



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

Tubos de Acero de México, S.A.
Carr. My-Laredo Km 24.2
Apartado Postal 43
(65550) C. de Flores, N.L. Méx.
(52) 81 8305 9600 tel
(52) 81 8305 9620 fax

Vendido a:	PROVEEDORA DE MATERIALES ANGER, S.A. DE C.V.	Pedido del Cliente No:	5256 - 5265 - 5252 - 5249 - 5264 - 5266	Lista de Empaque:	1 07 41	Fecha/Date:	19 de Agosto de 2008
Specifications and Grades / Standard or Specification and Steel Grade	ASME B 16.9 - 2003 and ASME B 16.28 - 1994	Customers Order No:		Packing List:		Factorial/Invoice:	Bocas / Ends
Seamless Fittings according to ASTM A 234-W WPB-B7, A234-W WPB-05a, NACE MR 01.75-2003		Dimensiones y tolerancias / Dimension and tolerances				Biselado / Bevelled ends	
Conform to ASME II Ed. 2001 ASME SA-234-W Grade WPB, NACE MR0103-2003							

ART. ITEM	COLADA HEAT CODE	CANTIDAD QUANTITY	DESCRIPCION / DESCRIPTION	PRUEBAS MECANICAS / MECHANICAL TEST				PRUEBA DE IMPACTO 0°C / IMPACT TEST 0°C			
				ESF. CEDENCIA YIELD STRENGTH (Mpa)	ESF. RUPURA TENSILE STRENGTH (Mpa)	ELONG. %2"	DUREZA HBW	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules
1	T36485	155	TEE 4 CED-STD	263	445	40	126				
2	S21171	200	CODO 2 1/2 X 90° R.I. CED-STD	327	500	31	122				
3	S21173	200	CODO 4 X 90° R.I. CED-XS	308	464	33	104				
4	T39177	9	CODO 16 X 90° R.I. CED-STD	342	494	31	131				
5	S45280	480	CODO 1 1/4 X 90° R.I. CED-STD	357	511	28	122				
6	T31643	12	RED. CONC. 10 X 6 CED-XS	315	481	31	84				
7	T38477	3	RED. CONC. 16 X 8 CED-STD	310	476	39	99				
8	T40571	30	RED. CONC. 8 X 6 CED-XS	306	481	44	111				
9	T25670	6	RED. CONC. 10 X 4 CED-XS	354	502	33	106				
10	T39508	20	RED. CONC. 6 X 5 CED-XS	341	501	36	103				
11	T40516	2	CODO 12 X 90° R.I. CED-80	293	482	46	120				

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	T36485	36485	0.310	0.170	0.760	0.010	0.280	0.030	0.061	0.020	0.030	0.000	0.000
HF	S21171	21171	0.310	0.180	0.740	0.010	0.290	0.010	0.018	0.010	0.010	0.001	0.002
HF	S21173	21173	0.328	0.200	0.720	0.010	0.270	0.020	0.016	0.010	0.016	0.001	0.001
HF	T39177	39177	0.310	0.170	0.700	0.007	0.270	0.060	0.072	0.009	0.040	0.000	0.000
HF	S45280	45280	0.323	0.180	0.730	0.010	0.300	0.050	0.055	0.020	0.048	0.001	0.000
CF	T31643	31643	0.330	0.180	0.730	0.009	0.280	0.070	0.086	0.040	0.030	0.000	0.000
CF	T38477	38477	0.310	0.170	0.680	0.008	0.280	0.050	0.074	0.029	0.040	0.000	0.000
CF	T40571	40571	0.300	0.170	0.690	0.009	0.280	0.040	0.057	0.009	0.030	0.000	0.000
CF	T25670	25670	0.310	0.170	0.670	0.009	0.290	0.050	0.096	0.037	0.040	0.000	0.000
CF	T39508	39508	0.310	0.180	0.670	0.012	0.280	0.060	0.047	0.017	0.030	0.000	0.000
HF	T40516	40516	0.320	0.180	0.720	0.009	0.280	0.060	0.071	0.008	0.030	0.000	0.000

Notes:
 Formado en caliente a 620°C-980°C, enfriado al aire.
 Hot formed ferritic in a range from 620°C to 980°C, cooled in still air.
 After Formado en frío normalizado a 940°C max.
 Cold formed normalized at 940°C max.
 Tiempo de permeancia 10'.
 Holding time 10'.
 Inspección Dimensional Satisfactoria.
 Visual dimensional check Satisfactory

CF: FORMADO EN FRIO/COLD FORMED **HF: FORMADO EN CALIENTE/HOT FORMED**

ING. WALDO GALLEGOS GALVAN

Quality Management de Calidad:
 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.

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