



Tubos de Acero de México, S.A.
 Carr. Inty-Laredo Km 24.2
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**CERTIFICADO DE CALIDAD
 INSPECTION CERTIFICATE
 (DIN EN 10204:2004E - ISO 10474 3.1.B)**

Número:
 Number: 24378
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Vendido a: Sold to: TUVANSA MONTERREY	Pedido del Cliente No: Customer's Order No: 10085	Lista de Empaque: Packing List: 12538	Fecha/Date: 28 de Febrero de 2011
Especificaciones y Grados / Standard or Specification and Steel Grade Seamless PIPE 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	T50206	13	CODO 3 X 90° R.L. CED-STD	353	493	36	122					
2	T52307	4	CODO 3 X 90° R.L. CED-STD	383	533	36	91					
3	T51345	6	CODO 3 X 90° R.L. CED-STD	354	490	36	88					
4	T50078	78	CODO 3 X 90° R.L. CED-STD	357	509	36	122					
5	S42141	1056	CODO 3 X 90° R.L. CED-STD	346	526	31	124					
6	T51817	427	CODO 3 X 90° R.L. CED-STD	358	507	35	120					
7	S42295	243	CODO 4 X 45° CED-STD	331	508	32	137					
8	T51525	3	CODO 16 X 90° R.L. CED-STD	327	485	43	124					
9	T49808	5	RED. CONC. 14 X 8 CED-3S	320	491	28	95					
10	T50526	20	RED. CONC. 10 X 6 CED-3S	318	482	43	120					
11	T51525	13	RED. CONC. 12 X 10 CED-STD	322	483	31	112					

ANÁLISIS QUÍMICO / CHEMICAL ANALYSIS														
PROCESO PROCESS	COLADA HEAT CODE	COLADA/HEAT M.P./ANOTHER PIPE	%C.E.	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
RF	T50206	50206	0.320	0.180	0.670	0.013	0.001	0.280	0.060	0.071	0.023	0.040	0.000	0.000
RF	T52307	52307	0.319	0.180	0.670	0.013	0.003	0.280	0.040	0.060	0.022	0.030	0.000	0.000
RF	T51345	51345	0.319	0.170	0.700	0.012	0.001	0.290	0.060	0.061	0.015	0.030	0.000	0.000
RF	T50078	50078	0.300	0.180	0.650	0.014	0.001	0.290	0.040	0.050	0.014	0.030	0.000	0.000
RF	S42141	42141	0.340	0.190	0.600	0.010	0.001	0.300	0.030	0.040	0.010	0.028	0.002	0.002
RF	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
RF	S42295	42295	0.330	0.190	0.770	0.012	0.001	0.300	0.030	0.028	0.020	0.034	0.002	0.001
RF	T51525	51525	0.320	0.190	0.680	0.014	0.002	0.280	0.040	0.053	0.016	0.030	0.000	0.000
CF	T49808	49808	0.310	0.180	0.690	0.009	0.002	0.290	0.050	0.062	0.018	0.030	0.000	0.000
CF	T50526	50526	0.310	0.190	0.670	0.013	0.002	0.280	0.050	0.059	0.019	0.030	0.000	0.000
CF	T51525	51525	0.310	0.190	0.670	0.014	0.003	0.270	0.040	0.058	0.015	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 (Tubos Sin Costuras) 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) cert conform to ASTM A106 Grade B N°:
 10055648 10055648 10055648 10055648 10057875 10056328
 10053806 10049915 10048734 10051540 10053790
 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.

Notes:
 Forged in furnace at 925°C-950°C, air-cooled to 800°C.
 Hot Treated (Staged) in a range from 625°C to 850°C, cooled in still air.
 Cold treated normalized at 540°C max.
 Holding time 10".
 Visual dimensional check: Subcritical.
 CP: FORMADO EN CALIENTE/NOT FORGED CP: 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 "B" 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 50.
 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 50.