

<b>REPORT N.</b> Rapporto N.	<b>TC-019212-16-0005</b>	<b>Issued on</b> Revised on	<b>16/05/2017</b>	<b>Customer</b> Cliente	PROVEEDORA DE MATERIALES AN CER SA DE CV, AV ADOLFO LOPEZ MATEOS 150, COL LAGRANGE, SAN NICOLAS DE LOS GARZA, N.L. - 66490, MEXICO	<b>Job n. / Com. n.</b>	<b>19212</b>	<b>Page n. / Pagina n.</b>	<b>1 of 3</b>
<b>Revision</b> Revisione	<b>0</b>	<b>According to</b> In accordo a	<b>EN 10204:2004</b> <b>UNI EN 10204:2005</b>	<b>Type</b> Tipo	<b>3.1</b>	<b>Purchase order and project/Ordine e progetto</b> <b>7902</b>			

**DESCRIPTION / DESCRIZIONE**

Test Prova	Item Pos.	Qty Q.tà	Customer code Codice cliente	Material Materiale	Heat Colata	Product Prodotto
ZNCC	3	312		A/SA105-14	238458	90 DEG. ELBOW S. 3000 NPT A/SA105N 1.1/2
ZLNX	14	504		A/SA105-14	16/78659	TEE S. 3000 NPT A/SA105N 1.1/2
YRXD	18	2010	*	A/SA105-14	16/70684	UNION S. 3000 NPT A/SA105N 3/4 male
YRXD	18	2010	*	A/SA105-14	16/70684	UNION S. 3000 NPT A/SA105N 3/4 female
YRXD	18	2010	*	A/SA105-14	16/70684	UNION S. 3000 NPT A/SA105N 3/4 nut

Test Prova	HEAT TREATMENT DATA Dettagli di trattamento termico	COUNTRY OF MELT Provenienza	RAW AND FORGING MATERIAL CERTIFICATES Certificati di acciaieria/forgia
ZNCC	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.		CERT.000008.EVASI*
ZLNX	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 880 C COOLED IN STILL AIR.		CERT.FC-005405-15-0020.MEGA/CERT.3287.MEGA*
YRXD	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.		CERT.2016/0010280.FEAT*
YRXD	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.		CERT.2016/0010281.FEAT*
YRXD	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.		CERT.2016/0010282.FEAT*

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 Sez.[mm <sup>2</sup> ]	Gage Length Lungh.[mm]	Snerv. [Mpa] Min:	Rottura [Mpa] Min:	Allung. [%] Min:	Contraz. [%] Min:	Dimens. [mm]	Temp. [°C]	Energia ass. [J]	Area d [%]	Esp. Lat. [mm]		
ZNCC	T/2	TRANS	Round	60.600	35.000	279.300	491.300	30.600	70.800	10x10x55	-10	100-58-95	45-30-45	1.26-0.80-1.20	HBW 150-152	
ZLNX	T/2	TRANS	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	
YRXD	T/2	LONG	Round	30.400	25.000	338.200	526.900	35.200	70.100	10x10x55	-10	100-97-92	55-55-50	1.23-1.18-1.14	HBW 154-158	
YRXD	T/2	LONG	Round	30.400	25.000	338.200	526.900	35.200	70.100	10x10x55	-10	100-97-92	55-55-50	1.23-1.18-1.14	HBW 154-158	
YRXD	T/2	LONG	Round	30.400	25.000	338.200	526.900	35.200	70.100	10x10x55	-10	100-97-92	55-55-50	1.23-1.18-1.14	HBW 154-158	

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> [%]
ZNCC	0.1650	0.1700	0.9700	0.0010	0.0080	0.2000	0.0800	0.0200	0.0020	0.1500	0.0050	0.0220	0.00012	0.0010	0.0049	0.0080	0.0013					0.3869		
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	0.00019	0.0020	0.0098	0.0100	0.0012					0.4007		
YRXD	0.1800	0.1800	0.9700	0.0080	0.0150	0.1800	0.0700	0.0100	0.0190	0.2000	0.0020	0.0250	0.00019	0.0020	0.0098	0.0100	0.0018					0.3980		
YRXD	0.1800	0.1800	0.9700	0.0080	0.0150	0.1800	0.0700	0.0100	0.0190	0.2000	0.0020	0.0250	0.00019	0.0020	0.0098	0.0100	0.0018					0.3980		
YRXD	0.1800	0.1800	0.9700	0.0080	0.0150	0.1800	0.0700	0.0100	0.0190	0.2000	0.0020	0.0250	0.00019	0.0020	0.0098	0.0100	0.0018					0.3980		

**REMARKS / Note**

1: MATERIAL ACCORDING TO NACE MR0175/ISO 15156-1-2-3 Ed.2015  
 2: MATERIAL ACCORDING TO ASME Sect. II Part. A 2015 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

