

**CERTIFICADO DE CALIDAD**  
**INSPECTION CERTIFICATE**  
(DIN EN 10204 3.1.B - ISO 10474 3.1.B)

Tubos de Acero de México, S.A.  
 Km 433.7 Carr. México-Veracruz  
 Via Xalapa  
 (91697) Veracruz, Ver. México  
 (52) 229 989 1100 tel  
 (52) 229 989 1120 fax

Vendido A: <b>Arucora</b>	Pedido del cliente No: _____	Lista de empaque: <b>6295</b>	Fecha/Date: <b>21 de 2003</b>
Sold to: _____	Customers Order No: _____	Packing List: _____	Bocas / Ends
Especificaciones y Grados / Standard or Specification and Steel Grade	Dimensiones y tolerancias / Dimension and tolerances		<b>Biselado / Bevelled ends</b>
Seamless Fittings according to ASTM/ASME ASA 234 WPB - NACE MR 01.75 ed. 02 -	ASME B 16.9 and ASME B 16.28 edition 2001		
Conform to ASME II Ed. 2001			

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 HB	DIMENSIONES / SAMPLE DIM mm	1 Joules	2 Joules	3 Joules	PROMEDIO / AVERAGE Joules
1	TXW5	17	CODO 6 X 90 RL STD	343	505	38	136	N/A	N/A	N/A	N/A	N/A
2	TWH5	83	CODO 6 X 90 RL STD	339	498	40	131	N/A	N/A	N/A	N/A	N/A
3	TZP5	120	CODO 8 X 90 RL STD	311	479	40	138	N/A	N/A	N/A	N/A	N/A
4	TYG5	9	CODO 16 X 90 RL XS	341	506	43	146	N/A	N/A	N/A	N/A	N/A
5	TXZ5	24	CODO 12 X 90 RL STD	320	495	40	141	N/A	N/A	N/A	N/A	N/A
6	TZP5	100	TEE 6 STD	324	505	42	135	N/A	N/A	N/A	N/A	N/A
7	TYL5	64	TEE 8 STD	307	485	44	140	N/A	N/A	N/A	N/A	N/A
8	TYP5	13	CODO 10 X 45 STD	359	529	43	135	N/A	N/A	N/A	N/A	N/A
9	TZH5	12	CODO 10 X 45 STD	343	507	42	137	N/A	N/A	N/A	N/A	N/A
10	TUC5	6	CODO 16 X 45 STD	337	493	44	139	N/A	N/A	N/A	N/A	N/A

ANALISIS QUIMICO / CHEMICAL ANALYSIS														
PROCESO / PROCESS	COLADA / HEAT CODE	COLADA/HEAT M.P./MOTHER PIPE	%C.E.	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	TXW5	12431	0.362	0.190	0.840	0.007	0.003	0.270	0.060	0.079	0.058	0.040	0.000	0.000
HF	TWH5	11794	0.348	0.180	0.840	0.011	0.021	0.290	0.060	0.097	0.036	0.040	0.000	0.000
HF	TZP5	12535	0.314	0.180	0.670	0.010	0.002	0.270	0.040	0.090	0.026	0.050	0.000	0.000
HF	TYG5	11686	0.346	0.190	0.770	0.013	0.003	0.280	0.080	0.060	0.027	0.040	0.000	0.000
HF	TXZ5	12536	0.324	0.180	0.670	0.009	0.000	0.270	0.060	0.074	0.046	0.100	0.000	0.000
CF	TZP5	13125	0.328	0.180	0.700	0.016	0.001	0.310	0.080	0.078	0.034	0.050	0.000	0.000
CF	TYL5	12538	0.341	0.180	0.750	0.010	0.002	0.290	0.090	0.070	0.052	0.050	0.000	0.000
HF	TYP5	12676	0.360	0.190	0.840	0.010	0.001	0.300	0.060	0.082	0.050	0.040	0.000	0.000
HF	TZH5	13125	0.340	0.190	0.710	0.017	0.002	0.310	0.080	0.079	0.034	0.050	0.000	0.000
HF	TUC5	10916	0.335	0.190	0.750	0.010	0.001	0.290	0.050	0.010	0.029	0.050	0.000	0.000

**NOTES:**  
 Formado en caliente a 780°C-940°C, enfriado al aire.  
 Hot formed fittings in a range from 780°C to 940°C. Cooled in still air.  
 Formado en frío normalizado a 940°C max.  
 Cold formed normalized at 940°C max.  
 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

**Gerente de Aseguramiento de Calidad:**  
**Quality Assurance Manager:**

ING. JOSE MARTINEZ MACIAS

CC-008