LAMINERIES MATTHEY
NOTZ group advanced metal solutions

Alloy 25

Wire & Rods

		DIN	EN	UNS (ASTM)	AISI	LMSA
Designation	**CuBe2**	2.1247	CW101C	C17200	-	**G200 / G250**

Chemical composition

Cu*	Be	Co + Ni	Co + Ni + Fe	Pb
Balance	1.80 - 2.00	0.20 min.	0.60 max.	0.02 max.

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precisely than the composition indicated.
*Copper plus additions > 99.5%

Main technical properties and features

Alloy 25 is a copper-beryllium alloy containing 2% beryllium. After hardening, the alloy achieves the highest mechanical strength and hardness of all copper alloys in the market and is commonly used. This alloy presents an excellent bending properties in the "annealed" temper condition. It can be used for bar turning and machining processes, however with lower performance than the M25 containing lead alloy. After forming, and in the hardened condition this alloy can reach a mechanical strength up to 1400 N/mm^2 . Alloy 25 is characterized by a high fatigue strength, an excellent thermal relaxation and a unique combination of high strength and high conductivity.

The Lamineries MATTHEY offers bars in the standard TD04 condition, and wires in various dimensions.

Typical uses

Spring contacts, diaphragms, bellows, electric and electronic contacts and connectors, switches, relays, bearings, resistance welding electrodes, various parts for the watch industry such as wheels, watch hands, balances, levers etc.

Typical manufacturing range

		Dimensions
Drawn bar	Bars and wire [1]	upon request

[1] Alloy 25 is generally suitable for applications requiring good machinability. For screw machined parts requiring improved machinability, we recommend the alloy M25 - CuBe2Pb.

Physical properties

Modulus of elasticity	kN/mm^2	125, 131 [1]
Poisson ratio		0.285
Density	g/cm^3	8.25, 8.36 [1]
Melting point / Melting range	°C	875 - 985
Linear dilatation coefficient	10^{-6}·/ ºC	17 from 20 to 200ºC
Thermal conductivity at 20°C	W/m °K	110
Electrical resistivity	µΩcm	9 - 11, 8 - 6 [1]
Electrical conductivity	MS/m	9 - 11, 13 - 16 [1]
Electrical conductivity	% IACS	15 - 19, 22 - 28 [1]
Magnetic properties		Nonmagnetic (slightly diamagnetic)
Permeability		µ = 1.0006

[1] Values before and after hardening, respectively.

Mechanical properties of rods and wires

Rods		Temper		Heat Treatment	$Rp_{0.2}$ (N/mm^2)	Rm (N/mm^2)	A_{50mm} (%)	Hardness HV
A [1]	TB00	R420	dead soft	-	140 - 210	420 - 600	35 min.	90 - 180
H [1]	TD04	R600	hard	-	500 - 750	600 - 800	10 min.	200 - 250
After hardening (by the customer)								
AT [1]	TF00	R1150	soft + hardened	3h à 325°C	1000-1250	1150-1350	3 min.	360 - 390
HT [1]	TH04	R1300	hard + hardened	2h à 325°C	1150-1400	1300-1500	2 min.	390 - 430

[1] These tempers do not correspond exactly to those of the EN standard. Values are valid for diameters < 25 mm.

Wire		Temper		Heat Treatment	$Rp_{0.2}$ (N/mm^2)	Rm (N/mm^2)	A_{50mm} (%)	Hardness HV
A [1]	**TB00**	**R400**	**soft**	**-**	**130 - 210**	**400 - 540**	**30 min.**	**90 - 170**
¼H [1]	TD01	R620	¼ hard	-	510 - 730	620 - 800	3 min.	200 - 250
½H [1]	TD02	R750	½ hard	-	620 - 870	750 - 940	2 min.	230 - 300
¾H [1]	TD03	R890	¾ hard	-	790 - 1040	890 - 1070	2 min.	270 - 340
H [1]	**TD04**	**R960**	**hard**	**-**	**890 - 1110**	**960 - 1140**	**1 min.**	**300 - 360**
After hardening (by the customer)								
AT [1]	**TF00**	**R1100**	**soft + hardened**	**3h à 325°C**	**990-1250**	**1100-1380**	**3 min.**	**340 - 430**
¼HT [1]	TH01	R1200	¼ hard +hardened	2h à 325°C	1130-1380	1200-1450	2 min.	370 - 460
½HT [1]	TH02	R1270	½ hard +hardened	2h à 325°C	1170-1450	1270-1490	2 min.	390 - 470
¾HT [1]	TH03	R1310	¾ hard +hardened	2h à 325°C	1200-1520	1310-1590	2 min.	410 - 500
HT [1]	**TH04**	**R1340**	**hard + hardened**	**2h à 325°C**	**1240-1520**	**1340-1590**	**1 min.**	**420 - 500**

[1] These tempers do not correspond exactly to those of the EN standard, but to the ASTM 197M.

Dimensional tolerances (rod and wire)

	Standard tolerances			Special tolerances
Diameter	≤ 3.0mm	h8	+ 0 / - 14 µm	Upon request, rod and wire can be delivered with tighter tolerances (h5, h6, h7) by means of additional drawing and/or grinding processes.
	> 3.0 et ≤ 6.0mm	h8	+ 0 / - 18 µm	
	> 10.0 et ≤ 10.5mm	h8	+ 0 / - 22 µm	
	> 10.5 et ≤ 18.0mm	h9	+ 0 / - 43 µm	
	> 18.0 et ≤ 30.0mm	h9	+ 0 / - 52 µm	
	Mill-hardened, non-ground bars are available with tolerances h9 for diameters ≤ 10.5 mm and h10 for the larger diameters.			
Out-of-roundness	Maximum equals half of the tolerance value of the diameter. Upon request rod and wire can be ordered with tighter out-of-roundness tolerances.			
Length	The standard length of rods is 3 m +/- 30mm. Rod can be ordered pointed and chamfered.			

The information in this document is informative only. Information provided does not constitute any contractual commitment or warranty of any kind.

© 2022 Lamineries MATTHEY, branch of Notz Metall AG
Rue Montagu 38
CH 2520 La Neuveville
P. +41 (0)32 752 32 32

www.matthey.ch
sales@matthey.ch