



Tenaris

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

Tubos de Acero de México, S.A.
Carr. Méj-Laredo Km 24.2
Apartado Postal 43
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Vendida a:	PROVEEDORA DE MATERIALES ANGER, S.A.	Pedido del Cliente No:	5275 - 5305 - 5301 - 5292	Lista de Empaque:	1 0998	Fecha/Date:	5 de Noviembre de 2008
Sold to:	DE C. V.	Customers Order No:		Packing List:		Factura/Invoice:	Bocas / Ends Biselado / Bevelled ends
Especificaciones y Grados / Standard or Specification and Steel Grade		Dimensiones y tolerancias / Dimension and tolerances		Numero: Number:		Pagina/Page:	
Seamless Fittings according to ASTM A 234 "M" WPB-97, A234 "M" WPB-04, NACE MR 0175-2003		ASME B 16.9 - 2003 and ASME B 16.28 - 1994		21501		1 DE 1	
Conform to ASME II Ed. 2001 ASME SA-234 "M" Grade WPB, NACE MR0103-2003							

ART. ITEM	COLADA HEAT CODE	CANTIDAD QUANTITY	DESCRIPCION / DESCRIPTION	PRUEBAS MECANICAS / MECHANICAL TEST			PRUEBA DE IMPACTO 0°C / IMPACT TEST 0°C							
				ESF. CEDENCIA YIELD STRENGTH (Mpa)	ESF. RUPATURA TENSILE STRENGTH (Mpa)	ELONG. %2"	DUREZA HARDNESS HBW	DIMENSIONES SAMPLE DIM (mm)	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules		
1	S29077	220	CODO 3 X 90° R.I. CED-STD	323	500	30	127							
2	23229	2	CODO 3 X 90° R.I. CED-STD	363	498	36	127							
3	S21986	7	CODO 3 X 90° R.I. CED-STD	355	496	34	112							
4	S28891	303	CODO 3 X 90° R.I. CED-STD	293	455	31	110							
5	S29604	701	CODO 3 X 90° R.I. CED-STD	301	500	30	132							
6	S30232	267	CODO 3 X 90° R.I. CED-STD	324	483	30	130							
7	T41272	12	CODO 14 X 90° R.I. CED-STD	298	496	32	107							
8	S26551	50	CODO 3 X 45° CED-STD	334	485	29	111							
9	S21173	18	CODO 4 X 90° R.I. CED-XS	308	464	33	104							
10	S20540	42	CODO 4 X 90° R.I. CED-XS	309	486	37	106							
11	S20539	6	CODO 4 X 90° R.I. CED-XS	272	459	39	102							

ANALISIS QUIMICO / CHEMICAL ANALYSIS

PROCESO PROCESS	COLADA HEAT CODE	COLADAH/ET M.P./MOTHER PIPE	%C.E.	%C	%Mn	%P	%S	%SI	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	S29077	29077	0.320	0.180	0.740	0.011	0.002	0.280	0.040	0.028	0.020	0.018	0.001	0.000
HF	23229	23229	0.310	0.180	0.710	0.012	0.001	0.270	0.040	0.046	0.010	0.024	0.001	0.001
HF	S21986	21986	0.320	0.180	0.770	0.008	0.002	0.300	0.040	0.031	0.010	0.033	0.001	0.001
HF	S28891	28891	0.340	0.200	0.750	0.010	0.002	0.280	0.030	0.029	0.010	0.033	0.001	0.000
HF	S29604	29604	0.330	0.180	0.750	0.008	0.001	0.270	0.070	0.035	0.010	0.022	0.001	0.000
HF	S30232	30232	0.350	0.200	0.830	0.014	0.002	0.280	0.050	0.037	0.010	0.021	0.001	0.002
HF	T41272	41272	0.330	0.180	0.820	0.017	0.001	0.310	0.050	0.040	0.010	0.030	0.000	0.000
HF	S26551	26551	0.310	0.180	0.720	0.011	0.001	0.280	0.040	0.023	0.010	0.015	0.001	0.000
HF	S21173	21173	0.328	0.200	0.720	0.010	0.004	0.270	0.020	0.016	0.010	0.016	0.001	0.001
HF	S20540	20540	0.320	0.180	0.770	0.013	0.001	0.280	0.050	0.038	0.010	0.022	0.001	0.001
HF	S20539	20539	0.330	0.190	0.750	0.013	0.001	0.300	0.050	0.032	0.020	0.022	0.001	0.001

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

ING. WALDO GALLEGOS GALVAN

Quality Manager Jefe de Calidad:

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.

Formado en caliente a 620°C-980°C, enfriado al aire.
Formado en frio normalizado a 940°C max.
Tiempo de permanencia 10'.
Inspeccion Dimensional: Satisfactoria.

CF: FORMADO EN CALIENTE/HOT FORMED

CC-008