



Tubos de Acero de México, S.A.  
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<b>CERTIFICADO DE CALIDAD INSPECTION CERTIFICATE</b> (DIN EN 10204:2004E - ISO 10474 3.1.B)		Numero: Number: 27929	Página/Page: 1
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Vendido a: Sold to: PROVEEDORA DE MATERIALES ANGER, S.A. DE C.V.	Pedido del Cliente No: Customers Order No: 6492-6743	Lista de Empaque: Packing List: 14508	Fecha/Date: 2 de Septiembre de 2013
Especificaciones y Grados / Standard or Specification and Steel Grade Seamless Fittings according to ASTM A 234 WPB-10, NACE MR 01.75-2003 Conform to ASME II Ed. 2001 ASME SA-234, Grade WPB, NACE MR0103-2003	Dimensiones y tolerancias / Dimension and tolerances ASME B 16.9 - 2007		Factura/Invoice: Bocas / Ends Biselado / Bevelled 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	T5591	8	CODO 8 X 45° CED-XS	279	468	37	151					
2	T65886	11	TEE 8 CED-STD	279	473	45	114					
3	T6402	110	TEE 4 CED-XS	306	478	41	145					
4	T65887	1	CODO 12 X 90° R.L. CED-40	317	472	69	133					
5	T65039	1	TEE RED. 6 X 4 CED-XS	288	472	45	161					
6	T64848	3	CODO 10 X 90° R.L. CED-80	319	475	38	146					
7	T6078	4	RED. CONC. 6 X 3 CED-STD	322	490	37	156					
8	T5006	40	RED. CONC. 8 X 3 CED-STD	315	498	38	158					
9	T65886	16	TEE RED. 8 X 4 CED-STD	290	479	44	148					
10	T65719	6	RED. CONC. 12 X 10 CED-40	328	492	42	75					
11	S25634	11	CODO 2 X 180° R.C. CED-XS	327	497	30	116					

ANALISIS QUIMICO / CHEMICAL ANALYSIS															Certificamos que los resultados de los Análisis Químicos y Pruebas Mecánicas son verdaderos o una copia fiel de los certificados enviados por el Fabricante y/o el proveedor.  de Materia Prima (Tubería Sin Costura) conforme ASTM A106 Grado B con 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) certis conform to ASTM A106 Grade B N°. 13015271 13053794 13052025 13040116 13029159 13025998 13039681 12073166 13046801 13047572 13088062  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!
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	T5591	5591	0.310	0.170	0.900	0.005	0.001	0.300	0.020	0.031	0.007	0.020	0.060	0.000	
HF	T65886	65886	0.310	0.180	0.660	0.006	0.001	0.270	0.040	0.066	0.014	0.030	0.000	0.000	
HF	T6402	6402	0.300	0.170	0.710	0.005	0.001	0.310	0.020	0.058	0.009	0.020	0.000	0.000	
HF	T65887	65887	0.320	0.190	0.670	0.007	0.000	0.280	0.030	0.055	0.010	0.030	0.000	0.000	
HF	T65039	65039	0.300	0.170	0.660	0.012	0.002	0.250	0.050	0.046	0.027	0.030	0.000	0.000	
HF	T64848	64848	0.320	0.180	0.670	0.019	0.002	0.280	0.070	0.062	0.024	0.030	0.000	0.000	
CF	T6078	6078	0.320	0.190	0.710	0.005	0.001	0.280	0.020	0.044	0.007	0.020	0.000	0.000	
CF	T5006	5006	0.310	0.170	0.770	0.005	0.002	0.310	0.020	0.040	0.004	0.020	0.000	0.000	
HF	T65886	65886	0.310	0.180	0.670	0.006	0.001	0.280	0.040	0.064	0.014	0.040	0.000	0.000	
CF	T65719	65719	0.310	0.180	0.660	0.005	0.002	0.270	0.040	0.062	0.014	0.040	0.000	0.000	
HF	S25634	25634	0.310	0.180	0.720	0.013	0.001	0.280	0.040	0.030	0.010	0.015	0.002	0.002	

Notes:  
Formado en caliente a 620°C-980°C, enfriado a:  
Hot formed in a range from 620°C to 980°C, cooled in air etc.  
No: 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. CP: FORMADO EN FRIO/COLD FORMED.

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.