

Copper

Bringing Quality Home



**Copper
Development
Association**

Copper Development Association (Limited by guarantee) is a non-trading organisation sponsored by the copper producers and fabricators to encourage the use of copper and copper alloys and to promote their correct and efficient application. Its services, which include the provision of technical advice and information, are available to those interested in the utilisation of copper in all its aspects. The Association also provides a link between research and the user industries and maintains close contact with other copper development organisations throughout the world.

Members, as at 1st January 2004:

The British Non-Ferrous Metals Federation • Codelco Services Ltd • Ecosea Ltd • Noranda Sales Corporation of Canada Ltd
Rio Tinto London Ltd • Southern Peru Copper Corporation

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Introduction

It's hard to imagine a home without copper. We rely on copper for our lighting and power, communications, plumbing and heating, architecture and interior design, hardware and fire protection. Copper makes our homes comfortable, functional, efficient and decorative and gives years of reliable service.



We have been putting copper to use for over 10,000 years and, for all of these millennia, have always taken advantage of copper's recyclability. Copper is 100% recyclable. Virtually all products made from copper can be recycled. It has been estimated that at least 80% of all copper ever mined is still in use - having been recycled time and again.

Although copper's virtually infinite recyclability makes it environmentally advantageous for use in a variety of products, worldwide demand cannot be met exclusively by recycled copper. Continued production of new copper is required to meet our needs. Fortunately, ample reserves have been identified to last for generations.

This booklet aims to provide a brief insight into where copper is used in our homes today and how, through its unique combination of properties, it brings quality to our homes.



Plumbing & Heating

Copper tube is the standard plumbing material for your hot and cold water supply, central heating and gas installation and the preferred material of the professional plumber.

Copper's popularity is based on a combination of properties that make it unique. Copper is durable, reliable and is resistant to heat, fire and corrosion. It is produced to a high quality, in standard sizes. It is excellent for providing high flow rates and has a long service life.

The latest copper flame-free jointing systems (push-fit and press fittings) offer ease of installation and high standards of safety without compromising on quality or reliability.



picture: Mueller Europe Ltd.

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Copper is a natural material - it has been used to make drinking vessels, pipes and water containers for thousands of years. It is used today for pipework, hot water storage cylinders and, in brass, for taps and shower attachments. Because copper is bacteriostatic, it inhibits the growth of bacterial and viral organisms in water systems. It has been shown that copper reduces the growth of the bacteria responsible for Legionnaires' Disease.

In addition, copper gives excellent protection against contaminants to the domestic water supply. Nothing can get through copper: no fluids, no germs, no oxygen, no ultra-violet rays - nothing. Copper doesn't absorb organic substances and cannot be softened by them in service.

Fire Sprinkler Systems

Sprinkler systems protect lives and property by detecting and controlling a fire at an early stage of development. Dangerous smoke and fumes are reduced allowing the occupants to escape to safety.

Sprinkler heads go off individually, triggered by the heat of a fire. Only the heads adjacent to the fire operate and almost all fires are controlled or extinguished by just one or two sprinkler heads. The chances of accidental triggering are the same as winning the lottery!



picture: Brian Allan



Fire damage in a sprinklered room is likely to be restricted to a small area near the source of ignition, typically a small patch on a chair or sofa. In an unprotected room the fire will burn unchecked and may eventually destroy the entire room.

A fire controlled by a sprinkler system will result in less water damage than an unchecked fire dealt with by the Fire Brigade, turning a potential disaster into just an inconvenience.

Concealed sprinkler heads are available which have a minimal visual impact on a room. Copper is the ideal pipework material because of its reliability, durability, strength, resistance to heat and fire, corrosion resistance and capability to deliver high flow rates. Details of designers and installers can be obtained from the Fire Sprinkler Association.

While smoke detectors save lives too, they do nothing to extinguish a fire or protect the most vulnerable - children and the elderly - who may be unable to escape. For maximum protection both sprinkler systems and smoke detectors should be installed. A copper fire sprinkler system will protect against loss of life and property by fire.



Power

Copper has the best electrical conductivity of all the non-precious metals and provides our homes with power. The increasing ownership of satellite television receivers, personal computers, games consoles and other electronic and electrical equipment means that more sockets are now required. The result is that, when one appliance is required, another has to be unplugged. Often the socket outlets end up behind furniture making an inconvenience into a chore. It is likely that you have had to buy extension leads or use adapters to cope with the demand. Trailing extension leads can be dangerous and overloaded sockets cause fires, damage to property, injury, or even death. In fact, the Fire Brigade recommends only one plug per socket (two per double).

New recommendations from The Institution of Electrical Engineers suggest that fifty twin sockets are needed for a typical family home (see table) and that you should provide:

- Two twin socket outlets close to any TV aerial outlet to allow for TV, video, satellite etc.
- Enough socket outlets for computers and electronic equipment in bedrooms for children/teenagers
- One twin socket outlet near any telephone outlet for telephone, answerphone or fax equipment.

If you have a home office don't forget to check with your contractor that your wiring complies with safety recommendations in BS 7671 Section 607.



