



**Pb < 80 ppm**  
**0% Cadmium**  
**RoHS & REACH ok**

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## Lead free brass

## EA

| Material designation            |               | Chemical composition*             |         |            |              |
|---------------------------------|---------------|-----------------------------------|---------|------------|--------------|
| <b>CuZn40</b>                   |               | Elements                          | % mean  | Impurities | % max.       |
|                                 |               | Cu                                | 60      | <b>Pb</b>  | <b>0.008</b> |
|                                 |               | Zn                                | Balance | Other      | 0.1          |
| EN12163 / 12164 / 12165 / 12167 | CW509L        | * Reference values in % by weight |         |            |              |
| NF A 51-104                     | CuZn40        |                                   |         |            |              |
| DIN 17660                       | CuZn40-2.0360 |                                   |         |            |              |
| BS 2872-2874                    | CZ109         |                                   |         |            |              |

| Properties and typical applications  |
|--|
| EA contains less than 80 ppm of lead, suitable for hot stamping and machining. Used in luxury items, automotive equipment... |

| Physical properties at 20°C                                    |     | Heat treatment  |         |
|--|-----|---|---------|
| Density (g/cm3)  | 8.4 | Melting range (°C)  | 900-910 |
| Young modulus (GPa)  | 103 | Hot working (°C)  | 650-750 |
| Thermal expansion coefficient (20-300°C) (10 <sup>-6</sup> /K) | 21  | Annealing temperature (°C)*   | 450-650 |
| Thermal conductivity (W/m.K)                                   | 121 | Stress relieving treatment (°C)**   | 250-350 |
| Thermal capacity (J/Kg.K)                                      | 376 | * <i>Annealing treatment of a material leads to reduce its hardness and increase its ductility.</i>   |         |
| Electrical conductivity (% I.A.C.S.)                           | 28  |   |         |
|  |     | ** <i>Stress relieving treatment allows to eliminate the residual stresses present in the material in order to avoid the stress corrosion cracking.</i> |         |

| Forming   |                              | Joining                        |           |
|---|------------------------------|--------------------------------|-----------|
| Hot forming   | Good                         | <b>Soldering</b>               |           |
| Cold forming  | Good                         | Soft                           | Very good |
| Machinability   | 45% (Ref : CuZn39Pb3 = 100%) | Hard                           | Very good |
| <b>Corrosion resistance</b>   |                              | <b>Welding</b>                 |           |
| Lead-free brasses generally have good resistance to corrosion. However, they may present a problem of cracking corrosion in an aggressive environment in the presence of internal stresses, but also a risk of dezincification (if Zn > 15%) in the presence of hot and acidic water. |                              | Gaz welding                    | Fair      |
|   |                              | Inert gas shielded arc welding | Fair      |
|   |                              | Resistance welding             | Fair      |

| Mechanical properties according to EN12164 |               |    |  |                  |              |             |
|--|---------------|----|--|------------------|--------------|-------------|
| Condition of material                      | Diameter [mm] |    | Rp0,2 [Mpa]<br>min. or max.                          | Rm [Mpa]<br>min. | A(%)<br>min. | Hardness HB |
|  | from          | to |  |                  |              |             |
| <b>M</b>                                   | All           |    | As extruded - without specific mechanical properties |                  |              |             |
| <b>R360</b>                                | 6             | 80 | < 300  | 360              | 20           | -           |
| <b>H070</b>                                |               |    | -  | -                | -            | 70-100      |
| <b>R410</b>                                | 6             | 40 | > 230  | 410              | 12           | -           |
| <b>H100</b>                                |               |    | -  | -                | -            | 100-145     |
| <b>R500</b>                                | 6             | 14 | > 350  | 500              | 8            | -           |
| <b>H120</b>                                |               |    | -  | -                | -            | > 120       |

| Fabrication range   |  |
|---|--|
| Available forms:  |  |
| Do not hesitate to contact us for further information regarding the dimensions, tolerances and metallurgical conditions. Our technical teams are by your side to help you succeed in your projects. |  |
| <a href="mailto:info@m-lego.com">info@m-lego.com</a>  |  |