



**CERTIFICADO DE CALIDAD
INSPECTION CERTIFICATE**

Tubos de Acero de México, S.A.
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Numero: 21378
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Vendido a: **PROVEEDORA DE MATERIALES ANGER, S.A.**
DE C.V.
Pedido del Cliente No: 5292 - 5298 - 5279 - 5274 - 5300 - 5295 -
Customers Order No: 5271 - 5275 - 5288

Fecha/Date: 29 de Octubre de 2008
Factura/Invoice: Bocas / Ends
Biselado / Bevelled ends

Seamless Fittings according to ASTM A 234 "W" WPB-97, A234 "W" WPB-95a, NACE MR 0175-2003
Conform to ASME II Ed. 2001 ASME SA-234 "W" Grade WPB, NACE MR0103-2003
ASME B 16.9 - 2003 and ASME B 16.28 - 1994

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. RUPATURA TENSILE STRENGTH (Mpa)	ELONG. % ^{2"}	DUREZA HARDNESS HBW	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules
1	T40846	4	TEE RED. 10 X 8 CED-STD	336	496	34	108					
2	T41272	4	CODO 14 X 90° R. I. CED-STD	327	509	42	122					
3	T40822	9	TEE 12 CED-STD	284	460	40	100					
4	T40571	100	RED. CONC. 8 X 6 CED-STD	306	485	35	113					
5	T41272	24	CODO 14 X 45° CED-STD	327	509	42	122					
6	T41315	5	CODO 12 X 45° CED-STD	339	507	32	119					
7	T40846	5	CODO 16 X 90° R. I. CED-STD	334	491	36	112					
8	T41139	13	CODO 16 X 90° R. I. CED-STD	334	491	36	112					
9	T40298	1	TEE 10 CED-STD	276	485	34	111					
10	T40546	11	TEE 10 CED-STD	305	477	36	119					
11	S38130	48	CODO 1.1/2 X 90° R. I. CED-XS	280	473	35	103					
				358	524	34	130					

ANALISIS QUIMICO / CHEMICAL ANALYSIS													
PROCESO PROCESS	COLADA HEAT CODE	COLADA/HEAT M.P. ANOTHER PIPE	%C	%Mn	%P	%S	%SI	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	T40846	40846	0.310	0.180	0.700	0.009	0.003	0.290	0.050	0.047	0.008	0.030	0.000
HF	T41272	41272	0.330	0.180	0.820	0.017	0.001	0.310	0.050	0.040	0.011	0.030	0.000
HF	T40822	40822	0.290	0.170	0.650	0.008	0.001	0.270	0.040	0.048	0.006	0.030	0.000
CF	T40571	40571	0.310	0.170	0.720	0.009	0.004	0.280	0.050	0.057	0.011	0.030	0.000
HF	T41272	41272	0.330	0.180	0.820	0.017	0.001	0.310	0.050	0.040	0.011	0.030	0.000
HF	T41315	41315	0.350	0.190	0.840	0.011	0.002	0.280	0.040	0.055	0.008	0.030	0.000
HF	T40846	40846	0.320	0.190	0.700	0.010	0.004	0.290	0.040	0.049	0.013	0.020	0.000
HF	T41139	41139	0.000	0.180	0.660	0.009	0.001	0.280	0.040	0.052	0.008	0.030	0.000
HF	T40298	40298	0.330	0.190	0.670	0.007	0.003	0.270	0.050	0.080	0.027	0.040	0.001
HF	T40546	40546	0.310	0.180	0.670	0.007	0.001	0.290	0.050	0.060	0.010	0.030	0.000
HF	S38130	38130	0.313	0.180	0.710	0.009	0.001	0.280	0.030	0.043	0.020	0.022	0.001

Notes:
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

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

CC-008