



Pinnacle Alloys are products of SOWESCO

ISO 9001:2015 REGISTERED
Certificate No.: 50040 & 50415

ENiCrMo-10 DATA SHEET

Pinnacle Alloys ENiCrMo-10 (122)

AWS CLASS ENiCrMo-10

CODE AND SPECIFICATION DATA:

AWS A5.11 ASME SFA 5.11; UNS W86022

DESCRIPTION:

Pinnacle Alloys ENiCrMo-10 has a nominal composition (wt.-%) of 56 Ni, 22 Cr, 13 Mo, 4 Fe, 3 W. Electrodes of this classification are used for welding nickel-chromium-molybdenum alloys, for the welding of the clad side of joints in steel clad with nickel-chromium-molybdenum alloy, to steel and to other nickel-base alloys; and for joining nickel-chromium-molybdenum alloys. Typical specifications for the nickel-chromium-molybdenum base metals are ASTM B 574, B 575, B 619, B 622, and B 626, all of which have UNS Number N06022. Pinnacle Alloys ENiCrMo-10 is formulated for welding a wide array of industrial applications including power generation, petroleum and chemical plants, as well as offshore and marine facilities.

TYPE OF CURRENT: Direct Current Electrode Positive (DCEP)

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

WELDING POSITIONS: All positions
5/32" & 3/16" recommended for use in flat & horizontal positions only





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TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
Carbon (C)	0.02	0.01
Chromium (Cr)	20.0-22.5	21.0
Cobalt (Co)	2.50	0.20
Copper (Cu)	0.50	0.02
Iron (Fe)	2.0-6.0	3.10
Manganese (Mn)	1.00	0.20
Molybdenum (Mo)	12.5-14.5	14.0
Nickel (Ni)	Balance	Balance
Phosphorus (P)	0.03	0.01
Silicon (Si)	0.20	0.13
Sulfur (S)	0.015	<0.001
Tungsten (W)	2.5-3.5	3.10
Vanadium (V)	0.35	0.06

NOTE: Single values are maximums.

*Additional customer requirements may apply.

TYPICAL MECHANICAL PROPERTIES:

	AWS Spec (min)	As Welded
Ultimate Tensile Strength	100,000 psi (690 MPa)	105,000 psi (720 MPa)
Percent Elongation in 2"	25%	38%

TYPICAL WELDING PARAMETERS:

Diameter	Type of Current	Amperage Range		Voltage Range
		Flat	Out of Position	
3/32"	DCEP	70-90	65-80	20-23
1/8"	DCEP	80-110	75-95	21-24
5/32"	DCEP	120-160	Not recommended	22-25
3/16"	DCEP	170-190	Not recommended	23-26

NOTE: Maintaining a proper welding procedure, including pre-heat and interpass temperatures, may be critical depending on the type and thickness of material being welded.

NOTICE: The results reported are based upon testing of the product under controlled laboratory conditions in accordance with American Welding Society Standards. Actual use of the product may produce different results due to varying conditions. An example of such conditions would be electrode size, plate chemistry, environment, weldment design, fabrication methods, welding procedure and service requirements. Thus the results are not guarantees for the use in the field. The manufacturer disclaims any warranty of merchantability of fitness for any particular purpose with respect to its products.

CAUTION: Consumers should be thoroughly familiar with the safety precautions on the warning label posted in each shipment and in the American National Standards A49.1, "Safety in Welding and Cutting," published by the American Welding Society, 8669 NW 36 Street, #130, Miami, FL 33126; OSHA Safety and Health Standards 29 CFR 1910 is available from the U.S. Department of Labor, Washington, D.C. 20210.

Pinnacle Alloys SDS sheets may be obtained on the website below.

