



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

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

Numero:  
Number: 27998  
Pagina/Page: 1

Vendido a: Sold to: PLESA ANAHUAC Y CIA. S.A. DE C.V.	Pedido del Cliente No: Customers Order No: 16529	Lista de Empaque: Packing List: 14550	Fecha/Date: 30 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	T5875	20	CODO 6 X 90° R.C. CED-STD	302	492	34	148					
2	T65578	1	TEE 12 CED-STD	305	485	46	150					
3	T65019	4	TEE 12 CED-STD	258	464	37	150					
4	T6457	60	CODO 6 X 45° CED-STD	322	479	35	146					
5	T65956	20	TEE 6 CED-XS	298	482	44	146					
6	T64660	32	CODO 4 X 45° CED-STD	346	488	30	152					
7	T6084	48	CODO 4 X 45° CED-STD	340	485	30	148					
8	T65030	6	CODO 14 X 45° CED-STD	277	471	68	146					
9	T64060	32	CODO 10 X 90° R.L. CED-STD	339	485	37	155					
10	T65451	8	CODO 10 X 90° R.L. CED-STD	332	483	37	146					
11	T65956	5	RED. CONC. 8 X 4 CED-XS	298	482	44	146					

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	T5875	5875	0.320	0.180	0.780	0.005	0.001	0.320	0.020	0.023	0.007	0.020	0.000	0.000
HF	T65578	65578	0.310	0.180	0.660	0.015	0.003	0.280	0.060	0.061	0.015	0.030	0.000	0.000
HF	T65019	65019	0.320	0.170	0.780	0.014	0.001	0.270	0.050	0.065	0.028	0.030	0.000	0.000
HF	T6457	6457	0.300	0.170	0.710	0.004	0.001	0.260	0.020	0.037	0.015	0.020	0.000	0.000
HF	T65956	65956	0.310	0.180	0.670	0.008	0.001	0.310	0.050	0.065	0.017	0.040	0.000	0.000
HF	T64660	64660	0.300	0.170	0.670	0.015	0.001	0.270	0.040	0.046	0.023	0.030	0.000	0.000
HF	T6084	6084	0.320	0.190	0.720	0.013	0.001	0.290	0.030	0.034	0.005	0.020	0.000	0.000
HF	T65030	65030	0.300	0.170	0.650	0.010	0.002	0.270	0.060	0.056	0.032	0.030	0.000	0.000
HF	T64060	64060	0.300	0.170	0.670	0.012	0.002	0.290	0.040	0.062	0.035	0.030	0.000	0.000
HF	T65451	65451	0.320	0.180	0.690	0.011	0.000	0.280	0.080	0.049	0.027	0.030	0.000	0.000
CF	T65956	65956	0.310	0.180	0.670	0.008	0.001	0.310	0.050	0.065	0.017	0.040	0.000	0.000

Certificamos que los resultados de los Analisis 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) carts conform to ASTM A106 Grade B N°:  
13024731 13064753 13029801 13048502 13041523 13023841  
13029442 13031804 13032043 13047576 13041523  
"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".

Notas: Formado en caliente a 620°C-980°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	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 CF: FORMADO EN FRIO/COLD FORMED	 <b>Quality Manager / Jefe de Calidad:</b> <b>ING. WALDO GALLEGOS GALVAN</b>	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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<b>CERTIFICADO DE CALIDAD INSPECTION CERTIFICATE</b> ( DIN EN 10204:2004E - ISO 10474 3.1.B )		Numero: Number: 27999	Pagina/Page: 2
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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
12	T64155	3	TEE 16 CED-STD	301	475	37	137					
13	S44801	42	CODO 1 1/4 X 45° CED-STD	381	516	48	116					
14	S22546	18	CODO 1 1/4 X 45° CED-STD	388	519	48	147					
15	T65886	20	TEE RED. 8 X 4 CED-STD	290	479	44	148					
16	T64661	70	CODO 3 X 90° R.L. CED-STD	355	504	40	161					
17	T4887	20	CODO 5 X 90° R.L. CED-STD	349	505	40	126					
18	T61223	30	CODO 5 X 90° R.L. CED-STD	293	489	32	143					
19	T5590	10	CODO 5 X 45° CED-RS	283	487	34	145					
20	T63735	10	TEE 5 CED-STD	315	486	36	147					
21	T65578	3	TEE RED. 12 X 10 CED-STD	305	485	46	150					
22	T65019	1	TEE RED. 12 X 10 CED-STD	258	464	37	150					

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	T64155	64155	0.310	0.180	0.680	0.010	0.001	0.300	0.050	0.044	0.028	0.020	0.000	0.000
HF	S44801	44801	0.310	0.160	0.830	0.012	0.001	0.280	0.040	0.050	0.010	0.035	0.001	0.002
HF	S22546	22546	0.330	0.190	0.750	0.011	0.001	0.300	0.060	0.004	0.020	0.021	0.003	0.002
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
HF	T64661	64661	0.310	0.180	0.690	0.015	0.001	0.280	0.030	0.037	0.017	0.030	0.000	0.000
HF	T4887	4887	0.310	0.170	0.770	0.005	0.001	0.350	0.030	0.030	0.005	0.020	0.000	0.000
HF	T61223	61223	0.310	0.170	0.700	0.016	0.001	0.280	0.040	0.078	0.027	0.030	0.000	0.000
HF	T5590	5590	0.300	0.160	0.790	0.004	0.001	0.310	0.020	0.029	0.008	0.020	0.000	0.000
HF	T63735	63735	0.300	0.170	0.670	0.016	0.001	0.270	0.050	0.080	0.022	0.030	0.000	0.000
HF	T65578	65578	0.310	0.180	0.660	0.015	0.003	0.280	0.060	0.061	0.015	0.030	0.000	0.000
HF	T65019	65019	0.320	0.170	0.780	0.014	0.001	0.270	0.050	0.065	0.028	0.030	0.000	0.000

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13018717 13035141 13008551 13051095 13024729 12081752 12042288 13018894 13011645 13064753 13029801  
"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".

<p>Notas:</p> <p>Formado en caliente a 620°C-880°C, enfriado al aire; Formado en frío normalizado a 940°C max.</p> <p>Tempo de permanencia 10'.</p> <p>Inspección Dimensional. Satisfactoria.</p> <p>HF: FORMADO EN CALIENTE/HOT FORMED</p>	<p>Notas:</p> <p>Hot formed fittings in a range from 620°C to 880°C, cooled in still air.</p> <p>Cold formed normalized at 940°C max.</p> <p>Holding time 10'.</p> <p>Visual dimensional check: Satisfactory</p> <p>CF: FORMADO EN FRIO/COLD FORMED</p>	<p style="text-align: center;">   <b>Quality Manager / Jefe de Calidad:</b>  <b>ING. WALDO GALLEGOS GALVAN</b> </p>	<p>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.</p> <p>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.</p>
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