

# ALLOY M25 H

Alloy M25 offers the strength properties of Alloy 25, with the added benefit of being "free machining." Alloy M25 rod and wire contain a small amount of lead to provide an alloy tailored for automatic machining operations. Lead promotes formation of finely divided chips thus extending cutting tool life. This alloy has good electrical conductivity and high strength relative to other alloys. It has good fatigue strength and stress relaxation resistance. Alloy M25 increases tool life, resulting in less overall equipment down-time, and ultimately, a lower total machining cost.

## MARKETS AND APPLICATIONS FOR ALLOY M25

Machined male or female contacts in the electronics, aircraft and automotive industries. The production of turned parts for the watch industry. Contact for circular connectors. Coaxial connectors.

## ALLOY M25 CHEMICAL COMPOSITION

Beryllium – 1.80-2.0%  
Lead – 0.20-0.60%  
Cobalt, nickel and iron – 0.6% max  
Cobalt and nickel – 0.2% max  
Copper – balance

## ALLOY M25 PHYSICAL PROPERTIES

Elastic Modulus -  $19 \times 10^6$  psi (131 Gpa)  
Density - 0.302 lb/in<sup>3</sup> (8.36 g/cm<sup>3</sup>)  
Poisson's Ratio - 0.3  
Relative Magnetic Permeability - < 1.01  
Electrical Conductivity - 22-28% IACS (12.8-16.3 MS/m)  
Thermal Conductivity 70°F / 20°C - 60 BTU/ft•hr•°F (105 W/m•K)  
Thermal Conductivity 200°F / 100°C - 75 BTU/ft•hr•°F (130 W/m•K)  
Coefficient of Thermal Expansion - 9.7 ppm/°F (17.5 ppm/°C)  
Specific Heat (Heat Capacity) 70°F / 20°C - 0.086 BTU/lb•°F (360 J/kg K)  
Specific Heat (Heat Capacity) 200°F / 100°C - 0.097 BTU/lb•°F (406 J/kg K)  
Melting Range - 1600- 1800 °F (870-980 °C)

## APPLICABLE SPECIFICATIONS & STANDARDS FOR ALLOY M25

Rod - ASTM B 196, MIL-C-21657, EN 12164  
Wire - ASTM B 197, EN 12164, EN 12166

## ALLOY M25 MECHANICAL PROPERTIES

WIRE	Tensile strength – 140-165 ksi (965-1135 N/mm <sup>2</sup> )
	Yield strength 0,2% - 130-160 (895-1100 N/mm <sup>2</sup> )
	Elongation 1-6 %
ROD	Tensile strength - 85-120 ksi (585-825 N/mm <sup>2</sup> )
	Yield strength 0,2% - 75-105 (515-720 N/mm <sup>2</sup> )
	Elongation 8-20 %
	Hardness (Rockwell B) 88-103

**RS Alloys**  
steel & copper

**FORMAPLAST®**

		Utensile <i>ISO</i>	Velocità <i>m/min</i>	Avanzamento <i>mm/dente</i>	Profondità <i>mm</i>
FRESATURA (SGROSATURA)	FormaPlast 105	K20	115-250	0,1-0,4	2,5-5,0
	FormaPlast 105 LH	K20	150-300	0,1-0,4	2,5-5,0
	FormaPlast 160	K20	110-150	0,08-0,15	2,5-5,0
	FormaPlast 200	K20	200-400	0,1-0,25	2,5-5,0
	FormaPlast 240	K20	250-600	0,13-0,2	2,5-4,0

FRESATURA (FINITURA)	FormaPlast 105	K20	125-460	0,025-0,075	0,25-2,5
	FormaPlast 105 LH	K20	150-460	0,025-0,075	0,25-2,5
	FormaPlast 160	K20	125-460	0,025-0,1	0,25-2,5
	FormaPlast 200	K20	125-460	0,05-0,1	0,25-0,8
	FormaPlast 240	K20	250-600	0,025-0,125	0,25-2,5

		Utensile <i>ISO</i>	Velocità <i>m/min</i>	Avanzamento <i>(mm/giro)</i>
TORNITURA	FormaPlast 105	K20	275-365	0,25-0,50
	FormaPlast 105 LH	K20	365-450	0,25-0,50
	FormaPlast 160	K20	275-425	0,08-0,25
	FormaPlast 200	K20	275-425	0,15-0,2
	FormaPlast 240	K20	450-600	0,25-0,65

FORATURA	FormaPlast 105	acciaio al cobalto	30-90	0,05-0,23
	FormaPlast 105 LH	acciaio al cobalto	30-125	0,05-0,23
	FormaPlast 160	acciaio al cobalto	40-60	0,05-0,18
	FormaPlast 200	acciaio al cobalto	40-60	0,05-0,18
	FormaPlast 240	acciaio al cobalto	40-150	0,05-0,13

		Elettrodo	Polarità	Corrente (A)	Voltaggio (V)	Duty Factor (%)	Burn Rate (cm/hr)
EDM A TUFFO	FormaPlast 105	Rame	Negativa	50	220	50	2
	FormaPlast 105 LH	Rame	Negativa	50	220	50	1,8
	FormaPlast 160	Rame	Negativa	60	220	50	1,8
	FormaPlast 200	Rame	Negativa	60	220	50	1,8
	FormaPlast 240	Rame	Negativa	50	220	50	1,3