<b>Additional elements:</b> 'ZNCC': Co 0,0080 Ca 0,0010 As 0,0050 Sb 0,0010   'YRXD': Ca 0,0019	<b>Quality inspector representative</b> Ispettore controllo qualità	<b>Riccardo Scorsetti</b> 
---	--	-------------------------------

<b>REPORT N.</b> Rapporto N.	<b>TC-019212-16-0005</b>	<b>Issued on</b> Revised on	<b>16/05/2017</b>	<b>Customer</b> Cliente	PROVEEDORA DE MATERIALES AN CER SA DE CV, AV ADOLFO LOPEZ MATEOS 150, COL LAGRANGE, SAN NICOLAS DE LOS GARZA, N.L. - 66490, MEXICO	<b>Job n. / Com. n.</b>	<b>19212</b>	<b>Page n./ Pagina n.</b>	<b>2 of 3</b>
<b>Revision</b> Revisione	<b>0</b>	<b>According to</b> In accordo a	<b>EN 10204:2004</b> <b>UNI EN 10204:2005</b>	<b>Type</b> Tipo	<b>3.1</b>	<b>Purchase order and project/Ordine e progetto</b> <b>7902</b>			

**DESCRIPTION / DESCRIZIONE**

Test Prova	Item Pos.	Qty Q.tà	Customer code Codice cliente	Material Materiale	Heat Colata	Product Prodotto
ZNAC	36	500		A/SA105-14	241542	BUSHING M/F NPT A/SA105N 1.1/4x3/4
ZNAX	59	1500		A/SA105-14	244301	90 DEG. ELBOW S. 3000 SW A/SA105N 1.1/4

Test Prova	HEAT TREATMENT DATA Dettagli di trattamento termico	COUNTRY OF MELT Provenienza	RAW AND FORGING MATERIAL CERTIFICATES Certificati di acciaieria/forgia
ZNAC	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.		CERT.000419.EVASI*
ZNAX	MATERIAL PRODUCED BY ELECT.FURNACE-NORMALIZED AT 900 C COOLED IN STILL AIR.		CERT.000516.EVASI*

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 Sez.[mm <sup>2</sup> ]	Gage Length Lungh.[mm]	Snerv. [Mpa] Min:	Rottura [Mpa] Min:	Allung. [%] Min:	Contraz. [%] Min:	Dimens. [mm]	Temp. [°C]	Energia ass. [J]	Area d [%]	Esp. Lat. [mm]		
ZNAC	T/2	LONG	Round	30.100	25.000	296.500	491.200	35.200	68.700	10x10x55	-1	160-181-182	80-90-90	1.77-1.90-1.90		HBW 156-159
ZNAX	T/2	TRANS	Round	31.200	25.000	293.500	489.900	34.500	68.100	10x10x55	-10	110-91-103	55-45-50	1.33-1.13-1.22		HBW 141-142

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> [%]
ZNAC	0.1540	0.1890	1.0190	0.0060	0.0090	0.1210	0.1290	0.0280	0.0130	0.1740	0.0040	0.0220	0.00014	0.0200	0.0111	0.0070	0.0016					0.3746		
ZNAX	0.1600	0.1810	1.0240	0.0060	0.0090	0.1230	0.0930	0.0300	0.0100	0.1340	0.0030	0.0230	0.00013	0.0010	0.0082	0.0050	0.0018					0.3769		

**REMARKS / Note**

1: MATERIAL ACCORDING TO NACE MR0175/ISO 15156-1-2-3 Ed.2015  
 2: MATERIAL ACCORDING TO ASME Sect. II Part. A 2015 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:**

<b>REPORT N.</b> Rapporto N.	<b>TC-019212-16-0005</b>	<b>Issued on</b> <b>Revised on</b>	<b>16/05/2017</b>	<b>Customer</b> Cliente	PROVEEDORA DE MATERIALES AN CER SA DE CV, AV ADOLFO LOPEZ MATEOS 150, COL LAGRANGE, SAN NICOLAS DE LOS GARZA, N.L. - 66490, MEXICO	<b>Job n. / Com. n.</b> <b>19212</b>	<b>Page n. / Pagina n.</b> <b>3 of 3</b>
<b>Revision</b> Revisione	<b>0</b>	<b>According to</b> In accordo a	<b>EN 10204:2004</b> <b>UNI EN 10204:2005</b>	<b>Type</b> Tipo	<b>3.1</b>	<b>Purchase order and project/Ordine e progetto</b> <b>7902</b>	

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 are manufactured in accordance with ASMEB.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 nipolet 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. P017 (ASTM E415 and E1086) – Procedure QC-07 Rev. 0

The product are manufactured in Italy.

<b>Quality inspector representative</b> Ispettore controllo qualità	Riccardo Scorsetti 
--	------------------------