



**CERTIFICADO DE CALIDAD
INSPECTION CERTIFICATE**
(DIN EN 10204:2004E - ISO 10474 3.1.B)

Numero:
Number: 21584
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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
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Vendido a: Sold to: PROVEEDORA DE MATERIALES ANGER, S.A. DE C.V.	Pedido del Cliente No: Customers Order No: 5308 -5275 - 5274 - 5301 -	Lista de Empaque: Packing List: 11037	Fecha/Date: 19 de Noviembre de 2008
Especificaciones y Grados / Standard or Specification and Steel Grade Seamless Fittings according to ASTM A 234"M" WPB-07, A234"M" WPB-08a, NACE MR 0175-2003 Conform to ASME II Ed. 2001 ASME SA-234"M", Grade WPB, NACE MR0103-2003	Dimensiones y tolerancias / Dimension and tolerances ASME B 16.9 - 2007 and ASME B 16.28 - 1994		Factura/Invoice: Bocas / Ends Biselado / Beveled ends

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 HBW	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules
1	T41315	36	CODO 12 X 45° CED-STD	339	507	32	119					
2	T40518	12	CODO 12 X 45° CED-STD	358	503	31	108					
3	T41351	40	CODO 10 X 90° R.L. CED-STD	280	479	35	120					
4	T41415	4	CODO 16 X 90° R.L. CED-STD	330	500	36	109					
5	T41140	5	CODO 16 X 90° R.L. CED-STD	346	511	30	112					
6	T40846	2	CODO 16 X 90° R.L. CED-STD	334	491	36	112					
7	T41139	7	CODO 16 X 90° R.L. CED-STD	276	485	34	111					
8	S24951	20	RED. CONC. 3 X 2 1/2 CED-XS	318	486	32	94					

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	T41315	41315	0.350	0.190	0.840	0.011	0.002	0.280	0.040	0.055	0.008	0.030	0.000	0.000
HF	T40518	40518	0.300	0.170	0.680	0.008	0.002	0.280	0.060	0.057	0.013	0.030	0.000	0.000
HF	T41351	41351	0.300	0.180	0.670	0.010	0.003	0.320	0.030	0.054	0.008	0.030	0.000	0.000
HF	T41415	41415	0.000	0.180	0.790	0.009	0.001	0.300	0.030	0.046	0.005	0.020	0.000	0.000
HF	T41140	41140	0.330	0.190	0.790	0.010	0.002	0.290	0.030	0.045	0.005	0.020	0.000	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	0.006	0.000
HF	T41139	41139	0.300	0.180	0.660	0.009	0.001	0.290	0.040	0.052	0.008	0.030	0.000	0.000
CF	S24951	24951	0.320	0.180	0.730	0.011	0.001	0.290	0.050	0.051	0.010	0.020	0.001	0.002

Certificamos que los resultados de los Analisis Quimicos y Pruebas Mecanicas son verdaderos o una copia fiel de los certificados enviados por el Fabricante y/o el proveedor de Materia Prima (Tuberia Sin Costura) conforme ASTM A108 Grado B con N°: 8052162 8040425 8049280 8056842 8056887 8045928 8052574 410578

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 A108 Grade B N°: 8052162 8040425 8049280 8056842 8056887 8045928 8052574 410578

"Este material cumple con los requerimientos especificados en la orden"
"The material of this certificate heat number mentioned above is in compliance with the requirements specified in the order"

Notes:
Formado en caliente a 620°C-680°C, enfriado al aire; Formado en frío normalizado a 940°C max.
Tiempo de permanencia 10'.
Inspección Dimensional: Satisfactoria.
HF: FORMADO EN CALIENTE/HOT FORMED
CF: FORMADO EN FRIO/COLD FORMED

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:
ING. WALDO GALLEGOS GALVAN

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.