

REPORT N. Rapporto N.	TC-021659-18-0004	Issued on Revised on	02/05/2018	Customer Cliente	PROVEEDORA DE MATERIALES ANGER SA DE CV, AV ADOLFO LOPEZ MATEOS 150, COL LAGRANGE, SAN NICOLAS DE LOS GARZA, N.L. - 66490, MEXICO	Job n. / Com. n.	21659	Page n. / Pagina n.	1 of 7
Revision Revisione	0	According to In accordo a	EN 10204:2004 UNI EN 10204:2005	Type Tipo	3.1	Purchase order and project/Ordine e progetto 8308			

DESCRIPTION / DESCRIZIONE

Test Prova	Item Pos.	Qty Qtà	Customer code Codice cliente	Material Materiale	Heat Colata	Product Prodotto
ADJB	3	4005		A/SA105-14	249015	90 DEG. ELBOW S. 3000 NPT A/SA105N 1
ABPX	14	1900		A/SA105-14	240259	TEE S. 3000 NPT A/SA105N 1/2
YRXS	22	1000		A/SA105-14	16/71123	UNION S. 3000 NPT A/SA105N 1 male
YRXS	22	1000		A/SA105-14	16/71123	UNION S. 3000 NPT A/SA105N 1 female
YRFX	22	1000		A/SA105-14	15/77527	UNION S. 3000 NPT A/SA105N 1 nut

HEAT TREATMENT DATA

Dettagli di trattamento termico

COUNTRY OF MELT

Provenienza

RAW AND FORGING MATERIAL CERTIFICATES

Certificati di acciaieria/forgia

ADJB	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	CERT.000512.EVASI*(VACUUM DEGASED STEEL)
ABPX	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	CERT.000357.EVASI*(VACUUM DEGASED STEEL)
YRXS	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	CERT.2017/0010063.FEAT*
YRXS	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	CERT.2017/0010063.FEAT*
YRFX	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	CERT.2016/0010266.FEAT*

Test Prova	Loc. Preso a	Orient. Direz.	TENSILE TEST AT ROOM TEMPERATURE / Trazione a temperatura ambiente										CVN (KV) / Prova di resilienza					Bend [B] Flatt. [F] Piega Schiacc.	Hardness Durezza			
			Specimen / Provino			Yield strength		Tensile strength		Elongation		Red. Of Area		Dimens.		T	Abs. Energy			Shear A	Lat Exp	
			Shape	A	Gage Length	Snerv. [Mpa]	Rottura [Mpa]	Allung. [%]	Contraz. [%]	Dimens. [mm]	Temp. [°C]	Energia ass. [J]	Area d [mm]	Esp. Lat. [mm]								
ADJB	T/2	TRANS	Round	30.700	25.000	306.400	489.000	32.300	64.300	10x10x55	-29	83-101-105	45-50-50	1.05-1.18-1.20						HBW 152-154		
ABPX	T/2	TRANS	Round	30.600	25.000	321.800	505.800	36.800	72.300	10x10x55	-29	96-51-60	50-30-35	1.21-0.74-0.82						HBW 156-157		
YRXS	T/2	TRANS	Round	30.600	25.000	343.600	525.500	33.200	69.800	10x10x55	-29	36-47-45	20-30-30	0.57-0.69-0.65						HBW 153-154		
YRXS	T/2	TRANS	Round	30.600	25.000	343.600	525.500	33.200	69.800	10x10x55	-29	36-47-45	20-30-30	0.57-0.69-0.65						HBW 153-154		
YRFX	T/2	LONG	Round	122.700	50.000	369.900	524.400	34.000	67.700	10x10x55	-10	115-146-105	55-70-50	1.33-1.61-1.26						HBW 155-158		

Test Prova	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Al	H	Nb	N	Sn	O	B	Fe	Zr	CE <sup>A</sup>	PREN <sup>B</sup>	X fact. <sup>C</sup>	J fact. <sup>D</sup>	
ADJB	0.1660	0.2040	0.1360	0.0040	0.0090	0.1380	0.0950	0.0190	0.0100	0.1680	0.0040	0.0210	0.00013	0.0010	0.0089	0.0060	0.0016								0.3883
ABPX	0.1660	0.2200	0.9500	0.0030	0.0100	0.1900	0.0900	0.0300	0.0030	0.1500	0.0040	0.0240	0.00011	0.0010	0.0052	0.0070	0.0013								0.3851
YRXS	0.1950	0.2100	0.8900	0.0100	0.0150	0.2000	0.0700	0.0200	0.0180	0.1600	0.0200	0.0270	0.00017	0.0010	0.0095	0.0100	0.0018								0.4066
YRXS	0.1950	0.2100	0.8900	0.0100	0.0150	0.2000	0.0700	0.0200	0.0180	0.1600	0.0200	0.0270	0.00017	0.0010	0.0095	0.0100	0.0018								0.4066
YRFX	0.1800	0.1800	0.9500	0.0060	0.0100	0.1000	0.0400	0.0100	0.0170	0.1000	0.0020	0.0250	0.00018		0.0098	0.0060	0.0014								0.3700

REMARKS / Note

- 1: MATERIAL ACCORDING TO NACE MR0175/ISO 15156-1-2-3 Ed.2015
- 2: MATERIAL ACCORDING TO ASME Sect. II Part A 2017 Edition.
- 3: FULLY KILLED STEEL, FINE GRAIN TREATED.

