



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

**Vendido a:** PLESA ANAHUAC Y CIA. S.A. DE C.V.  
**Sold to:** PLESA ANAHUAC Y CIA. S.A. DE C.V.  
**Especificaciones y Grados / Standard or Specification and Steel Grade:** Seamless Fittings according to ASTM A 234 "W" WPB-07, A234 "W" WPB-05a, NACE MR 01.75-2003  
**Conform to ASME II Ed. 2001 ASME SA-234 "W" Grade WPB, NACE MR0103-2003**  
**ASME B 16.9 - 2007 and ASME B 16.28 - 1994**

**Pedido del Cliente No:** 5469 - 5464 - 5405  
**Customers Order No.:** Dimensiones y tolerancias / Dimension and tolerances

**Numero:** 21769  
**Página/Page:** 1 DE 1  
**Fecha/Date:** 11 de Diciembre de 2008

**Lista de Empaque:** 11110  
**Packing List:** Bocas / Ends  
**Factura/Invoice:** Biselado / Bevelled ends

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. RUPTURA TENSILE STRENGTH (Mpa)	ELONG. %2"	DUREZA HARDNESS HBW	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules
1	S31158	47	CODO 4 X 90° R.I. CED-STD	241	464	31	114				
2	S30232	149	CODO 4 X 90° R.I. CED-STD	241	449	34	130				
3	S31760	14	CODO 4 X 90° R.I. CED-STD	314	484	31	130				
4	S28475	18	CODO 4 X 90° R.I. CED-STD	322	498	32	105				
5	S32203	8	CODO 6 X 90° R.I. CED-XS	293	480	32	111				
6	T41976	5	CODO 12 X 45° CED-STD	346	503	45	120				
7	T41032	10	CODO 10 X 90° R.I. CED-XS	296	477	35	113				
8	S45402	10	CODO 1 1/2 X 90° R.I. CED-STD.	400	546	46	133				
9	S23751	25	CODO 1 1/2 X 90° R.I. CED-STD.	353	497	42	112				
10	S20537	25	CODO 5 X 90° R.I. CED-STD	297	470	40	102				
11	S31050	25	CODO 1 1/2 X 90° R.C. CED-STD	368	534	32	157				

**ANALISIS QUIMICO / CHEMICAL ANALYSIS**

PROCESO PROCESS	COLADA HEAT CODE	COLADAM/HEAT M.P/MOTHER PIPE	%C.E.	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	S31158	31158	0.320	0.190	0.740	0.011	0.001	0.290	0.020	0.037	0.010	0.017	0.001	0.000
HF	S30232	30232	0.350	0.200	0.780	0.014	0.001	0.270	0.050	0.049	0.010	0.010	0.001	0.000
HF	S31760	31760	0.340	0.200	0.740	0.009	0.002	0.260	0.040	0.041	0.000	0.017	0.001	0.000
HF	S28475	28475	0.360	0.200	0.830	0.007	0.001	0.310	0.050	0.059	0.020	0.035	0.001	0.000
HF	S32203	32203	0.330	0.180	0.790	0.010	0.001	0.290	0.050	0.039	0.010	0.016	0.001	0.001
HF	T41976	41976	0.300	0.170	0.670	0.008	0.001	0.280	0.040	0.047	0.011	0.030	0.000	0.000
HF	T41032	41032	0.320	0.190	0.680	0.007	0.001	0.280	0.040	0.062	0.008	0.030	0.000	0.000
HF	S45402	45402	0.320	0.180	0.740	0.009	0.001	0.290	0.040	0.038	0.010	0.021	0.001	0.001
HF	S23751	23751	0.350	0.190	0.810	0.008	0.001	0.290	0.050	0.038	0.030	0.025	0.001	0.001
HF	S20537	20537	0.340	0.190	0.790	0.012	0.002	0.290	0.040	0.035	0.010	0.021	0.001	0.001
HF	S31050	31050	0.330	0.190	0.760	0.007	0.002	0.270	0.030	0.023	0.010	0.013	0.001	0.000

**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**

**Notes:**  
 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.

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

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