



**Pb < 0.1%**  
**0% Cadmium**  
**RoHS ok**

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## Lead free brass

## S42

Material designation		Chemical composition*			
<b>CuZn42</b>		Elements	% mean	Impurities	% max.
		Cu	58	<b>Pb</b>	<b>0.1</b>
EN12163	CW510L	Zn	Balance	Other	0.2
EN12164	CW510L	* Reference values in % by weight			
EN12165	CW510L				
EN12167	CW510L				

Properties and typical applications
This alloy is a lead free brass used to replace conventional brasses when Pb ≤ 0,1% is requested. S42 exhibits a good machinability due to its biphasic microstructure α+β.

Physical properties at 20°C		Heat treatment	
Density (g/cm <sup>3</sup> )	8.37	Melting range (°C)	890-910
Young modulus (GPa)	105	Hot working (°C)	650-700
Thermal expansion coefficient (20-300°C) (10 <sup>-6</sup> /K)	21.7	Annealing temperature (°C)*	450-600
Thermal conductivity (W/m.K)	139	Stress relieving treatment (°C)**	250-350
Thermal capacity (J/Kg.K)	375	* <i>Annealing treatment of a material leads to reduce its hardness and increase its ductility.</i>	
Electrical conductivity (% I.A.C.S.)	31		
** <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	Very good	<b>Soldering</b>	
Cold forming	Fair	Soft	Very good
Machinability	90% (Ref : CuZn39Pb3 = 100%)	Hard	Very good
Corrosion resistance		<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] min. or max.	Rm [Mpa] min.	A(%) min.	Hardness HB
	from	to				
<b>M</b>	All		As extruded - without specific mechanical properties			
<b>R360</b>	6	80	< 320	360	20	-
<b>H090</b>			-	-	-	90-125
<b>R430</b>	6	40	> 220	430	10	-
<b>H110</b>			-	-	-	110-160
<b>R500</b>	6	14	> 350	500	5	-
<b>H135</b>			-	-	-	> 135

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>	