



**CERTIFICADO DE CALIDAD  
INSPECTION CERTIFICATE**

(DIN EN 10204:2004E - ISO 10474.3.1.B)

Tubos de Acero de México, S.A.  
Carr. Mty-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: **5184 - 5185**  
Customers Order No: **Dimensiones y tolerancias / Dimension and tolerances**

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Fecha/Date: **15 de Abril de 2008**

Especificaciones y Grados / Standard or Specification and Steel Grade  
Seamless fittings according to ASTM A 234-W, WPB-97, A234-W, WPB-36, NACE MR 01-75-2003  
Conform to ASME II Ed. 2001 ASME SA-234-W, Grade WPB, NACE MRO 103-2003

ASME B 16.9 - 2003 and ASME B 16.28 - 1994

Lista de Empaque: **1 0 3 9 0**  
Packing List: **Bocas / Ends**  
**Biselado / Bevelled ends**

Factura/Invoice: **15 de Abril de 2008**

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. % <sup>2"</sup>	DUREZA HARDNESS HBW	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules
1	T35794	10	CODO 14 X 90° R.L. CED-STD	349	501	33	89					
2	T37205	2	CODO 14 X 90° R.L. CED-STD	349	503	30	90					
3	T38461	60	CODO 6 X 45° CED-STD	339	498	39	122					
4	S45279	77	CODO 3 X 90° R.L. CED-XS	264	462	36	105					
5	S22135	33	CODO 3 X 90° R.L. CED-XS	312	480	37	120					
6	S22620	147	CODO 3 X 90° R.L. CED-XS	316	493	32	123					
7	S21782	7	CODO 3 X 90° R.L. CED-XS	295	469	32	117					
8	S24067	100	CODO 3 X 45° CED-STD	315	479	31	114					
9	T38887	120	CODO 8 X 90° R.L. CED-STD	304	466	40	120					
10	T35671	3	TEE 16 CED-STD	307	471	38	91					
11	T37043	3	TEE 16 CED-STD	339	466	39	122					

**ANALISIS QUIMICO / CHEMICAL ANALYSIS**

PROCESO PROCESS	COLADA HEAT CODE	COLADAMATERIAL M.P./MOTHER PIPE	%C	%E	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	T35794	35794	0.320	0.180	0.700	0.013	0.001	0.270	0.040	0.082	0.024	0.040	0.000	0.000
HF	T37205	37205	0.310	0.170	0.660	0.010	0.002	0.280	0.050	0.054	0.050	0.030	0.000	0.000
HF	T38461	38461	0.310	0.170	0.710	0.014	0.002	0.270	0.070	0.043	0.033	0.030	0.000	0.000
HF	S45279	45279	0.320	0.180	0.730	0.010	0.001	0.300	0.050	0.055	0.020	0.048	0.001	0.002
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	S21782	21782	0.300	0.180	0.660	0.012	0.001	0.250	0.040	0.033	0.010	0.024	0.001	0.002
HF	S24067	24067	0.340	0.190	0.760	0.011	0.001	0.280	0.060	0.061	0.040	0.055	0.001	0.000
HF	T38887	38887	0.290	0.360	0.660	0.010	0.002	0.280	0.060	0.050	0.018	0.040	0.000	0.000
HF	T35671	35671	0.310	0.180	0.700	0.008	0.002	0.310	0.040	0.056	0.019	0.030	0.000	0.000
HF	T37043	37043	0.300	0.170	0.670	0.011	0.001	0.310	0.040	0.062	0.016	0.030	0.000	0.000

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.

Jefe de Calidad:  
Quality Manager:

*[Signature]*  
ING. WILDO GALLEGOS GALVAN

CC-008

Notes:  
Formado en caliente a 820°C-900°C, enfriado al aire.  
Hot formed fittings in a range from 820°C to 900°C, cooled in still air.  
Tiempo de permanencia 10'.  
Holding time 10'.  
Inspección Dimensional: Satisfactoria.  
Visual dimensional check: Satisfactory.  
HF: FORMADO EN CALIENTE/HOT FORMED  
CF: FORMADO EN FRIJO/COLD FORMED

Notes:  
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Tiempo de permanencia 10'.  
Holding time 10'.  
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Visual dimensional check: Satisfactory.  
HF: FORMADO EN CALIENTE/HOT FORMED  
CF: FORMADO EN FRIJO/COLD FORMED

Certificamos que los resultados de los Analisis Quimicos y Pruebas Mecanicas son veridicos o una copia fiel de los certificados enviados por el fabricante y/o el proveedor de Material Prima (Tubería Sin Costura) conforme ASTM A106 Grado B cor. 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°.  
8000808 7060679 8015921 347507 381899 385335 381899  
405032 8018554 8005886 8005182