



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

Numero:
Number: 28115
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Tubos de Acero de México, S.A.
Carr. Mty-Laredo Km 24.2
Apartado Postal 43
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(52) 81 8305 9600 tel
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Vendido a: Sold to: PLESA ANAHUAC Y CIA, S.A. DE C.V.	Pedido del Cliente No: Customers Order No: 16809	Lista de Empaque: Packing List: 14619	Fecha/Date: 21 de noviembre 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	T64572	228	CODO 4 X 90° R.L. CED-STD	350	492	36	155					
2	T65956	10	TEE RED. 6 X 3 CED-XS	256	457	38	130					
3	T5925	55	TEE 4 CED-STD	268	461	35	148					
4	T64661	160	CODO 3 X 90° R.L. CED-XS	343	495	40	153					
5	T5292	5	CODO 4 X 45° CED-STD	321	516	32	146					
6	S42775	2	CODO 4 X 45° CED-STD	324	504	33	109					
7	T59118	21	CODO 4 X 45° CED-STD	336	508	34	154					
8	T5872	92	CODO 4 X 45° CED-STD	352	513	33	152					
9	T5967	40	CODO 8 X 45° CED-STD	301	484	32	146					
10	T65038	40	CODO 10 X 90° R.L. CED-STD	339	498	34	148					
11	T6079	100	CODO 4 X 90° R.L. CED-XS	293	436	33	149					

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	T64572	64572	0.300	0.170	0.660	0.014	0.001	0.290	0.040	0.063	0.015	0.030	0.000	0.000
HF	T65956	65956	0.310	0.180	0.680	0.008	0.001	0.300	0.050	0.064	0.017	0.040	0.000	0.000
HF	T5925	5925	0.300	0.160	0.760	0.005	0.001	0.300	0.040	0.034	0.005	0.020	0.000	0.000
HF	T64661	64661	0.310	0.180	0.680	0.015	0.001	0.290	0.030	0.040	0.016	0.030	0.000	0.000
HF	T5292	5292	0.310	0.170	0.830	0.005	0.001	0.320	0.010	0.032	0.006	0.020	0.000	0.000
HF	S42775	42775	0.300	0.170	0.730	0.010	0.001	0.300	0.030	0.029	0.010	0.020	0.002	0.002
HF	T59118	59118	0.340	0.180	0.830	0.016	0.001	0.310	0.060	0.052	0.011	0.030	0.000	0.000
HF	T5872	5872	0.290	0.160	0.760	0.005	0.000	0.300	0.010	0.045	0.007	0.020	0.000	0.000
HF	T5967	5967	0.320	0.180	0.760	0.005	0.001	0.310	0.020	0.047	0.006	0.020	0.000	0.000
HF	T65038	65038	0.320	0.180	0.660	0.013	0.001	0.270	0.060	0.059	0.039	0.030	0.000	0.000
HF	T6079	6079	0.320	0.190	0.720	0.005	0.002	0.280	0.020	0.039	0.007	0.020	0.000	0.000

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) certs conform to ASTM A106 Grade B N°:
13023841 13046819 13056834 13025664 12080703
10057843 12032019 13018720 13025208 13027097
13031256
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

Notas:
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

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.



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

Numero:
Number: 28116
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Vendido a: Sold to: PLESA ANAHUAC Y CIA. S.A. DE C.V.	Pedido del Cliente No: Customers Order No: 16809	Lista de Empaque: Packing List: 14619	Fecha/Date: 21 de noviembre 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 H 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
12	T50215	1	RED. CONC. 16 X 14 CED-STD	372	492	44	124					
13	T59567	2	RED. CONC. 16 X 14 CED-STD	331	481	37	154					
14	T64785	2	RED. CONC. 16 X 14 CED-STD	311	491	35	154					
15	T65548	10	TEE RED. 10 X 4 CED-STD	318	482	30	143					
16	T65956	20	TEE RED. 6 X 4 CED-XS	298	482	44	146					
17	T65886	20	TEE RED. 8 X 4 CED-STD	290	479	44	148					
18	T50962	10	TEE RED. 8 X 6 CED-XS	299	484	46	103					
19	T6404	50	CODO 3 X 45° CED-XS	318	474	40	158					
20	T64660	40	CODO 4 X 45° CED-XS	279	482	33	150					
21	T64060	17	TEE RED. 6 X 3 CED-STD	339	485	37	155					
22	T66648	3	TEE RED. 6 X 3 CED-STD	300	456	38	146					

ANALISIS QUIMICO / CHEMICAL ANALYSIS														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						
PROCESO PROCESS	COLADA HEAT CODE	COLADA/HEAT M.P./MOTHER PIPE	%C.E.	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb						
CF	T50215	50215	0.310	0.180	0.660	0.013	0.004	0.280	0.050	0.069	0.020	0.030	0.000	0.000	de Materia Prima (Tubería Sin Costura) conforme ASTM A106 Grado B con N°:					
CF	T59567	59567	0.310	0.180	0.660	0.013	0.003	0.260	0.040	0.070	0.015	0.040	0.000	0.000	We certify that result of chemical analysis and mechanical test are true and correct					
CF	T64785	64785	0.330	0.190	0.660	0.012	0.002	0.270	0.050	0.065	0.041	0.040	0.000	0.000	copy of the test certificate issued by the manufacturer and/or supplier Raw					
HF	T65548	65548	0.310	0.180	0.670	0.012	0.001	0.280	0.040	0.058	0.011	0.030	0.000	0.000	material (Seamless Pipe) certs conform to ASTM A106 Grade B N°:					
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	10036178	12075071	13062511	13047572	13049570	
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	13046801	10040942	13053790	13029808	13025330	
HF	T50962	50962	0.310	0.180	0.670	0.012	0.002	0.280	0.020	0.047	0.028	0.040	0.000	0.000	13062517					
HF	T6404	6404	0.300	0.170	0.730	0.005	0.001	0.270	0.020	0.046	0.009	0.030	0.000	0.000	"Este material cumple con los requerimientos especificados en la orden".					
HF	T64660	64660	0.310	0.180	0.670	0.013	0.001	0.260	0.040	0.040	0.019	0.030	0.000	0.000	"The material of this certificate heat number mentioned above is in compliance					
HF	T64060	64060	0.300	0.170	0.680	0.012	0.003	0.290	0.040	0.059	0.035	0.030	0.000	0.000	with the requirements specified in the order".					
HF	T66648	66648	0.300	0.170	0.670	0.009	0.001	0.290	0.040	0.071	0.016	0.040	0.000	0.000						

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

Notas:
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

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.



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Numero:
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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
23	T65578	2	TEE RED. 12 X 10 CED-STD	305	485	46	150					
24	T65019	2	TEE RED. 12 X 10 CED-STD	258	464	37	150					
25	T64060	10	TEE RED. 5 X 3 CED-STD	339	485	37	155					

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	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	T64060	64060	0.300	0.170	0.680	0.012	0.003	0.290	0.040	0.059	0.035	0.030	0.000	0.000

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°: 13064753 13029801 13025330

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°: 13064753 13029801 13025330

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	 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.
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