



**CERTIFICADO DE CALIDAD  
INSPECTION CERTIFICATE**  
(DIN EN 10204:2004E - ISO 10474.3.1.B)

Tubos de Acero de México, S.A.  
Carr. Mérida-Laredo Km. 24.2  
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Vendido a:	PROVEEDORA DE MATERIALES ANGER, S.A. DE C.V.	Pedido del Cliente No:	5275 - 6318 - 5274 - 5308	Lista de Empaque:	11103	Fecha/Date:	9 de Diciembre de 2008
Sold to:		Customers Order No:		Packing List:		Factura/Invoice:	Bocas / Ends
Specifications according to ASTM A 234 "W" WPB-07, A234 "W" WPB-05a, NACE MR 01-75-2003		Dimensiones y tolerancias / Dimension and tolerances				Biselado / Bevelled ends	
Seamless Fittings according to ASTM A 234 "W" WPB-07, A234 "W" WPB-05a, NACE MR 01-75-2003							
Conform to ASME II EA. 2001 ASME SA-234 "W" Grade WPB, NACE MR01-03-2003		ASME B 16.9 - 2007 and ASME B 16.28 - 1994					

ART. ITEM	COLADA HEAT CODE	CANTIDAD QUANTITY	DESCRIPCION / DESCRIPTION	PRUEBAS MECANICAS / MECHANICAL TEST				PRUEBA DE IMPACTO 0°C / IMPACT TEST 0°C			
				ESF. CEDENCIA YIELD STRENGTH (Mpa)	ESF. RUPTURA TENSILE STRENGTH (Mpa)	ELONG. %2"	DUREZA HARDNESS HBW	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules
1	T42101	100	CODO 6 X 90° R.I. CED-STD.	263	504	33	107				
2	S30232	105	CODO 4 X 45° CED-STD	241	449	34	130				
3	T42086	59	CODO 8 X 90° R.I. CED-STD	270	434	36	129				
4	T41467	1	CODO 8 X 90° R.I. CED-STD	326	503	34	118				
5	S22135	398	CODO 1 1/2 X 90° R.I. CED-STD.	365	529	48	137				
6	S45402	2	CODO 1 1/2 X 90° R.I. CED-STD.	400	546	46	133				
7	S23751	2320	CODO 1 1/2 X 90° R.I. CED-STD.	353	497	42	145				
8	T39807	2	RED. CONC. 16 X 14 CED-STD	321	458	37	105				
9	T28071	6	RED. CONC. 6 X 4 CED-STD	353	487	37	119				
10	T31217	5	RED. CONC. 6 X 4 CED-STD	361	500	29	90				
11	T33052	5	RED. CONC. 6 X 4 CED-STD	371	516	35	91				

**ANALISIS QUIMICO / CHEMICAL ANALYSIS**

PROCESO PROCESS	COLADA HEAT CODE	COLADA/HEAT M.P./MOTHER PIPE	%C	%E	%Mn	%P	%S	%SI	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	T42101	42101	0.290	0.160	0.680	0.008	0.001	0.280	0.050	0.045	0.015	0.030	0.000	0.000
HF	S30232	30232	0.350	0.200	0.780	0.014	0.001	0.270	0.050	0.049	0.010	0.010	0.001	0.000
HF	T42086	42086	0.300	0.170	0.670	0.009	0.001	0.280	0.050	0.064	0.011	0.030	0.000	0.000
HF	T41467	41467	0.310	0.180	0.670	0.010	0.001	0.280	0.040	0.061	0.005	0.030	0.000	0.000
HF	S22135	22135	0.320	0.170	0.800	0.011	0.001	0.300	0.040	0.024	0.010	0.017	0.001	0.002
HF	S45402	45402	0.320	0.180	0.740	0.009	0.001	0.290	0.040	0.038	0.010	0.021	0.001	0.001
HF	S23751	23751	0.350	0.190	0.810	0.008	0.001	0.290	0.050	0.038	0.010	0.025	0.001	0.001
CF	T39807	39807	0.300	0.170	0.670	0.009	0.002	0.270	0.050	0.075	0.015	0.030	0.000	0.000
CF	T28071	28071	0.300	0.160	0.670	0.010	0.003	0.270	0.070	0.087	0.044	0.040	0.000	0.000
CF	T31217	31217	0.320	0.180	0.700	0.015	0.004	0.280	0.070	0.062	0.031	0.040	0.000	0.000
CF	T33052	33052	0.340	0.180	0.830	0.011	0.001	0.290	0.040	0.059	0.022	0.040	0.000	0.000

Notes: Hot formed fittings in a range from 620°C to 980°C, cooled in still air. Cold formed normalized at 940°C max. Holding time 10'. Material dimensional check: Satisfactory

Formado en caliente a 620°C-980°C, enfriado al ambiente. Formado en frío normalizado a 940°C max. Tiempo de permanencia 10'. Inspección Dimensional: Satisfactoria. **Quality Manager/ jefe de Calidad: ING. WALDO GALLEGOS GALVAN**

The Products described herein were produced in accordance with the above referenced specification and are identified with the "R" which is permanently marked on each fitting. The values of hardness for fittings NPS 2 1/2" and smaller sizes obtain from the conversion of hardness Rockwell B to hardness Brinell HBW by means of table WILSON DESK CHART 60. Los valores de dureza para conexiones de NPS de 2 1/2" y menores, se obtienen de la conversión de dureza Rockwell B a dureza Brinell HBW mediante la tabla WILSON DESK CHART 60.

Certificamos que los resultados de los Analisis Quimicos y Pruebas Mecanicas son verdaderos o una copia fiel de los certificados enviados por el Fabricante y/o el proveedor de Materia Prima (Tubería Sin Costura) conforme ASTM A106 Grado B con N°.

We certify that result of chemical analysis and mechanical test are true and correct copy of the test certificate issued by the manufacturer and/or supplier Raw material (Seamless Pipe) cuts conform to ASTM A106 Grade B N°.  
8057758 450995 8065069 8050031 385336 329135 8047094  
8044211 6013292 6039822 7015323

Este material cumple con los requerimientos especificados en la orden. The material of this certificate heat number mentioned above is in compliance with the requirements specified in the order.