SOWESCO, LLC www.pinnaclealloys.com
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2602 S. 50th Avenue • Phoenix, Arizona 85043 • 1-866-442-9353 • (602) 442-9353 • Fax (602) 442-9354



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ACTUAL TEST REPORT

CUSTOMER'S PURCHASE ORDER NUMBER	SOLD TO	SHIP TO
1102848	F&M MAFCO	F&M MAFCO
SALES ORDER NUMBER	PO BOX 11013	PO BOX 11013
W62341	CINCINNATI, OH 45211-1113	CINCINNATI, OH 45211-1113
CERTIFICATE DATE	SHIP DATE	
2/28/2017	2/28/2017	

DESCRIPTION OF MATERIAL	HEAT NUMBER	LOT NUMBER
ERNICrMo-10(622) .045 X 30# MIG	42274	182966

CHEMICAL ANALYSIS - PERCENTAGE OF EACH									
C	Co	Cr	Cu	Fe	Mn	Mo	NI	P	S
0.0030	0.0100	22.2000	0.0100	4.2200	0.2200	14.2000	55.7900	0.0020	0.0010
Si	V	W							
0.0600	0.0400	2.9900							
FERRITE	Shaeffler	Delong	WRC92	RADIOGRAPHIC TEST:					
	N/A	N/A	N/A	N/A					

ACTUAL MECHANICAL PROPERTIES		
TENSILE STRENGTH	YIELD STRENGTH	ELONGATION IN 2"
N/A	N/A	N/A
ACTUAL CHARPY IMPACT		
N/A		

SPECIFICATIONS	CLASSIFICATION	PART NUMBER
AWS A5.14/ASME SFA 5.14	ERNICrMo-10	045NICRMO10M(622)
QUANTITY		
210 Lbs.		

REMARKS

Conforms to ASME Sec II, Part C. 2010 Edition. Certificate in accordance to EN 10204 2005 3.1: ISO 14074 1992 3.1.B

Heat/Lot PMI Verified
MADE IN SWITZERLAND

We verify that the stated chemical analysis is compliant with the applicable AWS specification and classification. Flux bearing products will be warranted against non-conformance for no more than six (6) months from the original date of sale by SOWESCO. Non-flux bearing products will be warranted for no more than twelve (12) months from the original date of sale by SOWESCO.

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John Husfeld
 John Husfeld, QMS Director



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ACTUAL TEST REPORT

CUSTOMER'S PURCHASE ORDER NUMBER	SOLD TO	SHIP TO
1102848	F&M MAFCO	F&M MAFCO
SALES ORDER NUMBER	PO BOX 11013	PO BOX 11013
W62341	CINCINNATI, OH 45211-1113	CINCINNATI, OH 45211-1113
CERTIFICATE DATE	SHIP DATE	
2/28/2017	2/28/2017	

DESCRIPTION OF MATERIAL	HEAT NUMBER	LOT NUMBER
ERNiCrMo-10 (622) .045" X 30# MIG	52792	242646

CHEMICAL ANALYSIS - PERCENTAGE OF EACH									
C	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S
0.0020	0.0200	22.2000	0.0100	4.5000	0.0500	14.0000	55.8000	0.0020	0.0010
Si	V	W	Al						
0.0600	0.0100	3.0400	0.0800						
FERRITE	Shaeffler	DeLong	WRC92	RADIOGRAPHIC TEST:					
	N/A	N/A	N/A	N/A					

ACTUAL MECHANICAL PROPERTIES		
TENSILE STRENGTH	YIELD STRENGTH	ELONGATION IN 2"
N/A	N/A	N/A
ACTUAL CHARPY IMPACT		
N/A		

SPECIFICATIONS	CLASSIFICATION	PART NUMBER
AWS A5.14/ASME SFA 5.14	ERNiCrMo-10	045NICRMO10M30(622)
QUANTITY		
1710 Lbs.		

