

Structural technology and materials group

Locating materials information

The following is a list of key shelf numbers for the materials subject area. If you are looking for a particular book please check the library catalogue.

Adhesives	668.3	Bulk materials handling	621.8673
Aluminium	669.722	Materials handbooks	620.102
Automotive materials	629.232	Materials science	620.1
Biomedical materials	617.3	Materials testing	620.112
CAD	745.2002	Mechanics of materials	620.11
CAD/CAM	658.505	Metals	669
Ceramics	666	Metal Forming	671.3
Casting -Ferrous	672.25	Nanomaterials	681.3
Casting - Non Ferrous	671.25	Non destructive testing	620.1127
Composites	620.198	Oil/Petroleum	665.5
Corrosion	669.124	Paper making	676.2
Creep	620.11233	Plasticity	620.11233
Elasticity	620.11213	Plastics	668.4
Engineering databooks	620.8	Polymers	668.42
Engineering design	745.2	Powder Metallurgy	671.37
Fatigue of materials	620.1123	Rubber	678
Fibre reinforced composites	620.198	Shape memory alloys	620.1
Fluid mechanics	532	Sheet Metal	671.3
Foundry engineering	671.2	Stainless steel	669.133
Fracture	620.112	Statistical reliability	310.21
Friction	671.89	Stress analysis	620.1121
Fuels	662.6	Strength of materials	620.11
Gases	665.7	Textiles	677
Gas dynamics	533	Titanium	669.732
Glass	666	Tribology	621.89
Impact testing	620.1125	Unit conversion tables	389.152
Life cycle analysis	338.4	Wear of materials	621.89
Light metals	669.72	Welding	671.52
Lubrication	621.89		

Useful books

ASM International, Worldman's engineering alloys	669.02 WOL (Reference)
ASM International, Atlas of stress-strain curves	620.112 AME (Reference)
ASM, Worldwide guide to equivalent irons and steels	669.13 AME (Reference)
ASTM, Annual book of ASTM standards part 1-15	Standards collection
Craig R, Mechanics of materials	690.1 CRA
Davison B, Steel designers' manual	690.11 DAV
Dorf RC, The engineering handbook	620.8 DOR (Reference)
Elias HG, An introduction to plastics	668.4 ELI

Frankl P, Life cycle assessment in industry and business: adoption patterns, applications and implications	334.4 FRA
Gale WF & Totemeier TC, Smithells metals reference book	669 GAL (Reference)
Gay D, Composite materials : design and applications	620.198 GAY
Harper C, Handbook of plastics, elastomers and composites	620.192 HAR
Hertzberg RW, Deformation and fracture mechanics of engineering materials	620.112 HER
Jennings A, Structures : from theory to practice	690.1 JEN
Kollar LP & Springer GS, Mechanics of composite structures	690.1 KOL
Martin JW, Materials for engineering	620.1 MAR
Mukhopadhyay M, Mechanics of composite materials and structures	620.198 MUK
Moss TR, Reliability data handbook	310.21 MOS
Nayer A, The Metals databook	669 NAY
Pilkey W D, Peterson's stress concentration factors	620.112 PIL
Ross RB, Metallic materials specification book	669.03 ROS (Reference)
Soboyejo W, Mechanical properties of engineered materials	620.11 SOB
Stronge WJ, Impact mechanics	620.1125 STR
Tada H, The handbook of stress analysis of cracks	620.112 TAD
Timoshenko S, Strength of materials	620.112 TIM
Wulpi DJ, Understanding how components fail	620.112 WUL
Young WC, Roark's formulas for stress and strain	620.11 YOU

E-books

Available via the Knovel service in the Virtual Library

Ashby MF, Materials Selection in Mechanical Design (2nd edition), 1999
Case J, Chilver L & Ross CTF, Strength of Materials and Structures (4th edition), 1999
Chung DDL, Carbon fiber composites, 1994
Crompton, T, Polymer reference book, 2006
Durand C, Microstructure of steels and cast irons, 2003
Gale W F, Smithells metals reference book, 2004
Harper, C, Handbook of plastics, elastomers & composites (4th edition), 2002
Hearn EJ, Mechanics of Materials, Volume 1-3 (3rd edition), 1997
Hussey R J, Light alloys directory and databook, 1998
Kipp, D, Plastic material data sheets, 2007
Klutz, M, Handbook of materials selection, 2002
McKeen, L, Effect of temperature and other factors on plastics and elastomers (2nd edition), 2008
Megson THG, Structural and stress analysis, 1996
Myer E, Plastics failure guide, 1996
NACE, Corrosion survey database
Peters ST, Handbook of composites (2nd edition), 1998)
Pilkey WD, Peterson's Stress Concentration Factors (2nd edition), 1997
Piley WD, Formulas for stress, strain and structural matrices, 2005
Schwartz M, Encyclopedia of Smart Materials, Vol 1-2, 2002
Shreir LL, Corrosion, 1994
Suresh S, Fundamentals of metal matrix composites, 1993
Vargel, C, Corrosion of aluminium, 2004

