



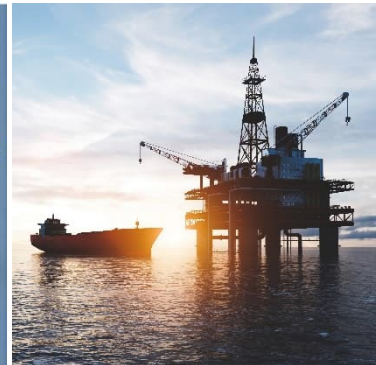
# Technical Data Sheet

## AMPCOLOY® 83

AMPCOLOY® 83 is a high-quality beryllium copper alloy known for its exceptional properties and versatility. This alloy contains approximately 1.9% beryllium, which provides excellent mechanical strength, including high hardness and wear resistance. Combined with its good thermal and electrical conductivity this alloy is suitable for a wide range of applications.

### Key Features:

- ▶ Highest hardness & strength of all AMPCOLOY® alloys
- ▶ Good thermal & electrical conductivity
- ▶ Corrosion & wear resistant
- ▶ Spark resistant & ATEX certified
- ▶ Hydrogen compatible according to DIN EN ISO 17081
- ▶ Good machinability & coatability, easy to polish & weld repairable
- ▶ Forged or extruded to achieve best physical properties



### Nominal Composition:

Copper (Cu)	Beryllium (Be)	Cobalt + Nickel (Co + Ni)	Others
Balance	1.9%	0.5%	max. 0.5%

### Applications:

- ▶ Cooling plates & inserts for the plastic molding & blow molding industry
- ▶ Mechanically highly stressed electrical conductive components
- ▶ Butt welding, flash butt welding & various welding electrodes
- ▶ Applications in hydrogen atmosphere
- ▶ Anti-spatter welding fixtures
- ▶ Spark resistance applications



### Hydrogen Compatibility:

Samples have been loaded according to DIN EN ISO 17081 and tested using slow strain rate tensile tests (SSRT) without any indication of embrittlement. However, the producer of final parts should demonstrate compatibility in hydrogen or hydrogen bearing environments since semi-finished product forms are in general modified and may become susceptible for embrittlement.



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Mechanical Properties (Nominal values)	Forged	Extruded
Tensile Strength $R_m$ (MPa)	1140	1250
Yield Strength $R_{p0.5}$ (MPa)	1000	1000
Elongation $A_5$ (%)	5	4
Brinell Hardness (10/3000)	360	380
Modulus of Elasticity E (GPa)	128	131

### Physical Properties:

Density $\rho$ (g/cm <sup>3</sup> )	Coefficient of Expansion $\alpha$ (10 <sup>-6</sup> /K)	Thermal Conductivity $\lambda$ (W/m·K)				Electrical Conductivity $\gamma$ (m/Ω·mm <sup>2</sup> )	Electrical Conductivity (% I.A.C.S.)	Specific Heat $c_p$ (J/g·K)
		20°C	100°C	200°C	300°C			
8.26	17.5	106	130	145	157	12.8	22	0.38

### Machining Parameters:

Operation	Cutting Speed $v_c$ (m/min)	Feed $f$ (mm/rev)	Depth $a$ (mm)	Tool Specification
Milling – Roughing	80 - 125	0.1 - 0.2	up to 2	K10 - K20
Milling – Finishing	70 - 110	0.05 - 0.1	0.1 - 0.5	K10 - K20
Turning – Roughing	120 - 180	0.1 - 0.2	up to 2	K10 - K20
Turning – Finishing	150 - 200	0.05 - 0.1	0.1 - 0.15	K10 - K20

Scan the QR Code to view our machining recommendations:



### Health & Safety:

Since the alloy contains Beryllium, it is recommended that during any operation which is liable to create dust or fumes (for example dry grinding, polishing or welding) precautions should be taken to ensure there is no inhalation or exposure to eyes or skin. Conventional machining (for example milling and turning) is not generally considered hazardous.

Contact us

