

## Copper-aluminium casting alloy **C95800** alloy 1890

**C95800** is very similar to CC333G = CuAl10Fe5Ni5 in that it has high corrosion resistance to water containing Cl, hot and cold seawater, neutral and acidic aqueous media, as well as to non-oxidising acids and sulphide/bleaching lye.

The material has relatively high strength values, high erosion and cavitation resistance as well as good abrasion resistance and good fatigue behaviour. It is tougher than C95500, which has slightly higher strength.

Good pressure tightness and excellent weldability mean it is predominantly used for castings exposed to corrosion in shipbuilding, the food and chemical industry as well as in pump and valve construction.

ZOLLERN brand	EBG C95800
ASTM designation	C95800
ASTM – standard	B 148

ASTM B 148

### // National designations

D	≈ CuAl10Fe5Ni5-C
D	≈ CC333G ≈ 2.0975
GB	≈ AB 2 ≈ DEF STAN 747
F	≈ U – E12P

≈ (substantial coherence)

### // Composition (mass fraction in %)

Cu	Al	Fe (< Ni)	Ni (> Fe)	Mn
min. 79	8.5 – 9.5	3.5 – 4.5	4.0 – 5.0	0.8 – 1.5
Pb	Si			
max. 0.03	max. 0.1	Ni > Fe, Al ≤ 8.2 + Ni/2		

### // Strength properties at room temperature

(minimum values)

	R <sub>m</sub> N/mm <sup>2</sup>	R <sub>p0.2</sub> N/mm <sup>2</sup>	A <sub>5</sub> %	HB
1] ASTM B148				
[1] Sand casting	585	240	15	-

### // Physical properties

Density at 20 °C	7.6 kg/dm <sup>3</sup>
Specific heat capacity at 20 °C	0.42 J/g × °C
Thermal conductivity at 20 °C	0.51 W/cm °C
Electrical conductivity at 20 °C	4.6 MS/m approx. 8 % IACS
Electrical resistance at 20 °C	0.215 Ω mm <sup>2</sup> /m
Temperature coefficient of the electrical resistance at -100 to 200 °C	0.0001 °C <sup>-1</sup>
Young's modulus	110 – 128 KN/mm <sup>2</sup>
Permeability	< 1.9

### // Dynamic strength values

at room temperature (reference values)

Bending fatigue strength R <sub>bw</sub> at 10 <sup>8</sup> load cycles	185 N/mm <sup>2</sup>
Notched impact energy (ISO - V/KV)	20 joules

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### Areas of application

- Hubs and Kaplan blades for ship drives made from C95800
- Parts for shipbuilding, also for submarines, hydraulic parts
- Valve housings, valve bodies and valve flaps, pump housings, impellers in contact with seawater and other chlorine-containing liquids
- Covers and other castings in condenser and heat exchanger construction
- Pickling hooks

### Machinability

Carbide tools are needed for turning and milling and sharp drill bits are needed for drilling and thread cutting. This results in machinability that is better than that of austenitic steel. Shorter rolling and flowing chips are formed.

### Relaxation annealing

675  $\pm$ 10°C  
min. 6h air cooling  
(improves corrosion resistance, annealing only if required by the customer)

### Soft soldering

not recommendable

### Brazing

poor, fluxes containing fluoride and chloride (type F – SH 1) silver solders are advantageous

### Welding

good, both TIG, MIG and also electrode manual welding are possible. Suitable filler material CuAl8 = CF309G, CuAl9Ni4Fe2Mn2 = CF310G or S-CuAl8Ni2

### Galvanisability

possible, good cleaning and pretreatment necessary

