

# Tenaris

Tubbs 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: 23369  
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Vendido a: Sold to: PROVEEDORA DE MATERIALES ANGER, S.A. DE C.V.	Pedido del Cliente No: Customers Order No: 5671-5617-	Lista de Empaque: Packing List: 11933	Fecha/Date: 22 de Abril de 2010
Especificaciones y Grados / Standard or Specification and Steel Grade Seamless Fittings according to ASTM A 234M WPB-07, NACE MR 01.75-2003 Conform to ASME II Ed. 2001 ASME SA-234M 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	T47231	1	CODO 8 X 45° CED-STD	304	478	38	120					
2	T48082	5	CODO 8 X 45° CED-STD	310	478	38	120					
3	T48705	1	CODO 12 X 45° CED-STD	326	492	43	122					
4	T48110	11	CODO 12 X 45° CED-STD	336	490	33	139					
5	T47856	1	CODO 12 X 45° CED-STD	334	493	33	137					
6	S23663	70	RED. CONC. 2 1/2 X 2 CED-STD	359	555	50	117					
7	T47708	20	TEE RED. 6 X 4 CED-STD	322	488	44	120					

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	T47231	47231	0.310	0.180	0.650	0.012	0.001	0.280	0.040	0.054	0.023	0.030	0.000	0.000
HF	T48082	48082	0.310	0.180	0.650	0.008	0.002	0.280	0.040	0.069	0.020	0.030	0.000	0.000
HF	T48705	48705	0.310	0.180	0.670	0.010	0.002	0.290	0.040	0.058	0.019	0.030	0.000	0.000
HF	T48110	48110	0.300	0.170	0.680	0.009	0.003	0.280	0.040	0.072	0.023	0.030	0.000	0.000
HF	T47856	47856	0.320	0.170	0.790	0.007	0.002	0.280	0.040	0.079	0.026	0.030	0.000	0.000
CF	S23663	23663	0.340	0.200	0.720	0.011	0.002	0.290	0.040	0.076	0.020	0.033	0.001	0.002
HF	T47708	47708	0.300	0.170	0.680	0.012	0.002	0.300	0.040	0.072	0.015	0.030	0.000	0.000

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 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) certa conform to ASTM A106 Grade B N°: 9063911 10007842 10016508 10007443 10006119 395159 10018311

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-980°C, enfriado a: Hot formed fittings in a range from 620°C to 980°C, cooled in still air.  
N/A: 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

  
**Quality Manager / Jefe de Calidad:**  
**ING. WALDO GALLEGOS GALVAN**

HF: FORMADO EN CALIENTE/HOT FORMED      CF: FORMADO EN FRIO/COLD FORMED

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.