.56	460.77
210	462.97	465.18	467.38	469.59	471.79	473.99	476.2	478.4	480.61	482.81
220	485.02	487.22	489.43	491.63	493.84	496.04	498.25	500.45	502.65	504.86
230	507.06	509.2	511.47	513.6	515.88	518.0	520.29	522.4	524.7	526.9
240	529.1	531.31	533.5	535.72	537.9	540.13	542.3	544.54	546.7	548.9
250	551.16	553.36	555.57	557.77	559.97	562.18	564.38	566.59	568.79	571.0
260	573.2	575.41	577.61	579.82	582.02	584.23	586.43	588.63	590.84	593.04
270	595.25	597.45	599.66	601.86	604.07	606.27	608.48	610.68	612.89	615.09
280	617.29	619.5	621.7	623.91	626.11	628.32	630.52	632.73	634.93	637.14
290	639.34	641.55	643.75	645.95	648.16	650.36	652.57	654.77	656.98	659.18
300	661.39	663.59	665.8	668.0	670.21	672.41	674.62	676.82	679.02	681.23
310	683.43	685.64	687.84	690.05	692.25	694.46	696.66	698.87	701.07	703.28
320	705.48	707.68	709.89	712.09	714.3	716.5	718.71	720.91	723.12	725.32
330	727.53	729.73	731.93	734.14	736.34	738.55	740.75	742.96	745.16	747.37
340	749.57	751.78	753.98	756.19	758.39	760.6	762.8	765.0	767.21	769.41
350	771.62	773.82	776.03	778.23	780.44	782.64	784.85	787.05	789.26	791.46
360	793.66	795.87	798.07	800.28	802.48	804.69	806.89	809.1	811.31	813.51
370	815.71	817.92	820.12	822.32	824.53	826.73	828.94	831.14	833.35	835.55
380	837.76	839.96	842.17	844.37	846.58	848.78	850.98	853.19	855.39	857.6
390	859.8	862.0	864.21	866.41	868.62	870.8	873.03	875.2	877.44	879.64
400	881.85	884.05	886.26	888.46	890.67	892.87	895.08	897.28	899.49	901.69
410	903.9	906.1	908.31	910.51	912.71	914.92	917.12	919.33	921.53	923.74
420	925.94	928.15	930.35	932.56	934.76	936.97	939.17	941.37	943.58	945.78
430	947.99	950.19	952.4	954.6	956.81	959.01	961.22	963.42	965.63	967.83
440	970.03	972.24	974.44	976.65	978.85	981.06	983.26	985.47	987.67	989.88
450	992.08	994.29	996.49	998.69	1000.9	1003.1	1005.31	1007.51	1009.72	1011.92
460	1014.13	1016.33	1018.54	1020.74	1022.94	1025.15	1027.35	1029.56	1031.76	1033.97
470	1036.17	1038.38	1040.58	1042.79	1044.99	1047.2	1049.4	1051.6	1053.81	1056.01
480	1058.22	1060.42	1062.63	1064.83	1067.04	1069.24	1071.45	1073.65	1075.86	1078.06
490	1080.27	1082.47	1084.67	1086.88	1089.08	1091.29	1093.49	1095.7	1097.9	1100.11
500	1102.31									

CONVERSIONS

gal imp	0	1	2	3	4	5	6	7	8	9
	litre									
0		4.55	9.09	13.64	18.18	22.73	27.28	31.82	36.37	40.91
10	45.46	50.0	54.55	59.1	63.64	68.19	72.74	77.28	81.83	86.38
20	90.92	95.47	100.01	104.56	109.1	113.65	118.2	122.74	127.29	131.83
30	136.38	140.93	145.47	150.02	154.56	159.1	163.66	168.21	172.75	177.3
40	181.84	186.38	190.93	195.48	200.02	204.57	209.11	213.66	218.21	222.75
50	227.3	231.84	236.39	240.94	245.48	250.03	254.57	259.12	263.67	268.21
60	272.76	277.3	281.85	286.4	290.94	295.49	300.03	304.58	309.13	313.67
70	318.22	322.76	327.31	331.86	336.4	340.95	345.49	350.04	354.59	359.13
80	363.68	368.22	372.77	377.32	381.86	386.41	390.95	395.5	400.04	404.59
90	409.14	413.68	418.23	422.77	427.32	431.87	436.41	440.96	445.5	450.05
100	454.6									

