



Tubos de Acero de México, S.A.
 Carr. MTY-Laredo Km. 24.2
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**CERTIFICADO DE CALIDAD
 INSPECTION CERTIFICATE**
 (DIN EN 10204:2004E - ISO 10474.3.1.B)

Número: 26677
 Pagina/Page: 1
 Fecha/Date: 11 de Diciembre de 2011

Vendido a: TUVANSA MTY
 Sold to: TUVANSA MTY
 Pedido del Cliente No: 12386
 Customers Order No: 12386
 Lista de Empaque: 13837
 Packing List: 13837
 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	T60997	20	TEE 4 CED-STD	292	458	36	147					
2	TS9966	23	TEE 4 CED-XS	257	456	38	153					
3	T62025	200	RED. CONC. 8 X 4 CED-STD	319	495	44	124					
4	S21359	1966	CODO 2 X 90° R.L. CED-STD	348	496	30	130					
5	S43735	34	CODO 2 X 90° R.L. CED-STD	351	504	30	135					
6	TS011	13	RED. CONC. 3 X 2 CED-STD	345	502	42	159					
7	T60552	482	CODO 4 X 90° R.L. CED-XS	342	461	40	157					
8	T60764	31	CODO 4 X 90° R.L. CED-XS	291	440	32	153					
9	TS9966	138	CODO 4 X 90° R.L. CED-XS	359	499	41	161					
10	TS9118	90	CODO 4 X 90° R.L. CED-XS	362	521	41	159					
11	TS9442	31	CODO 4 X 90° R.L. CED-XS	308	487	30	147					

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	T60997	60997	0.300	0.170	0.680	0.012	0.001	0.280	0.050	0.066	0.016	0.030	0.000	0.000
HF	TS9966	59966	0.310	0.180	0.680	0.013	0.001	0.290	0.040	0.075	0.023	0.030	0.000	0.000
CF	T62025	62025	0.320	0.190	0.720	0.012	0.001	0.300	0.070	0.067	0.027	0.030	0.000	0.000
HF	S21359	21359	0.300	0.170	0.710	0.007	0.001	0.270	0.030	0.080	0.010	0.027	0.001	0.002
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
CF	TS011	5011	0.330	0.180	0.820	0.004	0.002	0.310	0.020	0.037	0.005	0.020	0.000	0.000
HF	T60552	60552	0.300	0.170	0.650	0.018	0.003	0.280	0.050	0.065	0.019	0.030	0.000	0.000
HF	T60764	60764	0.310	0.170	0.690	0.017	0.002	0.280	0.050	0.055	0.022	0.030	0.000	0.000
HF	TS9966	59966	0.310	0.180	0.680	0.012	0.001	0.290	0.040	0.072	0.023	0.030	0.000	0.000
HF	TS9118	59118	0.320	0.170	0.820	0.015	0.001	0.330	0.050	0.047	0.009	0.030	0.000	0.000
HF	TS9442	59442	0.310	0.170	0.670	0.017	0.001	0.300	0.030	0.061	0.023	0.030	0.000	0.000

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 (Tuberia 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) certis conform to ASTM A106 Grade B N°.
 12041005 12038796 12073088 12048849 11054022 12065927 12030466 12048847 12032245 12032245 12032245
 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:
 Formado en caliente a 620°C-980°C, enfriado al aire. Formado en frío normalizado a 940°C max.
 Hot formed fittings in a range from 620°C to 980°C, cooled in still air.
 Cold formed/normalized at 940°C max.
 Tiempo de permanencia 10'.
 Holding time 10'.
 Inspección Dimensional: Satisfactoria.
 Visual dimensional check: Satisfactory.
 HF: FORMADO EN CALIENTE/HOT FORMED
 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.