Available via the Books24x7 service in the Virtual Library

Dynamics of multibody systems, Cambridge University Press, 2005
Introduction to structural dynamics and aeroelasticity, Cambridge University Press, 2005
Material forming processes, 2003

Materials selection and applications in mechanical, Industrial Press, 2007
Properties of stainless steel, Skillsoft Press, 2006
Properties of thermoset plastic, Skillsoft Press, 2006
Smithells light metals handbook, Butterworth-Heinemann, 1998
Stress analysis of cracks handbook, ASME, 2000

Recent IMechE seminars and conferences

[Design, maintenance and care of gasketed bolted flanged joints](#), IMechE seminar 2006
[Lightweighting for low-carbon vehicles](#), IMechE seminar 2008
[Material properties for finite element simulations - getting it right \(part 2 - biomedical applications\)](#), IMechE seminar 2007
[Material properties for finite element simulations – getting it right \(part 3 – composite materials\)](#), IMechE seminar 2009
[Modelling of manufacturing processes](#), IMechE seminar 2006 (Includes supplementary papers)
[Residual stresses - when do they matter?](#), IMechE seminar 2006
[Rotorcraft, structural integrity and survivability](#), IMechE seminar 2007
[Small specimen testing – methods and analysis](#), IMechE seminar 2006

Current Journals

Current issues of key journals are held on the journal display racks in the library reading room. Back issues are stored in the basement. Please ask a member of staff if you wish to view them.

Corrosion: the journal of science and engineering	Metallurgical science and technology
Corrosion prevention and control	MWP (metal working production)
Experimental techniques	NIMS data sheets – selected sheets
Insight	Oil and gas journal
International journal of fatigue	Proceedings of the IMechE Part L Journal of materials: design and applications
International journal of mechanical science	Proceedings of the IMechE Part C Journal of mechanical engineering science
JSME international journal series A: solid mechanics and material	Surface coatings
Journal of strain analysis for engineering design	Transactions of the ASME: journal of engineering materials and technology
Lube	Transactions of the ASME: journal of mechanical design
Materialprüfung: materials testing	Wear
Materials and design	
Materials performance	
Materials world	

A number of journals are available electronically via EBSCOhost which is available in the IMechE Virtual Library. Click here to see a list of [titles](#) or to see [titles by subject](#).

Databases

• Efundia

This database is available in the **Virtual Library** pages of the IMechE website (members only). It contains information on materials, processes and design.

The library holds the **ESDU (Engineering Science Data Unit) datasheets** which contain validated data and design methods, principles, worked examples, programs and related equations on over 1,200 specific aerospace, process, structural and mechanical engineering topics. The ESDU database can be viewed in the library. Datasheets are available for week loan to members and cannot be photocopied.

• **Standards Infobase (ILI)**

This database is available in the library. It can be searched by subject, standard number or publisher to find standards that meet your needs. Library staff can run searches on your behalf and email you the results

• **Metals Infobase (ILI)**

This database is available in the library. It can be used to search for metal grades, standards and suppliers. It provides information on chemical composition, mechanical and physical properties on thousands of different metal grades. You can search by metal description, standard number, designation and composition. Library staff can run searches on your behalf and email you the results

Useful Websites

General

A to Z of Materials	www.azom.com
American National Standards Institution	www.ansi.org
American Society for Testing & Materials	www.astm.org
ASM International	www.asminternational.org
Edinburgh Engineering Virtual Library	www.ee vl.ac.uk
ESDU (Engineering Science Data Units)	www.esdu.com
Institute of Materials, Minerals and Mining	www.iom3.org.uk
Institution of Structural Engineers	http://www.istructe.org/
London Metal Exchange	www.lme.com
Matweb (Free Materials database)	www.matweb.com
Materials Science and Engineering Laboratory	www.msel.nist.gov/dataontheweb.html
TMS Online	www.tms.org
TWI	www.twi.co.uk

Aluminium

Aluselect	http://aluminium.matter.org.uk/aluselect/default.asp
The Aluminum Association, Inc	www.aluminum.org
Aluminium International Today	www.aluminiumtoday.com

Cement

The Cement Industry	www.cementindustry.co.uk
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Copper

Copper Development Association	www.copper.org
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Corrosion

Corrosion Source	www.corrosionsource.com
Journal of Corrosion Science and Engineering	http://www2.umist.ac.uk/corrosion/JCSE
NACE International	www.nace.org

Glass

British Glass	http://www.britglass.org.uk
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Iron and steel

American Iron and Steel Institute	www.steel.org
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British Stainless Steel Association
Iron and steel statistics bureau
International iron and steel institute
Nickel Institute
Steel Times International
UK Steel

<http://www.bssa.org.uk>
<http://www.issb.co.uk/>
<http://www.worldsteel.org/>
<http://www.nickelinstitute.org>
www.steeltimesint.com
www.uksteel.org.uk

Plastics, polymers and rubber

British Plastics & Rubber Online
Case Western Reserve University virtual textbook
Rubber and plastic news

www.polymer-age.co.uk
<http://plc.cwru.edu/tutorial/enhanced/main.htm>
www.rubbernews.com

Platinum

Platinum Metals Review

www.platinummetalsreview.com