

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

Vendido a: **TUBOS MONTERREY, S. A. DE C. V.** Pedido del Cliente No: **J-092 -** Fecha/Date: **1 de Noviembre de 2006**
 Sold to: **TUBOS MONTERREY, S. A. DE C. V.** Customers Order No: **ASME B 16.9 - 2003 and ASME B 16.28 - 1994**
 Especificaciones y Grados / Standard or Specification and Steel Grade Dimensiones y tolerancias / Dimension and tolerances
 Seamless Fittings according to ASTM A 234-97, A 234-08a, NACE MR 01.75-2003
 Conform to ASME II Ed. 2001 ASME SA-234, Grade WPB

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 HB	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules
23	S45402	982	CODO 1 1/2 X 90° R. L. CED-STD.	400	546	45	131					
24	SGH6	3	CODO 2 1/2 X 45° CED-XS	433	536	29	135					
25	ITS	47	CODO 2 1/2 X 45° CED-XS	438	492	31	135					

ANALISIS QUIMICO / CHEMICAL ANALYSIS													
PROCESO PROCESS	COLADA HEAT CODE	COLADA/HEAT M.P./MOTHER PIPE	%C	%Mn	%P	%S	%SI	%Cr	%Cu	%Mo	%Ni	%V	%Nb
RF	S45402	45402	0.317	0.180	0.009	0.001	0.290	0.040	0.038	0.010	0.021	0.001	0.001
RF	SGH6	24683	0.346	0.190	0.007	0.001	0.280	0.050	0.040	0.040	0.000	0.020	0.001
RF	ITS	22281	0.334	0.190	0.012	0.001	0.270	0.040	0.050	0.020	0.001	0.001	0.001

Notas:
 Formado en caliente a 620°C-640°C, enfriado al aire. Formado in hot normalized at 640°C max. Visual dimensional check: Satisfactory
 Tiempo de permeancia 10'. Holding time 10'.
 Inspección Dimensional Satisfactoria. Visual dimensional check: Satisfactory
 RF: FORMADO EN CALIENTE/HOT FORMED CF: FORMADO EN FRIOCOLD FORMED

Notas:
 Hot formed fittings in a range from 620°C to 640°C, cooled in still air. Cold formed normalized at 640°C max. Holding time 10'.
 Visual dimensional check: Satisfactory
 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.

Jefe de Calidad: **ING. JOSE MARTINEZ MACIAS**
 Quality Manager: