



DUPLEX LONG PRODUCTS SUPPLY RANGE DUPLEX BAR (RIBBED & PLAIN) + COIL

Supply Range				Weight and Length		Rp 0,2 (N/mm ²)
Cold	Bar	Duplex	4 - 14 mm	Bar Length: 3.000 - 8.000 mm. (- 0 / + 100)		> 600
Hot	Coil	Duplex	8 - 40 mm	Coil Weight: 2000 - 2.200 kg.		> 500
	Bar	Duplex	16 - 50 mm	Bar Length: 3.000 - 12.000 mm. (- 0 / + 100)		

CARES	Diameters
1.4482	Being processed
1.4362	6 - 32 mm
1.4462	12 - 50 mm

ACX 917

EN 10088-3 : EN 1.4462
UNS S32205
ASTM A276

Review: 1. July 2009

Chemical Composition:

ACX 900	C	Mn	P	S	Si	Cr	Ni	Mo	N
EN 1.4462	0,030 max.	2,00 max.	0,035 max.	0,015 max.	1,00 max.	21-23	4,5-6,5	2,5-3,5	0,10-0,22
UNS S32205	0,030 max.	2,00 max.	0,030 max.	0,020 max.	1,00 max.	22-23	4,5-6,5	3-3,5	0,14-0,20
ACX standard	0,025	1,75	0,025	0,010	0,35	22,40	4,75	3,30	0,180

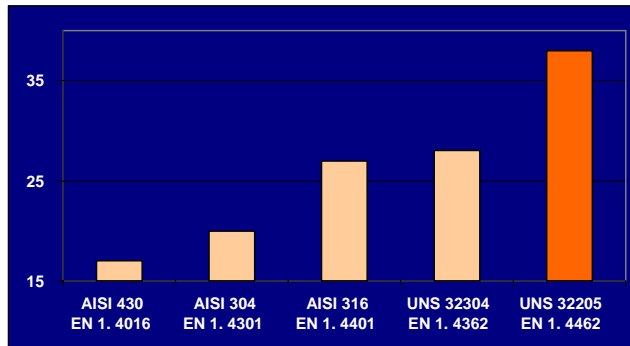
Mechanical Property Table: Roldan Standard Property / International Standards:

ROLDAN PRODUCT				
	0,2% Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Rebar	650	820	35	245
Wire rod	600	800	35	240
Cold drawn bar $6 \leq \phi \leq 30$	850	1040	15 - 30	290
Peeled bar $30 < \phi \leq 52$	660	840	35	240
ASTM A-276	450 minimum	655 minimum	25 minimum	290 maximum
EN 10088-3	450 minimum	650 minimum	25 minimum	270 maximum
BS 6744	500 minimum	Rp0,2% x 1,1 minimum	14	--

Corrosion Resistance:

- Superior characteristics to Aisi 316 grade
- Corrosion resistance improved due to the increase content of Cr with respect to Austenitics grades.
- The N and Cr content improved crevice corrosion resistance as well as by pitting.

PRE (Pitting Resistance Equivalent)



$$PRE = (\%Cr) + 3,3 \cdot (\%Mo) + X \cdot (\%N)$$

Austenitics: X = 16

Duplex: X = 30

Mechanical properties:

- Yield strength and tensile strength are higher than AISI 304L / 316L and UNS 32304 grades
- Suitable for temperature ranges from -50°C to 300°C

Mechanical Properties according to EN 10088 standard				
EN	Type (equivalent)	Re 0,2% min. N7mm ² (Yield Strength)	Rm min. N/mm ² (Tensile Strength)	A5 Mini. % (Elongation)
1.4301	304	190	500	45
1.4404/1.4571	316L	200	500	40
1.4362	2304	400	600	25
1.4462	2205	450	655	25

Welding:

- Good weldability (except oxy-fuel)
- Less sensitive to hot cracking due to duplex structure

Applications:

- Where AISI 316/L grade does not reach the necessary corrosion resistance level
- Under the sea
- Pulp & Paper Industry
- Tubing and storage in chemical products tanks
- Mining
- Structural
- Desalination Plants
- Oil drilling platform
- Heat interchange



ACX 915

EN 10088-3 : EN 1.4362
UNS S32304
ASTM A276

Review 1 July/09

Chemical composition:

ACX 915	C	Mn	P	S	Si	Cr	Ni	Mo	N	Cu
EN 1.4362	0,030 max.	2,00 max.	0,035 max.	0,015 max.	1,00 max.	22-24	3,5-5,5	0,1-0,6	0,05-0,20	0,1-0,6
UNS S32304	0,030 max.	2,50 max.	0,040 max.	0,030 max.	1,00 max.	21,5-24,5	3,0-5,5	0,05-0,60	0,05-0,20	0,05-0,60
ACX standard	0,020	1,600	0,025	0,001	0,550	22,800	4,250	0,200	0,160	0,250