26
imperial
gallons
to litres

gal US	0	1	2	3	4	5	6	7	8	9
	litre									
0		3.79	7.57	11.36	15.14	18.93	22.71	26.5	30.28	34.07
10	37.85	41.64	45.42	49.21	52.99	56.78	60.56	64.35	68.13	71.92
20	75.7	79.49	83.27	87.06	90.84	94.63	98.41	102.2	105.98	109.77
30	113.55	117.34	121.12	124.91	128.69	132.48	136.26	140.05	143.83	147.62
40	151.40	155.19	158.97	162.76	166.54	170.33	174.11	177.9	181.68	185.47
50	189.25	193.04	196.82	200.61	204.39	208.18	211.96	215.75	219.53	223.32
60	227.1	230.89	234.67	238.46	242.24	246.03	249.81	253.6	257.38	261.17
70	264.95	268.74	272.52	276.31	280.09	283.88	287.66	291.45	295.23	299.02
80	302.81	306.59	310.37	314.16	317.94	321.73	325.51	329.3	333.08	336.87
90	340.65	344.44	348.22	352.01	355.79	359.58	363.36	367.14	370.93	374.72
100	378.51									

28
US gallons
to litres

lb	0	1	2	3	4	5	6	7	8	9
	kg									
0		0.45	0.91	1.36	1.81	2.27	2.72	3.18	3.63	4.08
10	4.54	4.99	5.44	5.9	6.35	6.8	7.26	7.71	8.16	8.62
20	9.07	9.53	9.98	10.43	10.89	11.34	11.79	12.25	12.7	13.15
30	13.61	14.06	14.52	14.97	15.42	15.88	16.33	16.78	17.24	17.69
40	18.14	18.6	19.05	19.5	19.96	20.41	20.87	21.32	21.77	22.23
50	22.68	23.13	23.59	24.04	24.49	24.95	25.4	25.85	26.31	26.76
60	27.22	27.67	28.12	28.58	29.03	29.48	29.94	30.39	30.84	31.3
70	31.75	32.21	32.66	33.11	33.57	34.02	34.47	34.93	35.38	35.83
80	36.29	36.74	37.19	37.65	38.1	38.56	39.01	39.46	39.92	40.37
90	40.82	41.28	41.73	42.18	42.64	43.09	43.54	44.0	44.45	44.91
100	45.36	45.81	46.27	46.72	47.17	47.63	48.08	48.53	48.99	49.44
110	49.9	50.35	50.8	51.26	51.71	52.16	52.62	53.07	53.52	53.98
120	54.43	54.88	55.34	55.79	56.25	56.7	57.15	57.61	58.06	58.51
130	58.97	59.42	59.87	60.33	60.78	61.24	61.69	62.14	62.6	63.05
140	63.5	63.96	64.41	64.86	65.32	65.77	66.22	66.68	67.13	67.59
150	68.04	68.49	68.95	69.4	69.85	70.31	70.76	71.21	71.67	72.12
160	72.57	73.03	73.48	73.94	74.39	74.84	75.3	75.75	76.2	76.66
170	77.11	77.56	78.02	78.47	78.93	79.38	79.83	80.29	80.74	81.19
180	81.65	82.1	82.55	83.01	83.46	83.91	84.37	84.82	85.28	85.73
190	86.18	86.64	87.09	87.54	88.0	88.45	88.9	89.36	89.81	90.26
200	90.72	91.17	91.63	92.08	92.53	92.99	93.44	93.89	94.35	94.8
210	95.25	95.71	96.16	96.62	97.07	97.52	97.98	98.43	98.88	99.34
220	99.79	100.24	100.7	101.15	101.61	102.06	102.51	102.97	103.42	103.87
230	104.33	104.78	105.23	105.69	106.14	106.59	107.05	107.5	107.96	108.41
240	108.86	109.32	109.77	110.22	110.68	111.13	111.58	112.04	112.49	112.95
250	113.4	113.85	114.31	114.76	115.21	115.67	116.12	116.57	117.03	117.48
260	117.93	118.39	118.84	119.3	119.75	120.2	120.66	121.11	121.56	122.02
270	122.47	122.92	123.38	123.83	124.28	124.74	125.19	125.65	126.1	126.55
280	127.01	127.46	127.91	128.37	128.82	129.27	129.73	130.18	130.64	131.09
290	131.54	132.0	132.45	132.9	133.36	133.81	134.26	134.72	135.17	135.62
300	136.08	136.53	136.99	137.44	137.89	138.35	138.8	139.25	139.71	140.16
310	140.61	141.07	141.52	141.97	142.43	142.88	143.34	143.79	144.24	144.7
320	145.15	145.6	146.06	146.51	146.96	147.42	147.87	148.33	148.78	149.23
330	149.69	150.14	150.59	151.05	151.5	151.95	152.41	152.86	153.31	153.77
340	154.22	154.68	155.13	155.58	156.04	156.49	156.94	157.4	157.85	158.3
350	158.76	159.21	159.67	160.12	160.57	161.03	161.48	161.93	162.39	162.84
360	163.29	163.75	164.2	164.65	165.11	165.56	166.02	166.47	166.92	167.38
370	167.83	168.28	168.74	169.1	169.56	170.01	170.46	170.92	171.37	171.83
380	172.37	172.82	173.27	173.73	174.18	174.63	175.09	175.54	175.99	176.45
390	176.9	177.36	177.81	178.26	178.72	179.17	179.62	180.08	180.53	180.98
400	181.44	181.89	182.34	182.8	183.25	183.71	184.16	184.61	185.07	185.52
410	185.97	186.43	186.88	187.33	187.79	188.24	188.69	189.15	189.6	190.06
420	190.51	190.96	191.42	191.87	192.32	192.78	193.23	193.68	194.14	194.59
430	195.05	195.5	195.95	196.41	196.86	197.31	197.77	198.22	198.67	199.13
440	199.58	200.03	200.49	200.94	201.4	201.85	202.3	202.76	203.21	203.66
450	204.12	204.57	205.02	205.48	205.93	206.39	206.84	207.29	207.75	208.2
460	208.65	209.11	209.56	210.01	210.47	210.92	211.37	211.83	212.28	212.74
470	213.19	213.64	214.1	214.55	215.0	215.46	215.91	216.36	216.82	217.27
480	217.72	218.18	218.63	219.09	219.54	219.99	220.45	220.9	221.35	221.81
490	222.26	222.71	223.17	223.62	224.08	224.53	224.98	225.44	225.89	226.34
500	226.8									

