



Tulso de Acero de Mexico, S.A.  
 Carr. Mty-Laredo Km 24.2  
 Apartado Postal 43  
 (65550) C. de Flores, N.L. Máx  
 (52) 81 8305 9600 tel  
 (52) 81 8305 9630 fax.

**CERTIFICADO DE CALIDAD  
 INSPECTION CERTIFICATE**  
 ( DIN EN 10204:2004E - ISO 10474 3.1.B )

Numero:  
 Number:  
 24147

Página/Page:  
 1 DE 1

Vendido a: Sold to:	PROVEEDORA DE MATERIALES ANGER, S.A. DE C.V.	Pedido del Cliente No: Customers Order No:	5855 - 5823	Lista de Empaque: Packing List:	1 2 3 9 4	Fecha/Date:	14 de Diciembre de 2010
Especificaciones y Grados / Standard or Specification and Steel Grade Seamless Fittings according to ASTM A 234 WPB-07, NACE MR 01.75-2003 Conform to ASME II Ed. 2001 ASME SA-234, Grade WPB, NACE MR0103-2003		Dimensiones y tolerancias / Dimension and tolerances ASME B 16.9 - 2007 and ASME B 16.28 - 1994			Factura/Invoice: Bocas / Ends Biselado / Bevelled ends		

DESCRIPCION DE MATERIAL / MATERIAL DESCRIPTION				PRUEBAS MECANICAS / MECHANICAL TEST				PRUEBA DE IMPACTO 0°C / IMPACT TEST 0°C				
ART. ITEM	COLADA HEAT CODE	CANTIDAD QUANTITY	DESCRIPCION / DESCRIPTION	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	PROMEDIO AVERAGE Joules
1	T51817	17	CODO 6 X 45° CED-XS	322	494	41	120					
2	T51817	444	CODO 3 X 90° R.L. CED-STD	358	507	35	120					
3	T52307	100	CODO 6 X 90° R.L. CED-STD	310	457	42	120					
4	T49259	10	TEE 8 CED-XS	339	476	38	140					
5	T51653	103	TEE 6 CED-XS	296	473	44	116					
6	T50825	6	CODO 10 X 90° R.L. CED-STD	298	479	42	124					
7	T51887	2	CODO 10 X 90° R.L. CED-STD	332	502	38	102					
8	T49520	87	RED. CONC. 6 X 4 CED-STD	339	514	39	116					
9	T49307	20	CODO 6 X 90° R.L. CED-XS	319	465	42	116					
10	T52235	2	TEE 6 CED-STD	321	486	43	122					
11	T51653	10	TEE RED. 6 X 4 CED-XS	296	473	44	116					

ANALISIS QUIMICO / CHEMICAL ANALYSIS														
PROCESO PROCESS	COLADA HEAT CODE	COLADA/HEAT M.P./MOTHER PIPE	%C.E.	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	T51817	51817	0.330	0.190	0.730	0.012	0.002	0.300	0.040	0.054	0.027	0.030	0.000	0.000
HF	T51817	51817	0.320	0.180	0.730	0.013	0.002	0.300	0.040	0.053	0.026	0.030	0.000	0.000
HF	T52307	52307	0.300	0.170	0.680	0.012	0.002	0.270	0.050	0.060	0.023	0.030	0.000	0.000
HF	T49259	49259	0.320	0.160	0.700	0.012	0.002	0.270	0.040	0.075	0.022	0.030	0.000	0.000
HF	T51653	51653	0.310	0.180	0.670	0.006	0.001	0.290	0.040	0.043	0.013	0.030	0.000	0.000
HF	T50825	50825	0.310	0.180	0.660	0.012	0.001	0.280	0.050	0.050	0.012	0.020	0.000	0.000
HF	T51887	51887	0.340	0.180	0.820	0.009	0.001	0.260	0.050	0.062	0.023	0.040	0.000	0.000
CF	T49520	49520	0.290	0.170	0.670	0.017	0.003	0.290	0.020	0.046	0.019	0.020	0.000	0.000
HF	T49307	49307	0.360	0.170	0.690	0.011	0.001	0.290	0.040	0.042	0.019	0.020	0.000	0.000
HF	T52235	52235	0.320	0.180	0.730	0.015	0.002	0.280	0.040	0.062	0.022	0.040	0.000	0.000
HF	T51653	51653	0.310	0.190	0.670	0.006	0.001	0.290	0.040	0.043	0.013	0.030	0.000	0.000

Certificamos que los resultados de los Análisis Químicos y Pruebas Mecánicas 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) certs conform to ASTM A106 Grade B N°:  
 10048028 10056328 10056324 10048779 10050020 10051515  
 10055457 10025165 10043642 10053599 10050020  
 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.

Notas:  
 Formado en caliente a 620°C-980°C, enfriado al aire; Formado en frío normalizado a 940°C max.  
 Tiempo de permanencia 10'.  
 Inspección Dimensional: Satisfactoria.  
 HF: FORMADO EN CALIENTE/HOT FORMED

Notas:  
 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'.  
 Visual dimensional check: Satisfactory.  
 CF: FORMADO EN FRIO/COLD FORMED

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 ones 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.