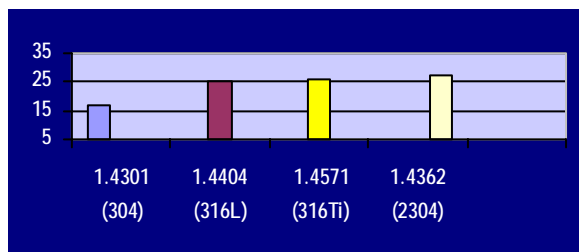
Mechanical Property Table: Roldan Standard Property / International Standards:

ROLDAN PRODUCT				
	0,2% Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Rebar	655	855	37	247
Wire rod	565	793	40	220
Angle	683	844	31	252
Bar	794	927	26	255
ASTM A-276	400 minimum	600 minimum	25 minimum	290 maximum
EN 10088-3	400 minimum	600 minimum	25 minimum	260 maximum
BS 6744	500 minimum	Rp _{0,2%} x 1,1 minimum	14	--

Corrosion Resistance:

- Similar characteristic to AISI 316 grade
- Improved stress corrosion resistance properties as compared to AISI 304L / 316L

PRE (Pitting Resistance Equivalent)



$$PRE = (\%Cr) + 3,3 \cdot (\%Mo) + X \cdot (\%N)$$

$$\text{Austenitics: } X = 16$$

$$\text{Duplex: } X = 30$$

Mechanical Properties:

- Tensile property Yield Strength is double of AISI 304L / 316L stainless
- Suitable for temperature ranges from -50°C to 300°C

Mechanical Properties according to EN 10088 standard				
EN	Type (equivalent)	Re 0,2% min. N/mm ² (Yield Strength)	Rm min. N/mm ² (Tensile Strength)	A5 Mini. % (Elongation)
1.4301	304	190	500	45
1.4404/1.4571	316L	200	500	40
1.4362	2304	400	600	25

Welding:

- Can be welded by TIG, Plasma, MIG, SMAW, SAW, FCAW
- Less sensitive to hot cracking due to duplex structure

Applications:

- In place of AISI 304L / 316L applications
- Pulp & Paper Industry
- Organic acids (caustic solutions)
- Food industry
- Mining
- Structural
- Desalination Plants
- Oil drilling platform

Stainless steel type enclosed on the next revision draft



EN 10088-3 : EN 1.4482 ⁽¹⁾
 UNS S32001
 ASTM A240 A789

ACX 903

Review 1. July 2009

Chemical Composition:

ACX 903	C	Mn	P	S	Si	Cr	Ni	Mo	N	Cu
EN 1.4482	0,030 max.	4,0-6,0	0,035 max.	0,030 max.	1,00 max.	19,5-21,5	1,5-3,5	0,1-0,6	0,05-0,20	1 max.
UNS S32001	0,030 max.	4,0-6,0	0,040 max.	0,030 max.	1,00 max.	19,5-21,5	1,0-3,0	0,60 max.	0,05-0,17	1 max.
ACX 903 standard	0,020	4,20	0,025	0,001	0,650	20	1,8	0,20	0,11	0,3

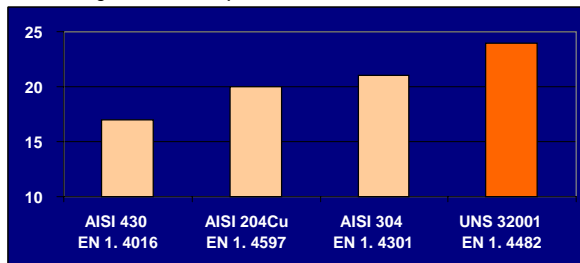
Mechanical Property Table: Roldan Standard Property / International Standards:

ROLDAN PRODUCT				
	0.2% Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Rebar	610	820	42	240
Wire rod	557	814	46	235
ASTM A-240 A-789	450 minimum	620 minimum	25 minimum	290 maximum
EN 10088-3 ⁽¹⁾	400 minimum	600 minimum	25 minimum	--
BS 6744 ⁽²⁾	500 minimum	Rp _{0.2%} x 1,1 minimum	14	--

Corrosion resistance:

- Similar characteristics to AISI 304 type
- Corrosion resistance improve under tensions compared with AISI 304L types

PRE (Pitting Resistance Equivalent)



$$PRE = (\%Cr) + 3,3 \cdot (\%Mo) + X \cdot (\%N)$$

Austenitics: X = 16

Duplex: X = 30

Mechanical properties:

- Yield strength and tensile strength are higher than on the AISI 430 / 304 types

Mechanical Properties according to EN 10088 standard				
EN	Type (equivalent)	Re 0,2% min. N/mm ² (Yield Strength)	Rm min. N/mm ² (Tensile Strength)	A5 Mini. % (Elongation)
1.4016	430	240	400	20
1.4301	304	190	500	45
1.4482 ⁽¹⁾	UNS 32001	400	600	25

Welding:

- Less sensitive to hot cracking due to duplex structure

Applications:

- In the same applications of AISI 304 / 304L type
- Pulp & Paper Industry
- Higher ductility to a higher temperatures
- Similar machinability of AISI 304
- Structural
- Oil drilling platform

⁽¹⁾ Steel type still to be registered in the following EN 10088 reviews.

⁽²⁾ Mechanical and geometrical properties are fulfil the conditions show in the standard which does not enclose type EN 1.4482 / ACX 903