30
pounds to
kilograms

Density (mass/ volume)	kg/m ³	0	10	20	30	40	50	60	70	80	90
	lb/ft ³										
	0	0.62	1.25	1.87	2.5	3.12	3.75	4.37	5.0	5.62	
	100	6.24	6.87	7.49	8.12	8.74	9.36	9.99	10.61	11.24	11.86
31	200	12.49	13.11	13.73	14.36	14.98	15.61	16.23	16.86	17.48	18.11
kilograms	300	18.73	19.35	19.98	20.61	21.23	21.85	22.47	23.1	23.72	24.35
per cubic	400	24.97	25.6	26.22	26.84	27.47	28.09	28.72	29.34	29.97	30.59
metre to	500	31.21	31.84	32.46	33.09	33.71	34.33	34.96	35.58	36.21	36.83
pounds per	600	37.46	38.08	38.71	39.33	39.95	40.58	41.2	41.83	42.45	43.08
cubic foot	700	43.7	44.32	44.95	45.57	46.2	46.82	47.45	48.07	48.7	49.32
	800	49.94	50.57	51.19	51.82	52.44	53.06	53.69	54.31	54.94	55.56
	900	56.19	56.81	57.43	58.06	58.68	59.31	59.93	60.56	61.18	61.81
	1 000	62.43									

Velocity	m/s	0	1	2	3	4	5	6	7	8	9
	mile/hr										
33	0	2.24	4.47	6.71	8.95	11.18	13.42	15.66	17.9	20.13	
metres per	10	22.37	24.61	26.84	29.08	31.32	33.55	35.79	38.03	40.26	42.51
second to	20	44.74	46.96	49.21	51.45	53.69	55.92	58.16	60.4	62.63	64.87
miles per	30	67.11	69.35	71.58	73.82	76.06	78.29	80.53	82.77	85.0	87.24
hour	40	89.48	91.71	93.95	96.19	98.43	100.66	102.9	105.13	107.37	109.61
	50	111.85	114.08	116.32	118.56	120.8	123.03	125.27	127.5	129.74	131.98
	60	134.22	136.45	138.69	140.93	143.16	145.4	147.64	149.88	152.11	154.34
	70	156.59	158.82	161.06	163.3	165.53	167.77	170.0	172.24	174.48	176.72
	80	178.96	181.19	183.43	185.67	187.9	190.14	192.38	194.61	196.85	199.09
	90	201.32	203.56	205.8	208.04	210.27	212.51	214.75	216.98	219.22	221.46
	100	223.69									

