



Tenaris Group

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

Empresas Riga, S.A. De C.V.  
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Vendido A: **TUBOS CONEXIONES Y TANQUES, S.A. DE C.V.**  
 Sold to: **Customers Order No.: 5601, 5614, 5690**  
 Dimensiones y tolerancias / Dimension and tolerances  
**ASME B 16.9 and ASME B 16.28 edition 2001**

Lista de empaque: **5824**  
 Packing List: **Bocas / Ends**  
 Fecha/Date: **MARZO 10 de 2003**  
**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 HB	DIMENSIONES SAMPLE DIM mm	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules
1	RS5	140	ELLS 2 X 90 L.R. SCH XH	337	493	39	128	N/A	N/A	N/A	N/A	N/A
2	OZ5	100	ELLS 3 X 45 SCH STD	347	492	39	136	N/A	N/A	N/A	N/A	N/A
3	OK5	100	ELLS 4 X 45 SCH STD	372	506	38	131	N/A	N/A	N/A	N/A	N/A
4	LP5	20	ELLS 4 X 90 S.R. SCH STD	328	501	30	133	N/A	N/A	N/A	N/A	N/A
5	OT5	362	ELLS 4 X 90 L.R. SCH STD	361	496	41	135	N/A	N/A	N/A	N/A	N/A
6	PJ5	94	ELLS 4 X 90 L.R. SCH STD	359	490	41	129	N/A	N/A	N/A	N/A	N/A
7	IX5	20	ELLS 6 X 90 S.R. SCH STD	316	499	32	141	N/A	N/A	N/A	N/A	N/A
8	OS5	17	ELLS 6 X 90 L.R. SCH STD	330	498	40	136	N/A	N/A	N/A	N/A	N/A
9	PN5	253	ELLS 6 X 90 L.R. SCH STD	344	510	39	131	N/A	N/A	N/A	N/A	N/A

PROCESO PROCESS	COLADA HEAT CODE	COLADA/HEAT M.P./MOTHER PIPE	ANALISIS QUIMICO / CHEMICAL ANALYSIS											
			%C.E.	%C	%Mn	%P	%S	%Si	%Cr	%Cu	%Mo	%Ni	%V	%Nb
HF	RS5	24684	0.3330	1.90	0.740	0.007	0.001	0.290	0.040	0.030	0.040	0.020	0.001	0.001
HF	OZ5	23881	0.3250	1.90	0.730	0.011	0.001	0.290	0.030	0.030	0.020	0.020	0.001	0.002
HF	OK5	98919	0.3070	1.70	0.680	0.010	0.003	0.270	0.050	0.078	0.029	0.040	0.000	0.000
HF	LP5	22138	0.3150	1.80	0.730	0.010	0.001	0.310	0.030	0.050	0.010	0.020	0.001	0.001
HF	OT5	24114	0.3180	1.80	0.740	0.008	0.001	0.310	0.030	0.040	0.020	0.020	0.001	0.001
HF	PJ5	24113	0.3290	1.90	0.760	0.008	0.001	0.310	0.030	0.040	0.010	0.020	0.001	0.001
HF	IX5	96135	0.3160	1.80	0.660	0.006	0.002	0.290	0.050	0.077	0.043	0.040	0.000	0.000
HF	OS5	99244	0.2960	1.60	0.690	0.014	0.004	0.280	0.050	0.060	0.024	0.030	0.000	0.000
HF	PN5	99520	0.3220	1.70	0.750	0.012	0.005	0.280	0.070	0.069	0.029	0.040	0.000	0.000

Notes: Formado en caliente a 780°C-940°C, enfriado al aire. Formado en frío normalizado a 940°C. max. Tiempo de permanencia 10'. Holding time 10'. Visual dimensional check. Satisfactory. CF: FORMADO EN CALIENTE/NOT FORMED. CF: FORMADO EN FRIO/COLD FORMED

Gerente de Aseguramiento de Calidad: **ING. JOSE MARTINEZ MACIAS**

Quality Assurance Manager: **ING. JOSE MARTINEZ MACIAS**

CC-008