



**CERTIFICADO DE CALIDAD  
INSPECTION CERTIFICATE**  
(DIN EN 10204:2004E - ISO 10474.3.1.B)

Tubos de Acero de México, S.A.  
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Vendido a: **TUVANSA MONTERREY** Pedido del Cliente No.: **2998** Fecha/Date: **6 de Agosto de 2007**  
 Sold to: **Dimensiones y tolerancias / Dimension and tolerances** Customers Order No.: **Lista de Empaque: 9 471** Factural/Invoice: **Bocas / Ends**  
 Especificaciones y Grados / Standard or Specification and Steel Grade **ASME B 16.9 - 2003 and ASME B 16.28 - 1994** Biscelado / Bevelled ends  
 Seamless fittings according to ASTM A 234 WPB-97, A234 WPB-98a, NACE MR 0175-2003  
 Conform to ASME II Ed. 2001 ASME SA-234 "W", Grade WPB.

ART. ITEM	COLADA HEAT CODE	CANTIDAD QUANTITY	DESCRIPCION / DESCRIPTION	PRUEBAS MECANICAS / MECHANICAL TEST		PRUEBA DE IMPACTO 0°C / IMPACT TEST 0°C				
				EST. CEDENCIA YIELD STRENGTH (Mpa)	EST. RUPATURA TENSILE STRENGTH (Mpa)	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules
12	T28420	1	COOD 12 X 90° R.I. CED-40	323	489	42	121			
13	T34322	29	COOD 12 X 90° R.I. CED-40	365	505	36	82			
14	T32569	16	COOD 10 X 90° R.I. CED-80	293	509	44	118			
15	T96341	28	RED. CONC. 5 X 3 CED-STD	325	485	41	111			
16	T33854	15	TEE RED. 10 X 4 CED-XS	250	458	35	93			
17	T29437	2	RED. CONC. 6 X 3 CED-XS	322	487	40	114			
18	T28615	1	RED. CONC. 6 X 3 CED-XS	305	476	44	113			
19	T31217	46	RED. CONC. 6 X 3 CED-XS	321	478	33	114			
20	T22409	1	RED. CONC. 6 X 3 CED-XS	300	474	42	109			
21	T15572	20	RED. CONC. 5 X 4 CED-STD	405	516	28	119			

**ANALISIS QUIMICO / CHEMICAL ANALYSIS**

PROCESO	COLADA HEAT CODE	COLADA/HEAT M.P. MOTHER PIPE	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	T28420	28420	0.320	0.180	0.009	0.001	0.290	0.060	0.090	0.037	0.040	0.000	0.000
HF	T34322	34322	0.300	0.170	0.008	0.002	0.290	0.040	0.069	0.028	0.040	0.000	0.000
HF	T32569	32569	0.330	0.190	0.011	0.001	0.280	0.050	0.076	0.031	0.030	0.000	0.000
CF	T96341	96341	0.313	0.170	0.007	0.002	0.280	0.050	0.079	0.048	0.040	0.000	0.000
HF	T33854	33854	0.310	0.180	0.008	0.001	0.300	0.040	0.052	0.030	0.030	0.000	0.000
CF	T29437	29437	0.300	0.170	0.009	0.000	0.280	0.030	0.072	0.028	0.030	0.000	0.000
CF	T28615	28615	0.290	0.160	0.007	0.002	0.270	0.040	0.096	0.026	0.030	0.000	0.000
CF	T31217	31217	0.310	0.170	0.013	0.003	0.290	0.070	0.058	0.030	0.040	0.000	0.000
CF	T22409	22409	0.300	0.170	0.007	0.001	0.270	0.040	0.055	0.028	0.040	0.000	0.000

**Notas:**  
 Formado en caliente a 207°C-307°C, enfriado al aire.  
 Hot formed in air in a range from 207°C to 307°C, cooled in air.  
 Tratamiento en frío normalizado a 340°C máx.  
 Cold formed normalized at 340°C máx.  
 Tiempo de permanencia 10".  
 Holding time 10".  
 Inspección Dimensional Substantiva

**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° de Material.**  
 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) tests conform to ASTM A106 Grade B N° 6038768 7028471 7006034 02307989 7020183 6025205 6025208 7011045 5012255 4009401

Certificamos que los resultados de los Análisis Químicos y Pruebas Mecánicas son verdaderos.

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.