Pressure, stress	kgf/ cm ²	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	lbf/in ²										
35	0	1.42	2.84	4.27	5.6	7.11	8.53	9.96	11.38	12.8	
kilograms	1	14.22	15.65	17.07	18.49	19.91	21.34	22.76	24.18	25.6	27.02
force per	2	28.45	29.87	31.29	32.71	34.13	35.56	36.98	38.4	39.83	41.25
square	3	42.67	44.09	45.51	46.94	48.36	49.78	51.2	52.63	54.05	55.47
centimetre	4	56.9	58.32	59.73	61.16	62.58	64.0	65.43	66.85	68.27	69.69
to pounds	5	71.12	72.54	73.96	75.38	76.81	78.23	79.65	81.07	82.5	83.92
force per	6	85.34	86.76	88.18	89.61	91.03	92.45	93.87	95.3	96.72	98.14
square inch	7	99.56	100.99	102.41	103.83	105.25	106.68	108.1	109.52	110.94	112.36
	8	113.79	115.21	116.63	118.05	119.48	120.9	122.32	123.74	125.17	126.59
	9	128.01	129.43	130.86	132.28	133.7	135.12	136.54	137.97	139.39	140.81
	10	142.23									

37 kilonewtons per square metre to pounds force per square inch	kN/m ² (k Pa)	0	10	20	30	40	50	60	70	80	90
	lbf/in ²										
	0	1.45	2.9	4.35	5.8	7.25	8.7	10.15	11.6	13.05	
	100	14.50	15.95	17.40	18.85	20.30	21.75	23.21	24.66	26.11	27.56
	200	29.01	30.46	31.91	33.36	34.81	36.26	37.71	39.16	40.61	42.06
	300	43.51	44.96	46.41	47.86	49.31	50.76	52.21	53.66	55.11	56.56
	400	58.01	59.46	60.91	62.36	63.81	65.26	66.71	68.17	69.62	71.07
	500	72.52	73.97	75.42	76.87	78.32	79.77	81.22	82.67	84.12	85.57
	600	87.02	88.47	89.92	91.37	92.82	94.27	95.72	97.17	98.62	100.07
	700	101.52	102.97	104.42	105.87	107.32	108.77	110.22	111.68	113.13	114.58
	800	116.03	117.48	118.93	120.38	121.83	123.28	124.73	126.18	127.63	129.08
	900	130.53	131.98	133.43	134.88	136.33	137.78	139.23	140.68	142.13	143.58
	1 000	145.03									

CONVERSIONS

lb/ft ³	0	1	2	3	4	5	6	7	8	9
	kg/m³									
0		16.02	32.04	48.06	64.07	80.09	96.11	112.13	128.15	144.17
10	160.19	176.2	192.22	208.24	224.26	240.28	256.3	272.31	288.33	304.35
20	320.37	336.39	352.41	368.43	384.44	400.46	416.48	432.5	448.52	464.54
30	480.55	496.57	512.59	528.61	544.63	560.65	576.67	592.68	608.7	624.72
40	640.74	656.76	672.78	688.79	704.81	720.83	736.85	752.87	768.89	784.91
50	800.92	816.94	832.96	848.98	865.0	881.02	897.03	913.05	929.07	945.09
60	961.11	977.13	993.15	1 009.16	1 025.18	1 041.2	1 057.22	1 073.24	1 089.26	1 105.27
70	1 121.29	1 137.31	1 153.33	1 169.35	1 185.37	1 201.38	1 217.4	1 233.42	1 249.44	1 265.46
80	1 281.48	1 297.5	1 313.51	1 329.53	1 345.55	1 361.57	1 377.59	1 393.61	1 409.62	1 425.64
90	1 441.66	1 457.68	1 473.7	1 489.72	1 505.74	1 521.75	1 537.77	1 553.79	1 569.81	1 585.83
100	1 601.85									

