



Tubos de Acero de México, S.A.
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**CERTIFICADO DE CALIDAD
INSPECTION CERTIFICATE**
(DIN EN 10204:2004E - ISO 10474 3.1.B)

Número:
Number: 24372
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Vendido a: Sold to: TUVANSA MONTERREY	Pedido del Cliente No: Customers Order No: 10085	Lista de Empaque: Packing List: 12535	Fecha/Date: 25 de Febrero de 2011
Especificaciones y Grados / Standard or Specification and Steel Grade Seamless Fittings according to ASTM A 234 WPB-07, 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 and ASME B 16.28 - 1994		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	T53005	432	CODO 6 X 45° CED-STD	324	489	40	126					
2	T50825	250	RED CONC. 8 X 6 CED-STD	317	482	43	111					
3	T52716	48	CODO 10 X 45° CED-STD	320	492	40	122					
4	T50825	4	CODO 10 X 45° CED-XS	307	483	37	100					
5	T51982	32	CODO 10 X 45° CED-XS	335	504	41	124					
6	T51887	12	CODO 10 X 45° CED-XS	287	491	39	105					
7	T52003	36	CODO 12 X 90° R.L. CED-XS	302	484	45	118					
8	T34476	1	TEE RED. 12 X 10 CED-XS	325	482	37	97					
9	T43000	1	TEE RED. 12 X 10 CED-XS	324	461	43	106					
10	T50215	15	TEE RED. 12 X 10 CED-XS	342	482	48	118					
11	T19740	1	TEE RED. 12 X 10 CED-XS	300	471	33	100					

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	T53005	53005	0.310	0.180	0.680	0.009	0.001	0.270	0.050	0.060	0.016	0.030	0.000	0.000	
CF	T50825	50825	0.300	0.170	0.650	0.011	0.001	0.270	0.050	0.048	0.012	0.020	0.000	0.000	
HF	T52716	52716	0.320	0.180	0.680	0.010	0.002	0.300	0.040	0.072	0.028	0.050	0.000	0.000	
HF	T50825	50825	0.320	0.190	0.660	0.012	0.001	0.280	0.050	0.050	0.012	0.020	0.000	0.000	
HF	T51982	51982	0.350	0.180	0.840	0.012	0.002	0.260	0.050	0.080	0.042	0.040	0.000	0.000	
HF	T51887	51887	0.340	0.180	0.810	0.009	0.001	0.260	0.050	0.062	0.023	0.040	0.000	0.000	
HF	T52003	52003	0.330	0.190	0.690	0.018	0.002	0.280	0.050	0.061	0.027	0.040	0.000	0.000	
HF	T34476	34476	0.300	0.170	0.690	0.006	0.003	0.270	0.040	0.072	0.021	0.030	0.000	0.000	
HF	T43000	43000	0.310	0.180	0.670	0.011	0.002	0.280	0.060	0.062	0.016	0.040	0.000	0.000	
HF	T50215	50215	0.320	0.190	0.660	0.013	0.003	0.280	0.060	0.070	0.020	0.030	0.000	0.000	
HF	T19740	19740	0.310	0.170	0.650	0.011	0.004	0.260	0.070	0.086	0.038	0.040	0.000	0.000	

Certificamos que los resultados de los Analisis Quimicos 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 A108 Grado B con N°: 11004287 10049559 10060272 10050019 10060051 10050024 10053612 7044849 9015606 10049530 5007963

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°: 11004287 10049559 10060272 10050019 10060051 10050024 10053612 7044849 9015606 10049530 5007963

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 820°C-980°C, enfriado al aire.
Hot formed fittings in a range from 820°C to 980°C, cooled in still air.

Notas:
Formado en frío normalizado a 940°C max.
Cold formed normalized at 940°C max.

Tempo de permanencia 10'.
Holding time 10'.

Inspección Dimensional: Satisfactoria.
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 80. 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 80.