1 Bare

Specifications: AWS A5.21-2001

Classification: ERCoCr-C

Description:

1 Bare rod has the highest hardness of the standard # cobalt alloys and is used in elevated temperature wear applications. It has a large volume of chromium carbides in a cobalt matrix giving the alloy excellent resistance to abrasion and solid particle erosion. It can be machined with difficulty using carbide tools or ground. It bonds well with stainless and other weldable grade steels.

Typical Deposit Analysis					
C	Cr	Fe	Mn	Mo	Ni
2.3	30.0	3.0 max	1.0 max	1.0 max	3.0 max
Si	W	Co	Other		
2.0 max	13.0	Rem	0.50 max		

Typical Deposit Characteristics	
Abrasion Resistance	Excellent
Impact Resistance	Fair
Corrosion Resistance	Good
Hardness	HRC 48 - 56
Hot Hardness	Very Good

6 Bare

Specifications: AWS A5.21-2001

Classification: ERCoCr-A

Description:

6 Bare rod provides resistance to many forms of chemical and mechanical degradation over a wide temperature range. It is the most versatile and widely used cobalt alloy, with a good balance of abrasion and impact resistance. Particular attributes of # 6 Bare are it's outstanding anti-galling properties, high temperature hardness and high resistance to cavitation erosion that results in its wide use as a valve seat material. It bonds well to all weldable grade steels and stainless.

Typical Deposit Analysis					
C	Cr	Fe	Mn	Mo	Ni
1.1	28.0	3.0 max	1.0 max	1.0 max	3.0 max
Si	W	Co	Other		
2.0 max	4.7	Rem	0.50 max		

Typical Deposit Characteristics	
Abrasion Resistance	Very Good
Impact Resistance	Very Good
Corrosion Resistance	Good
Hardness	HRC 38 - 46
Hot Hardness	up to 1200°F

12 Bare

Specifications: AWS A5.21-2001

Classification: ERCoCr-B

Description:

12 Bare rod is slightly harder than # 6 Bare rod with better abbrasive and metal-to-metal wear resistance. It produces a high hardness cobalt-chromium deposit. The chromium carbides contained in the deposit provide excellent resistance to many forms of chemical and mechanical degradation, including galling. It bonds well with all weldable steels, including stainless.

Typical Deposit Analysis					
C	Cr	Fe	Mn	Mo	Ni
1.4	29.0	3.0 max	1.0 max	1.0 max	3.0 max
Si	W	Co	Other		
2.0 max	8.0	Rem	0.50 max		

Typical Deposit Characteristics	
Abrasion Resistance	Excellent
Impact Resistance	Good
Corrosion Resistance	Good
Hardness	HRC 44 - 50
Hot Hardness	Excellent

21 Bare

Specifications: AWS A5.21-2001

Classification: ERCoCr-E

Description:

21 Bare rod deposits a low carbon austenitic cobalt type alloy with excellent work hardenability, high temperature, strength, and impact resistance. These deposits are quite stable during thermal cycling, making them a favorite for hot die materials. They have good strength and ductility in temperatures up to 2100º F. Resistance to galling (self-mated) corrosion and cavitation erosion make # 21 Bare is a good choice for valve trim on steam and fluid control valve bodies and seats. It bonds well to all weldable steels, including stainless.

Typical Deposit Analysis

C	Cr	Fe	Mn	Mo	Ni
0.3	27.0	3.0 max	1.5 max	5.0	2.5
Si	W	Co	Other		
1.5 max	0.5 max	Rem	0.50 max		

Typical Deposit Characteristics

Abrasion Resistance	Fair
Impact Resistance	Excellent
Corrosion Resistance	Good
Hardness (2 Layers)	HRC 22 - 26
Hardness: Work Hardened	HRC 40 - 45
Hot Hardness	Excellent