



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)

Vendido a: **PLESA ANAHUAC Y CIA. S.A. DE C.V.** Fecha/Date: **12 de Agosto de 2008**  
 Sold to: **PLESA ANAHUAC Y CIA. S.A. DE C.V.** Customers Order No.: **4960 - 4884 - 4897** Packing List:  
 Especificaciones y Grados / Standard or Specification and Steel Grade  
 Seamless Fittings according to ASTM A 234 "M" WPB-97, A234 "M" WPB-05a, NACE MR 01.75-2003  
 Conform to ASME II Ed. 2001 ASME SA-234 "M", Grade WPB, NACE MR0103-2003  
 Factura/Invoice: **10724**  
 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	S22135	16	CODO 3 X 90° R.I. CED-XS	312	480	37	120					
2	S22620	36	CODO 3 X 90° R.I. CED-XS	278	472	34	123					
3	S29077	57	CODO 3 X 45° CED-STD	323	500	30	127					
4	S26551	13	CODO 3 X 45° CED-STD	334	485	29	111					
5	S21394	25	CODO 2 X 45° CED-STD	458	679	29	133					
6	T40103	50	CODO 8 X 90° R.I. CED-XS	325	484	34	109					
7	T40183	4	CODO 8 X 90° R.I. CED-STD	339	483	33	122					
8	T40182	76	CODO 8 X 90° R.I. CED-STD	311	481	31	95					
9	T39736	10	TEE 10 CED-STD	340	476	45	118					
10	S38904	10	CODO 5 X 90° R.I. CED-XS	332	487	39	116					
11	T32354	5	TEE RED. 10 X 4 CED-STD	346	481	37	84					

ANALISIS QUIMICO / CHEMICAL ANALYSIS														
PROCESO PROCESS	COLADA HEAT CODE	COLADA/M.P. MOTHER PIPE	%C.E.	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	S22135	22135	0.320	0.170	0.800	0.012	0.001	0.280	0.040	0.025	0.010	0.018	0.001	0.001
HF	S22620	22620	0.320	0.170	0.800	0.012	0.001	0.280	0.040	0.025	0.010	0.018	0.001	0.001
HF	S29077	29077	0.320	0.180	0.740	0.011	0.002	0.280	0.040	0.028	0.020	0.018	0.001	0.000
HF	S26551	26551	0.310	0.180	0.720	0.011	0.001	0.280	0.040	0.023	0.010	0.015	0.001	0.000
HF	S21394	21394	0.310	0.180	0.720	0.011	0.001	0.260	0.030	0.035	0.010	0.021	0.001	0.001
HF	T40103	40103	0.300	0.170	0.670	0.011	0.002	0.260	0.050	0.071	0.010	0.030	0.000	0.000
HF	T40183	40183	0.290	0.160	0.670	0.011	0.001	0.260	0.070	0.064	0.009	0.030	0.000	0.000
HF	T40182	40182	0.310	0.170	0.680	0.013	0.002	0.270	0.070	0.063	0.009	0.030	0.000	0.000
HF	T39736	39736	0.290	0.160	0.680	0.008	0.001	0.260	0.040	0.049	0.010	0.020	0.000	0.000
HF	S38904	38904	0.313	0.170	0.780	0.009	0.002	0.280	0.030	0.024	0.020	0.021	0.001	0.001
HF	T32354	32354	0.320	0.180	0.710	0.010	0.002	0.270	0.060	0.070	0.024	0.030	0.000	0.000

Notas:  
 Formado en caliente a 620°C-980°C, enfriado al aire; Formado in fire normalized at 940°C max.  
 Tiempo de permanencia 10'.  
 Inspeccion Dimensional: Satisfactoria.  
 HF: FORMADO EN CALIENTE/HOT FORMED  
 CF: FORMADO EN FRIO/COLD FORMED

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

Los productos descritos 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.

Confirmamos 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 (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°. 385335 385335 440948 424210 371740 8033231 8043135 8043135 8037858 261678 7029200

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.

Quality Manager/Jefe de Calidad:  
 ING. WALDO GALLEGOS GALVAN