L O C A T I O N											
Lounge	Kitchen	Dining	Double Bedroom	Single Bedroom	Bedsitter	Hall	Stairs/Landing	Loft	Study/Home Office	Garage*	Utility
6 to 10	6 to 10	3	4 to 6	4 to 6	4	2	1	1	6	2	2
I E E R E C O M M E N D A T I O N (T W I N S O C K E T S)											

**It is important that a 30mA residual current device (RCD) protects this and any other circuit intended for outdoor use.*

The 'Smart Home'

The smart home concept is the ultimate in domestic labour saving and convenience. The dream for the future is a unified system controlling heating, lighting, security, etc. and making entertainment and communications, such as internet access, available in every room. All of this controllability will be available remotely from a mobile telephone or a portable computer.

Most of the dream is already reality. Many hundreds of homes have been built in the UK with the copper network cabling already installed, so that occupiers can connect their telephones, audio systems, computers, door cameras and baby-monitoring cameras in whatever way suits their needs.

Of course, this is not yet a mass market so systems are still relatively expensive. Soon, standards will be agreed that will allow manufacturers to provide compatible products at competitive prices, introducing endless possibilities. By 2005, more than half of new homes will be smart homes.

So, if you are designing, building or refurbishing a home now, what can you do to prepare for the future? The first thing to realise is that everything that is going to be controlled is going to need power - every screen, curtain closer, security light, etc. - so you need plenty of power sockets. Secondly, consider having the network cabling installed at the same time - but make sure there is plenty; it is cheaper to install it all in one go than have to do it again later. If you don't feel ready to install the network cable, consider using decorative trunking instead of skirting boards so that adding the cable later is quick and easy.



picture: Laing Homes' Intelligent House in Battersea

Architectural Copper

Copper is a pure, natural material that has been used for centuries as an effective roof covering. Sheet copper is light in weight, durable and long lasting, with the added attraction of unique, changing visual characteristics.

The copper's patina is an integral feature of the appearance of a building as it weathers, the original copper gradually changing to a succession of warm brown tones before reaching the final distinctive green.



picture: Cutch



Architects today are taking advantage of the flexibility of copper as a distinctive external covering for any building element including all roof slopes, cladding, soffits, fascias, flashings, gutters and downpipes.

Modern homes can make use of the high performance and unique attributes of copper.

Interior design

Copper and copper alloys are used in the manufacture of interior design fixtures and decorative objects. Handles, door knobs, lock cylinders and lighting are current hardware items found in homes around the world. Increasingly, copper and brass are the materials of choice for interior designers such as Andrea Ponsi ('The Copper House', 1990s) in creating original contemporary furniture.



picture: Christopher Wray Lighting



Brass has done more to stimulate the designer in the creation of exciting architectural detailing, than almost any other material. Gleaming balustrades, handrails and fine door furniture in polished or patinated brass and architectural bronze, are in the mind of every architect and designer who has ever seen the beauty of these superb metals and their potential for enriching architectural ornamentation.

Brass is probably the only common metal that possesses virtually every positive attribute, from corrosion resistance to aesthetic beauty. Surfaces made from copper and brass, such as doorknobs and tabletops, can also reduce the spread of disease-causing organisms. The incidence of microbial food poisoning, for instance, can be reduced by using a copper surface in food preparation.

But, above all, it is probably the extraordinary richness of colour and texture that endears it to the heart of every designer.

About the Picture Box House

Sue Ilic of Pastimes Picture Boxes was approached by CDA to produce a 'copper house' exhibit for the Ideal Home Exhibition. Of course much of the copper used in a home - pipe and cable - is hidden behind walls and under floors - essential but invisible - and not inspiring for an artist like Sue. So, rather than trying to produce a technically accurate model depicting the use of copper in a typical modern home, it was decided to opt for the most decorative effect by selecting as many copper and brass objects as possible and setting them off in a beautifully furnished period style house.

Sue, who with her husband Peter has been making picture box rooms and houses for eight years, remarked 'The copper house was a real challenge - I'd come across various copper and brass pieces before but have never been asked to find so many for one project.

'There was a good selection of common items like copper pans, brass lights and picture frames but, strangely, the hardest piece to locate was the PC.' Sue takes great pride in her work and each picture box is unique. 'Demand for my work is very high but I don't want to go down the mass production route - I prefer to concentrate on a high quality of workmanship and make each piece an individual work of art'.

Sue and Peter Ilic
Pastimes Picture Boxes
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Useful Contacts

Installers and Contractors

Copper roofing contractors:

Copper Development Association Information Service

Tel: 01442 275700

Sprinkler installers and designers:

Fire Sprinkler Association (FSA)

www.firesprinklers.info

Qualified electricians:

Electrical Contractors' Association

Tel: 020 7313 4800

SELECT (Scotland)

Tel: 0131 445 5577

NICEIC

Tel: 020 7564 2323

Information on Copper

Copper Development Association

www.cda.org.uk

International Copper Association

www.copperinfo.com

European Copper Institute

www.eurocopper.org

Plumbing and heating information:

UK Copper Board

www.ukcopperboard.co.uk

Architectural inspiration:

www.copperconcept.org

Smart wiring:

www.smartwiredhouse.com.au

Electrical safety in the home:

www.electric-safety.org