REMARKS
Conforms to ASME Sec II, Part C. Certificate in accordance to EN 10204 3.1. MADE IN SWITZERLAND.
Heat/Lot PMI Verified

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CERTIFICATE NO.: 50040 & 50415

ACTUAL TEST REPORT

CUSTOMER'S PURCHASE ORDER NUMBER	SOLD TO	SHIP TO
1102848	F&M MAFCO	F&M MAFCO
SALES ORDER NUMBER	PO BOX 11013	PO BOX 11013
W62341	CINCINNATI, OH 45211-1113	CINCINNATI, OH 45211-1113
CERTIFICATE DATE	SHIP DATE	
2/28/2017	2/28/2017	

DESCRIPTION OF MATERIAL	HEAT NUMBER	LOT NUMBER
ERNICrMo-10 (622) .045" X 30# MIG	48141	242644

CHEMICAL ANALYSIS - PERCENTAGE OF EACH									
C	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S
0.0070	0.0100	22.1000	0.0100	4.6300	0.0500	14.0000	55.5000	0.0030	0.0010
Si	V	W	Al						
0.0400	0.0400	3.2500	0.0800						
FERRITE	Shaeffler	Delong	WRC92	RADIOGRAPHIC TEST:					
	N/A	N/A	N/A	N/A					

ACTUAL MECHANICAL PROPERTIES		
TENSILE STRENGTH	YIELD STRENGTH	ELONGATION IN 2"
N/A	N/A	N/A
ACTUAL CHARPY IMPACT		
N/A		

SPECIFICATIONS	CLASSIFICATION	PART NUMBER
AWS A5.14/ASME SFA 5.14	ERNICrMo-10	045NICRMO10M30(622)
QUANTITY		
9120 Lbs.		

REMARKS
Conforms to ASME Sec II, Part C. Certificate in accordance to EN 10204 3.1. MADE IN SWITZERLAND.
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ACTUAL TEST REPORT

CUSTOMER'S PURCHASE ORDER NUMBER	SOLD TO	SHIP TO
1102848	F&M MAFCO	F&M MAFCO
SALES ORDER NUMBER	PO BOX 11013	PO BOX 11013
W62341	CINCINNATI, OH 45211-1113	CINCINNATI, OH 45211-1113
CERTIFICATE DATE	SHIP DATE	
2/28/2017	2/28/2017	

DESCRIPTION OF MATERIAL	HEAT NUMBER	LOT NUMBER
ERNICrMo-10(622) .045 X 30# MIG	41988	182838

CHEMICAL ANALYSIS - PERCENTAGE OF EACH									
C	Co	Cr	Cu	Fe	Mn	Mo	NI	P	S
0.0040	0.0100	22.2000	0.0100	4.2500	0.2100	13.9000	55.9000	0.0020	0.0010
SI	V	W	AI						
0.0500	0.0400	3.0900	0.0400						
FERRITE	Shaeffler	Delong	WRC92	RADIOGRAPHIC TEST:					
	N/A	N/A	N/A	N/A					

ACTUAL MECHANICAL PROPERTIES		
TENSILE STRENGTH	YIELD STRENGTH	ELONGATION IN 2"
N/A	N/A	N/A
ACTUAL CHARPY IMPACT		
N/A		

SPECIFICATIONS	CLASSIFICATION	PART NUMBER
AWS A5.14/ASME SFA 5.14	ERNICrMo-10	045NICRMO10M(622)
QUANTITY		
30 Lbs.		

REMARKS
Conforms to ASME Sec II, Part C, 2010 Edition. Certificate in accordance to EN 10204 2005 3.1: ISO 14074 1992 3.1.B
Heat/Lot PMI Verified MADE IN SWITZERLAND

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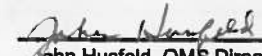
CERTIFICATE NO.: 50040 & 50415

