



REPORT N. Rapporto N.	TC-018503-16-0004	Issued on Revised on	08/03/2017	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.	18503	Page n. / Pagina n.	1 of 2
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 7763			

Test Prova	Item Pos.	Qty Q.tà	Customer code Codice cliente	Material Materiale	Heat Colata	Product Prodotto
ZNBX	51	210		A/SA105-14	236691	BUSHING M/F NPT A/SA105N 2x1.1/2
YFRC	52	80		A/SA105-14	13/77828	BUSHING M/F NPT A/SA105N 2.1/2x1
ZLSX	59	1200		A/SA105-14	16/79775	90 DEG. ELBOW S. 3000 SW A/SA105N 2
YRCR	65	900		A/SA105-14	16/79774	TEE S. 3000 SW A/SA105N 2
ZLNX	65	1104		A/SA105-14	16/78659	TEE S. 3000 SW A/SA105N 2

Test Prova	HEAT TREATMENT DATA AND REFERENCES TO OTHER CERTIFICATES / Dettagli di trattamento termico e riferimenti ad altri certificati	RAW AND FORGING MATERIAL CERTIFICATES / Certificati di acciaieria/forgia
ZNBX	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.	CERT.592.EVASI (VACUUM DEGASED STEEL)
YFRC	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 880 C COOLED IN STILL AIR.	CERT.FC-005283-15-0005.MEGA/CERT.2486.MEGA*H=0.00021
ZLSX	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 880 C COOLED IN STILL AIR.	CERT.FC-005405-15-0019.MEGA/CERT.3270.MEGA
YRCR	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 880 C COOLED IN STILL AIR.	CERT.FC-005405-15-0016.MEGA/CERT.3190.MEGA
ZLNX	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 880 C COOLED IN STILL AIR.	CERT.FC-005405-15-0020.MEGA/CERT.3287.MEGA

Test Prova	Test 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 Forma	A [mm] ² Sezione	L [mm] Lungh.	Snerv. [Mpa] Min:	Rottura [Mpa] Min:	Allung. [%] Min:	Contraz. [%] Min:	Dimens. [mm]	Temp. [°C]	Energia ass. [J]	Area d [%]	Exp. Lat. [mm]						
ZNBX	T/2	TRANS	Round	122.700	50.000	310.700	521.100	35.100	73.100	10X10X55	-10	102-146-89	50-70-45	1.20-1.61-1.05	HBW 162-164					
YFRC	T/2	TRANS	Round	30.000	25.000	296.900	489.000	30.000	60.400	10X10X55	-1	88-73-89	HBW 140-143					
ZLSX	T/2	LONG	Round	60.100	35.000	313.800	499.800	31.600	61.100	10X10X55	-10	31-33-34	20-20-20	0.58-0.60-0.62	HBW 144-146					
YRCR	T/2	TRANS	Round	122.500	50.000	320.700	503.100	30.000	60.700	10x10x55	-10	35-35-37	20-20-25	0.58-0.60-0.64	HBW 153-155					
ZLNX	T/2	LONG	Round	59.500	35.000	304.300	490.000	35.500	65.400	10x10x55	-10	39-46-42	25-25-25	0.64-0.68-0.66	HBW 147-148					

Test Prova	C [%]	Si [%]	Mn [%]	S [%]	P [%]	Cr [%]	Ni [%]	Mo [%]	Ti [%]	Cu [%]	V [%]	Al [%]	H [%]	Nb [%]	N [%]	Sn [%]	O [%]	B [%]	Fe [%]	Zr [%]	CE ^A [%]	PREN ^B [%]	X fact. ^C [%]	J fact. ^D [%]
ZNBX	0.1760	0.2000	0.9600	0.0020	0.0120	0.2000	0.0500	0.0100	0.0010	0.1100	0.0050	0.0150	0.0001	0.0010	0.0063	0.0050	0.0014					0.3896		
YFRC	0.1900	0.1600	0.9500	0.0100	0.0120	0.1300	0.0800	0.0200	0.0150	0.1800	0.0030	0.0260		0.0020	0.0102	0.0090	0.0018					0.3962		
ZLSX	0.1800	0.2300	1.0300	0.0100	0.0150	0.1100	0.0700	0.0100	0.0190	0.1800	0.0020	0.0250	0.0001	0.0020	0.0094	0.0080	0.0018					0.3927		
YRCR	0.1900	0.2500	1.0900	0.0100	0.0140	0.0800	0.1000	0.0200	0.0210	0.1600	0.0020	0.0250		0.0020	0.0093	0.0080	0.0016					0.4093		
ZLNX	0.1800	0.2500	1.0500	0.0070	0.0120	0.1300	0.0600	0.0100	0.0250	0.2000	0.0020	0.0350	0.0001	0.0020	0.0098	0.0100	0.0012					0.4007		

REMARKS / Note	
1: MATERIAL ACCORDING TO NACE MR0175/ISO 15156-1-2-3 Ed.2009	A: CE = C + Mn/6 + (Cr+Mo+V)/5 + (Cu+Ni)/15 B: PREN = Cr + 3.3Mo + 16N
2: MATERIAL ACCORDING TO ASME Sect. II Part. A 2015 Edition.	C: X factor = (10P + 55b+4Sn+As)/100 - elements expressed in ppm
3: FULLY KILLED STEEL, FINE GRAIN TREATED.	D: J factor = ((Mn + Si) (P + Sn)) x 10E4
Additional elements: 'ZNBX': As 0,0040 Sb 0,0010	Quality Inspector representative Emmanuel Centimeri Ispettore controllo qualità



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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.

Manufacturing standards:

- 45° and 90° elbows, tees, crosses, full and half couplings, caps, square, hexagonal and round plugs, hexagonal and flush bushings are manufactured in accordance with ASME B.16.11; threads in accordance with ANSI/ASME B1.20.1.
- Outlet branches are manufactured in accordance with: ASME B.31.1, B.31.3 and MSS-SP-97
- Seamless swage nipples are manufactured in accordance with: BS3799-74 or MSS SP95-86
- Seamless pipe nipples are manufactured in accordance with: B36.10-95 or B36.19-85
- Flanged outlet branches are manufactured in accordance with: ASME B.31.1, B.31.3 and B.16.5
- Unions are manufactured in accordance with: BS 3799 or MSS SP-83

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 97/23/EC (PED) Annex 1, Paragraph 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. PD17 (ASTM E415 and E1086) - Procedure QC-07 Rev. 0

The product are manufactured in Italy.

Quality inspector representative

Ispettore controllo qualità

Emmanuel Centemeri