



Tubos de Acero de México, S.A.  
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<b>CERTIFICADO DE CALIDAD INSPECTION CERTIFICATE</b> (DIN EN 10204:2004E - ISO 10474 3.1.B)		Numero: Number:  25939	Pagina/Page:  1
Vendido a: Sold to: PROVEEDORA DE MATERIALES ANGER, S.A. DE C.V.	Pedido del Cliente No: Customers-Order No: 6206 - 6246 - 6117	Lista de Empaque: Packing List: 13454	Fecha/Date: 21 de Junio de 2012
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	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	T59006	2	CODO 6 X 90° R.L. CED-STD.	334	487	34	104					
2	T60765	373	CODO 6 X 90° R.L. CED-STD.	298	465	32	151					
3	T60997	27	CODO 6 X 90° R.L. CED-STD.	333	498	36	142					
4	T60764	98	CODO 6 X 90° R.L. CED-STD.	321	488	39	142					
5	T51306	12	CODO 14 X 90° R.L. CED-STD.	320	484	37	105					
6	T59968	85	CODO 6 X 90° R.L. CED-XS	291	474	35	145					
7	T46413	1828	CODO 1 X 90° R.L. CED-STD.	300	447	52	118					
8	T57394	59	RED. CONC. 6 X 4 CED-STD	294	478	38	149					
9	T55579	2	TEE RED. 6 X 3 CED-STD	328	479	37	92					
10	T57065	8	TEE RED. 6 X 3 CED-STD	292	460	35	91					
11	T55926	27	TEE RED. 6 X 4 CED-STD	311	487	43	98					

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	T59006	59006	0.320	0.190	0.680	0.014	0.002	0.300	0.040	0.075	0.015	0.040	0.000	0.000
HF	T60765	60765	0.310	0.170	0.690	0.018	0.001	0.280	0.060	0.053	0.029	0.030	0.000	0.000
HF	T60997	60997	0.310	0.180	0.680	0.013	0.001	0.290	0.050	0.066	0.016	0.030	0.000	0.000
HF	T60764	60764	0.300	0.170	0.680	0.015	0.001	0.280	0.050	0.052	0.022	0.030	0.000	0.000
HF	T51306	51306	0.310	0.180	0.660	0.011	0.001	0.260	0.040	0.050	0.022	0.030	0.000	0.000
HF	T59968	59968	0.000	0.170	0.690	0.013	0.001	0.290	0.040	0.065	0.015	0.030	0.000	0.000
HF	T46413	46413	0.310	0.160	0.570	0.012	0.000	0.190	0.040	0.049	0.013	0.020	0.000	0.000
CF	T57394	57394	0.300	0.170	0.670	0.009	0.001	0.260	0.050	0.076	0.028	0.030	0.000	0.000
HF	T55579	55579	0.300	0.170	0.660	0.008	0.001	0.290	0.040	0.080	0.024	0.050	0.000	0.000
HF	T57065	57065	0.310	0.170	0.680	0.013	0.002	0.280	0.070	0.067	0.016	0.040	0.000	0.000
HF	T55926	55926	0.310	0.170	0.680	0.012	0.001	0.290	0.060	0.067	0.021	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°: 12010447 12038071 12038071 12036578 10641124 12020221 11697 12012256 11037949 11041520 11033156

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°: 12010447 12038071 12038071 12036578 10641124 12020221 11697 12012256 11037949 11041520 11033156

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	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'. Visual dimensional check: Satisfactory. CF: FORMADO EN FRIO/COLD FORMED	 <b>Quality Manager / Jefe de Calidad:</b> <b>ING. WALDO GALLEGOS GALVAN</b>
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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.