32
pounds per
cubic foot to
kilograms
per cubic
metre

mile/hr	0	1	2	3	4	5	6	7	8	9
	m/s									
0		0.45	0.89	1.34	1.79	2.24	2.68	3.13	3.58	4.02
10	4.47	4.92	5.36	5.81	6.26	6.71	7.15	7.6	8.05	8.49
20	8.94	9.39	9.83	10.28	10.73	11.18	11.62	12.07	12.52	12.96
30	13.41	13.86	14.31	14.75	15.2	15.65	16.09	16.54	16.99	17.43
40	17.88	18.33	18.78	19.22	19.67	20.12	20.56	21.01	21.46	21.91
50	22.35	22.8	23.25	23.69	24.14	24.59	25.03	25.48	25.93	26.38
60	26.82	27.27	27.72	28.16	28.61	29.06	29.5	29.95	30.4	30.85
70	31.29	31.74	32.19	32.63	33.08	33.53	33.98	34.42	34.87	35.32
80	35.76	36.21	36.66	37.1	37.55	38.0	38.45	38.89	39.34	39.79
90	40.23	40.68	41.13	41.57	42.02	42.47	42.92	43.36	43.81	44.26
100	44.7									

34
miles per
hour to
metres per
second

lbf/in ²	0	1	2	3	4	5	6	7	8	9
	kgf/cm²									
0		0.07	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.63
10	0.7	0.77	0.84	0.91	0.98	1.05	1.12	1.2	1.27	1.34
20	1.41	1.48	1.55	1.62	1.69	1.76	1.83	1.9	1.97	2.04
30	2.11	2.18	2.25	2.32	2.39	2.46	2.53	2.6	2.67	2.74
40	2.81	2.88	2.95	3.02	3.09	3.16	3.23	3.3	3.37	3.45
50	3.52	3.59	3.66	3.73	3.8	3.87	3.94	4.01	4.08	4.15
60	4.22	4.29	4.36	4.43	4.5	4.57	4.64	4.71	4.78	4.85
70	4.92	4.99	5.06	5.13	5.2	5.27	5.34	5.41	5.48	5.55
80	5.62	5.69	5.77	5.84	5.91	5.98	6.05	6.12	6.19	6.26
90	6.33	6.4	6.47	6.54	6.61	6.68	6.75	6.82	6.89	6.96
100	7.03									

36
pounds force
per square
inch to
kilograms
force per
square
centimetre

lbf/in ²	0	1	2	3	4	5	6	7	8	9
	kN/m² (k Pa)									
0		6.9	13.79	20.68	27.58	34.48	41.37	48.26	55.16	62.06
10	68.95	75.84	82.74	89.64	96.53	103.42	110.32	117.22	124.11	131.0
20	137.9	144.8	151.69	158.58	165.48	172.38	179.27	186.16	193.06	199.96
30	206.85	213.74	220.64	227.54	234.43	241.32	248.22	255.12	262.01	268.9
40	275.8	282.7	289.59	296.48	303.38	310.28	317.17	324.06	330.96	337.86
50	344.75	351.64	358.54	365.44	372.33	379.22	386.12	393.02	399.91	406.8
60	413.7	420.6	427.49	434.38	441.28	448.18	455.07	461.96	468.86	475.76
70	482.65	489.54	496.44	503.34	510.23	517.12	524.02	530.92	537.81	544.7
80	551.6	558.5	565.39	572.28	579.18	586.08	592.97	599.86	606.76	613.66
90	620.55	627.44	634.34	641.24	648.13	655.02	661.92	668.82	675.71	682.6
100	689.5									

38
pounds force
per square
inch to
kilonewtons
per square
metre

Refrigeration	W	0	1	2	3	4	5	6	7	8	9
	Btu/hr										
39	0		3.41	6.82	10.24	13.65	17.06	20.47	23.89	27.3	30.71
watts to	10	34.12	37.53	40.95	44.36	47.77	51.18	54.59	58.01	61.42	64.83
British	20	68.24	71.66	75.07	78.5	81.89	85.3	88.72	92.13	95.54	98.95
thermal	30	102.36	105.78	109.12	112.6	116.01	119.43	122.76	126.25	129.66	133.07
units per hour	40	136.49	139.91	143.31	146.72	150.13	153.55	156.96	160.37	163.78	167.2
	50	170.61	174.02	177.43	180.84	184.26	187.67	191.08	194.49	197.9	201.31
	60	204.73	208.14	211.55	214.97	218.38	221.79	225.2	228.61	232.03	235.44
	70	238.85	242.26	245.68	249.09	252.5	255.91	259.32	262.74	266.15	269.56
	80	272.97	276.38	279.8	283.21	286.62	290.03	293.45	296.86	300.27	303.68
	90	307.09	310.51	313.92	317.33	320.74	324.15	327.57	330.98	334.39	337.8
	100	341.22									

