

AI-1706L

Specifications

AWS A 5.21 ERC CoCr-A

DIN 8555 MF 20-GF-40-CTZ

Description and Applications

AI-1706L is a low carbon Cobalt based MIG welding wire which provides excellent resistance to the single or combined effects of wear due to mechanical and chemical degradation over a wide temperature range. Due to the low carbon content **AI-1706L** lends itself very well to semi-automatic and automatic welding processes by reducing the occurrence of lateral cracking in the deposit.

AI-1706L is a tough; impact and corrosion resistant alloy, which does not readily heat, check under pressure at elevated temperatures and has excellent anti-galling properties. It resists chipping, spalling and oxidation at red heat while maintaining reasonable ductility and good high temperature hardness. The alloy has a low coefficient of friction and even after prolonged exposure to temperatures over 1000°C will recover full room temperature hardness.

AI-1706L is virtually unaffected by most common corrosive chemicals as well as atmospheric corrosion. When heated in air, the alloy begins to tarnish at 400°C, but no appreciable oxidation takes place until it is heated to temperatures above 750°C. Due to the formation of a tightly adherent scale after the initial heating cycle, subsequent oxidation, up to 1000°C is negligible. At temperatures above 1000°C, oxidation is more noticeable but not appreciably affected by the presence of moisture. Decarburization is negligible below 1000°C. However, molten salts and alkali carbonates and hydrozides are somewhat corrosive, especially if allowed to collect and remain on the surface.

Applications include: diesel engine exhaust valves and seats; steam control valves; hot work shearing parts; edger rolls; hot trim dies; swaging mandrels; hot shear blades; cams; steam turbine parts; plastic extruder screws; scrapers; pit points; pump parts; components in hot zinc baths.

AI-1706L is considered to be readily machineable with selected Tungsten Carbide Tools. It has a slightly lower hardness than AI 1706.

Typical Weldmetal Analysis

C	Mn	Si	Cr	Fe	W	Co
0.8	1.5	1.0	28.5	3.0	4.5	Bal

AI-1706L is a quaternary alloy consisting nominally of 28.5% Chromium, 4.5% Tungsten and 0.8% Carbon. It essentially consists of M₇C₃ and M₆C type carbides in an alloyed austenitic matrix of cobalt, chromium and tungsten.



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Mechanical Properties of Weldmetal

	As Welded
Hardness	37-40HRc as welded
Metal-to-metal wear resistance	Excellent
Thermal Shock resistance	Excellent
High temperature resistance	Excellent
Melting Point	1278oC
Tensile Strength	832MPa
Plastic Deformation	5% in 2 inches
Machineability	Good with carbide tipped tools
Shielding Gas	Argon 98% + 2% Oxygen or Argon 100%

Hot Hardness

Temp (°C)	20	100	200	300	400	500	600	700	800	900
Hardness DPH ₃₀₀	410	390	356	345	334	301	235	155	138	95
Hardness HRc	37	39	34	33	34	29	20	18	-	-

Welding Instructions

For reduced levels of dilution and an improved weldability, we recommend using a pulsed MIG mode.

Welding Parameters

Diameter (mm)	Current type	Amps
1.2	DC(+)	150-220
1.6	DC(+)	180-300

Diameter (mm)	Pulsed Arc Welding	Spray Transfer
1.2	22V/150A	28V/220A
1.6	25V/180A	30V/250A

Welding Positions

(1G, 1F) Downhand/flat position, (2F) Horizontal position, (2G) Horizontal vertical position

Disclaimer

All figures in this datasheet should be considered indicative only. No guarantee is made as to their accuracy. All figures subject to change without notice. Batch analysis is available for all products sold. Should you require any further information, please contact us at sales@alloysint.com.au