ACTUAL TEST REPORT

CUSTOMER'S PURCHASE ORDER NUMBER				SOLD TO		SHIP TO			
1102848				F&M MAFCO		F&M MAFCO			
SALES ORDER NUMBER				PO BOX 11013		PO BOX 11013			
W62341				CINCINNATI, OH 45211-1113		CINCINNATI, OH 45211-1113			
CERTIFICATE DATE			SHIP DATE						
2/28/2017			2/28/2017						
DESCRIPTION OF MATERIAL					HEAT NUMBER		LOT NUMBER		
ERNICrMo-10(622) .045 X 30# MIG					41988		182838		
CHEMICAL ANALYSIS - PERCENTAGE OF EACH									
C	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S
0.0040	0.0100	22.2000	0.0100	4.2500	0.2100	13.9000	55.9000	0.0020	0.0010
Si	V	W	Al						
0.0500	0.0400	3.0900	0.0400						
FERRITE	Shaeffler	Delong	WRC92	RADIOGRAPHIC TEST:					
	N/A	N/A	N/A	N/A					
ACTUAL MECHANICAL PROPERTIES									
TENSILE STRENGTH			YIELD STRENGTH			ELONGATION IN 2"			
N/A			N/A			N/A			
ACTUAL CHARPY IMPACT									
N/A									
SPECIFICATIONS			CLASSIFICATION			PART NUMBER			
AWS A5.14/ASME SFA 5.14			ERNICrMo-10			045NICRMO10M(622)			
QUANTITY									
120 Lbs.									
REMARKS									
Conforms to ASME Sec II, Part C. 2010 Edition. Certificate in accordance to EN 10204 2005 3.1: ISO 14074 1992 3.1.B									
Heat/Lot PMI Verified									

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ACTUAL TEST REPORT

CUSTOMER'S PURCHASE ORDER NUMBER		SOLD TO	SHIP TO
1102848		F&M MAFCO	F&M MAFCO
SALES ORDER NUMBER		PO BOX 11013	PO BOX 11013
W62341		CINCINNATI, OH 45211-1113	CINCINNATI, OH 45211-1113
CERTIFICATE DATE	SHIP DATE		
2/28/2017	2/28/2017		

DESCRIPTION OF MATERIAL	HEAT NUMBER	LOT NUMBER
ERNICrMo-10(622) .045 X 30# MIG	43217	186729

CHEMICAL ANALYSIS - PERCENTAGE OF EACH									
C	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S
0.0070	0.0100	22.3000	0.0300	4.5400	0.1700	14.1000	55.4000	0.0030	0.0010
Si	V	W	Al						
0.0400	0.0400	3.0200	0.1000						
FERRITE	Shaeffler	DeLong	WRC92	RADIOGRAPHIC TEST:					
	N/A	N/A	N/A	N/A					

ACTUAL MECHANICAL PROPERTIES		
TENSILE STRENGTH	YIELD STRENGTH	ELONGATION IN 2"
N/A	N/A	N/A
ACTUAL CHARPY IMPACT		
N/A		

SPECIFICATIONS	CLASSIFICATION	PART NUMBER
AWS A5.14/ASME SFA 5.14	ERNICrMo-10	045NICRMO10M(622)
QUANTITY		
210 Lbs.		

REMARKS
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ACTUAL TEST REPORT

CUSTOMER'S PURCHASE ORDER NUMBER		SOLD TO	SHIP TO
1102848		F&M MAFCO	F&M MAFCO
SALES ORDER NUMBER		PO BOX 11013	PO BOX 11013
W63187		CINCINNATI, OH 45211-1113	CINCINNATI, OH 45211-1113
CERTIFICATE DATE	SHIP DATE		
3/21/2017	3/21/2017		

DESCRIPTION OF MATERIAL	HEAT NUMBER	LOT NUMBER
ERNICrMo-10 (622) .045" X 30# MIG	48111	242644

CHEMICAL ANALYSIS - PERCENTAGE OF EACH

C	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S
0.0070	0.0100	22.1000	0.0100	4.6300	0.0500	14.0000	55.5000	0.0030	0.0010
Si	V	W	Al						
0.0400	0.0400	3.2500	0.0800						
FERRITE	Shaeffler	DeLong	WRC92	RADIOGRAPHIC TEST:					
	N/A	N/A	N/A	N/A					

ACTUAL MECHANICAL PROPERTIES

TENSILE STRENGTH	YIELD STRENGTH	ELONGATION IN 2"
N/A	N/A	N/A
ACTUAL CHARPY IMPACT		
N/A		

SPECIFICATIONS	CLASSIFICATION	PART NUMBER
AWS A5.14/ASME SFA 5.14	ERNICrMo-10	045NICRMO10M30(622)
QUANTITY		
210 Lbs.		

REMARKS

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