Thermal conductance	W/(m ² K)	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	Btu/(ft ² hr°F)										
41	0.0		0.018	0.035	0.053	0.074	0.088	0.106	0.123	0.141	0.158
watts per	1.0	0.176	0.194	0.211	0.229	0.247	0.264	0.282	0.299	0.317	0.335
square metre	2.0	0.352	0.370	0.387	0.405	0.423	0.440	0.458	0.476	0.493	0.511
kelvin to	3.0	0.528	0.546	0.564	0.581	0.599	0.616	0.634	0.652	0.669	0.687
British	4.0	0.704	0.722	0.740	0.757	0.775	0.793	0.810	0.828	0.845	0.863
thermal	5.0	0.881	0.898	0.916	0.933	0.951	0.969	0.986	1.004	1.021	1.039
units per	6.0	1.057	1.074	1.092	1.110	1.127	1.145	1.162	1.180	1.198	1.215
square foot	7.0	1.233	1.250	1.268	1.286	1.303	1.321	1.34	1.356	1.374	1.391
hour degree F	8.0	1.409	1.427	1.444	1.462	1.479	1.497	1.515	1.532	1.550	1.567
	9.0	1.585	1.603	1.620	1.638	1.656	1.673	1.691	1.708	1.726	1.744
	10.0	1.761									

CONVERSIONS

Btu/hr	0	1	2	3	4	5	6	7	8	9
	W									
0		0.29	0.59	0.88	1.17	1.47	1.76	2.05	2.34	2.64
10	2.93	3.22	3.52	3.81	4.1	4.4	4.69	4.98	5.28	5.57
20	5.86	6.16	6.45	6.74	7.03	7.33	7.62	7.91	8.21	8.5
30	8.79	9.09	9.38	9.67	9.97	10.26	10.55	10.84	11.14	11.43
40	11.72	12.02	12.31	12.6	12.9	13.19	13.48	13.78	14.07	14.36
50	14.66	14.95	15.24	15.53	15.83	16.12	16.41	16.71	17.0	17.29
60	17.59	17.88	18.17	18.47	18.76	19.05	19.34	19.64	19.93	20.22
70	20.52	20.81	21.1	21.4	21.69	21.98	22.28	22.57	22.86	23.15
80	23.45	23.74	24.03	24.33	24.62	24.91	25.21	25.5	25.79	26.09
90	26.38	26.67	26.97	27.26	27.55	27.84	28.14	28.43	28.72	29.02
100	29.31									

40
British
thermal
units per hour
to watts

Btu/(ft ² hr°F)	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
	W/(m²K)									
0.0		0.057	0.114	0.17	0.227	0.284	0.341	0.397	0.454	0.511
0.1	0.568	0.624	0.681	0.738	0.795	0.852	0.908	0.965	1.022	1.079
0.2	1.136	1.192	1.249	1.306	1.363	1.42	1.476	1.533	1.59	1.647
0.3	1.703	1.76	1.817	1.874	1.931	1.987	2.044	2.101	2.158	2.214
0.4	2.271	2.328	2.385	2.442	2.498	2.555	2.612	2.669	2.725	2.782
0.5	2.839	2.896	2.953	3.009	3.066	3.123	3.18	3.236	3.293	3.35
0.6	3.407	3.464	3.52	3.577	3.634	3.691	3.747	3.804	3.861	3.918
0.7	3.975	4.031	4.088	4.145	4.202	4.258	4.315	4.372	4.429	4.486
0.8	4.542	4.599	4.656	4.713	4.77	4.826	4.883	4.94	4.997	5.053
0.9	5.11	5.167	5.224	5.281	5.337	5.394	5.451	5.508	5.564	5.621
1.0	5.678									

42
British
thermal
units per
square foot
hour degree F
to watts per
square metre
kelvin

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