

## Section 1 – INTRODUCTION

**Brass is usually the first-choice material for many of the components for equipment made in the general, electrical and precision engineering industries. Brass is specified because of the unique combination of properties, matched by no other material, that make it indispensable where a long, cost-effective service life is required.**

The generic term 'brass' covers a wide range of copper-zinc alloys with differing combinations of properties, including:

- Strength
- Ductility
- Hardness
- Conductivity
- Machinability
- Wear resistance
- Colour
- Corrosion resistance

Brasses can easily be cast to shape or fabricated by extrusion, rolling, drawing, hot stamping and cold forming.

- The machinability of brass sets the standard by which other materials are judged.
- Brasses are ideal for a very wide range of applications.
- Brass is frequently the cheapest material to select.
- The correct choice of brass is important if manufacturing and operating requirements are to be met in the most cost-effective way.

To suit every need, there are over sixty Standard compositions for brass with copper contents ranging from 58% to 95%. Apart from the major alloying element, zinc, small additions (less than 5%) of other alloying elements are made to modify the properties so that the resulting material is fit for a given purpose.

### Brass Designations

Brasses are described by a number of systems of common terminology. As an example, in the old British Standards BS 2870 to 2875, the designation CZ106 is referred to as '70/30 Brass' or 'Cartridge Brass' or sometimes 'Deep Drawing Brass'.

In EN Standards the composition symbol for 70/30 Brass is CuZn30 and the material designation number is CW505L. In this publication the notation used in the text gives the EN number first, followed by the old BS number in brackets. Hence, for the above brass the designation is CW505L (CZ106).

**TABLE 1 – Brasses - typical engineering applications**

Form	Cold Working	Free-Machining	High Tensile	High Corrosion Resistance
Rods	Rivets Pinions Motion sensors	Unions Terminals Spindles Screws Jets Injectors Cable glands	Valve spindles Shafts	Marine fittings Plumbing fittings Gas fittings Pneumatic fittings
Sections	Bathroom hardware	Terminals Tracks Valve bodies Balance weights	Valves Spark resistant mining components	Shower parts
Hollows	Automotive components	Nuts Cable connectors	Bearings	Nuts
Hot Stampings	n/a	Tube fittings Electrical components Plumbing hardware	Syncromesh gearings Cavity wall ties Mining equipment	Plumbing fittings
Plate	n/a	n/a	n/a	Condenser tubeplates
Sheet	Holloware Lamp caps Reflectors	Clock plates Instrument frames	n/a	Instrument cases Cartridge cases
Strip	Springs Terminals Fuse caps Bellows Precision etchings	n/a	Wear plates and strips	Heat exchangers
Wire	Springs Pins Rivets Zip fasteners Jewellery	Screws Terminals	n/a	Scouring pads Papermaking screens Brake pad carrier wire
Tube	Heat exchanger tubes	(See hollows)	n/a	Heat exchanger tubes for corrosive environments
Castings	n/a	Taps Water fittings	Bearings	Valve bodies