A: CE = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 | B: PREN = Cr + 3.3Mo + 16N  
 C: X factor = ((10P + 5Sb + 4Sn + As)/100 - elements expressed in ppm  
 D: J factor = ((Mn + Si) / (P + Sn)) x 10E4

Quality inspector representative

Ispettore controllo qualità

Riccardo Scorsetti

Additional elements: 'ADJB': Ca 0,0010 | 'ABPX': Co 0,0080 As 0,0040 Sb 0,0010 | 'YRXS': Ca 0,0027 | 'YRFX': Ca 0,0009 |

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We hereby certify that all items supplied for the above purchase orders meet all the requirements of the applicable specification of manufacture, the purchase item descriptions, purchase specifications and purchase order requirements. Visual, dimensional and marking check of items supplied has been carried out by our internal inspectors with satisfactory results.

The chemical and mechanical values shown on the EN 10204 certificate are true copy of the mill test certificate issued by the steel mill, or by the laboratory that determined it. All material is certified to be mercury free and free from radioactivity contamination. No weld repair was performed. Marking was performed by low stress stamps in accordance with MSS SP25 Ed. 2008

**Manufacturing standards:**

- 45° and 90° elbows, tees, crosses, full and half couplings, caps, square, hexagonal and round plugs, hexagonal and flush bushings, welding bosses are manufactured in accordance with ASME B.16.11 Ed. 2016; threads in accordance with ANSI/ASME B1.20.1 Ed. 2013

- Outlet branches are manufactured in accordance with: ASME B.31.1 Ed. 2016, B.31.3 Ed. 2016 and MSS-SP-97 Ed. 2012

- Seamless swage nipples are manufactured in accordance with: BS3799-74 or MSS SP95 Ed. 2014

- Seamless pipe nipples are manufactured in accordance with: B36.10 Ed. 2015 or B36.19 Ed. 2004

- Flanged outlet branches are manufactured in accordance with: ASME B.31.1 Ed. 2016, B.31.3 Ed. 2016 and B.16.5 Ed. 2013

- Unions are manufactured in accordance with: BS 3799-74 or MSS SP-83 Ed. 2014

When the length of flanged nipple is not specified in the description, it is 150 mm.

The material is according to ASTM and ASME Boiler and Pressure Vessel Code Section II.

When the Edition/Revision of the listed standards is not mentioned, it is assumed to be the latest.

Yield strength detected by 0.2% off-set method

Austenitic and duplex stainless steels have been pickled and passivated. Machined surfaces do not require pickling and passivation.

M.E.G.A. is approved with certificate 75/2002/MUC by T.U.V. (certification Body N.0036) to issue certificate of specific product control in accordance with the Pressure Equipment Directive 2014/68/EU (PED) Annex 1, Section 4.3.

**Testing equipment used:**

- Tensile test machine Galdabini Quasar 250 serial No. VAOG – Procedure MAC-03 Rev. 3

- Impact test Cermac JB-W500 serial No. 04031 – Procedure MAC-04 Rev. 3

- Brinell and Vickers Hardness test Wolpert Dia Testor 2RC serial No. 8900298/0001 – Procedure MAC-05 Rev. 3 (HBW); MAC-09 Rev.0 (HV10)

- Rockwell Hardness test EMCO Test DJ10 Serial No. 255 - Procedure MAC-06 Rev. 3

- Chemical analysis spectrometer Baird DV4 serial No. P017 (ASTM E415 and E1086) – Procedure QC-07 Rev. 0

Alloy N08020: Material from forgings according to ASTM B462; Material from bars according to ASTM B473; both grades ASTM B462 and ASTM B473 conform also ASTM B366

Alloy N10276: Material from forgings according to ASTM B564; Material from bars according to ASTM B574; both grades ASTM B564 and ASTM B574 conform also ASTM B366

Alloy N06625: material from forgings according to ASTM B564; material from bars according to ASTM B444; material from pipes according to ASTM B444; all grades ASTM B564, ASTM B446 and ASTM B444 conform also ASTM B366

Alloy N08825: Material from forgings according to ASTM B564; Material from bars according to ASTM B425; both grades ASTM B564 and ASTM B425 conform also ASTM B366

The product are manufactured in Italy.

<b>Quality inspector representative</b> Ispettore controllo qualità	Ricardo Scorsetti 
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