



Tubos de Acero de México, S.A.
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**CERTIFICADO DE CALIDAD
INSPECTION CERTIFICATE**
(DIN EN 10204:2004E - ISO 10474 3.1.B)

Numero:
Number: 24651 *
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Vendido a: Sold to: PROVEEDORA DE MATERIALES ANGER, S.A. DE C.V.	Pedido del Cliente No: Customers Order No: 5996 - 5960	Lista de Empaque: Packing List: 12714	Fecha/Date: 10 de Junio de 2011
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	S42775	912	CODO 4 X 90° R.L. CED-STD	325	505	33	140					
2	T54537	338	CODO 6 X 90° R.L. CED-STD	316	480	39	120					
3	T54867	662	CODO 6 X 90° R.L. CED-STD	316	482	38	122					
4	T51345	10	CODO 3 X 45° CED-STD	354	490	36	88					
5	T50206	28	CODO 3 X 45° CED-STD	354	506	37	118					
6	T50878	12	CODO 3 X 45° CED-STD	357	503	35	122					
7	T52307	21	CODO 3 X 45° CED-STD	383	533	36	91					
8	S42141	528	CODO 3 X 45° CED-STD	348	526	31	124					
9	T51817	1	CODO 3 X 45° CED-STD	358	507	35	120					
10	S43735	1788	CODO 2 X 90° R.L. CED-STD	351	504	30	126					
11	T52716	50	CODO 10 X 45° CED-STD	320	492	40	122					

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	S42775	42775	0.320	0.180	0.750	0.012	0.002	0.300	0.040	0.024	0.010	0.015	0.002	0.002
HF	T54537	54537	0.320	0.180	0.690	0.009	0.001	0.320	0.050	0.061	0.020	0.030	0.000	0.000
HF	T54867	54867	0.310	0.180	0.670	0.006	0.001	0.290	0.040	0.056	0.013	0.030	0.000	0.000
HF	T51345	51345	0.310	0.170	0.700	0.012	0.001	0.290	0.060	0.061	0.015	0.030	0.000	0.000
HF	T50206	50206	0.320	0.180	0.690	0.014	0.002	0.280	0.060	0.073	0.025	0.040	0.000	0.000
HF	T50878	50878	0.300	0.180	0.650	0.014	0.001	0.290	0.040	0.050	0.014	0.030	0.000	0.000
HF	T52307	52307	0.310	0.180	0.670	0.013	0.003	0.280	0.040	0.060	0.022	0.030	0.000	0.000
HF	S42141	42141	0.340	0.190	0.800	0.010	0.001	0.330	0.030	0.040	0.010	0.028	0.002	0.002
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	S43735	43735	0.310	0.180	0.720	0.011	0.001	0.270	0.020	0.020	0.010	0.019	0.002	0.002
HF	T52716	52716	0.320	0.180	0.680	0.010	0.002	0.300	0.040	0.072	0.028	0.050	0.000	0.000

Certificamos que los resultados de los Analisis 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°
10058145 11023992 11023991 10055648 10039275 10055648
10055648 10057994 10056328 11004275 11010824
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.

<p>Notes:</p> <p>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</p>	<p>Notes:</p> <p>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</p>	<p><i>Waldo Gallegos</i></p> <p>Quality Manager/Jefe de Calidad: ING. WALDO GALLEGOS GALVAN</p>	<p>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.</p>
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