

CERTIFICADO DE CALIDAD
INSPECTION CERTIFICATE

(DIN EN 10204 3.1.B - ISO 10474.3.1.B)

Tubos de Acero de Mexico, S.A
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Via Xalapa
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Vendido A:	TUBERIA Y VALVULAS DEL NORTE, S.A. DE C.V.	Pedido del cliente No:	193, 194, 195, 196	Lista de empaque:	6244	Fecha/Dat:	SEPTIEMBRE 24 de 2003
Sold to:		Customers Order No:		Packing List:			
Dimensiones y tolerancias / Dimension and tolerances							
ASME B 16.9 and ASME B 16.28 edition 2001							
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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. RUP.TURA TENSILE STRENGTH (MPa)	ELONG. %2"	DUREZA HARDNESS HB	DIMENSIONES SAMPLE DIM (mm)	1 Joules	2 Joules	3 Joules	PROMEDIO AVERAGE Joules	
1	MD4	11	CODO R.C. 4 X 180 CED STD	466	523	31	130	N/A	N/A	N/A	N/A	N/A	
2	MC4	1	CODO R.C. 4 X 180 CED STD	350	511	31	119	N/A	N/A	N/A	N/A	N/A	
3	TYG5	9	CODO R.L. 16 X 90 CED XS	341	506	43	146	N/A	N/A	N/A	N/A	N/A	
4	TXUX	9	CODO R.L. 16 X 90 CED XS	316	483	45	141	N/A	N/A	N/A	N/A	N/A	
5	TXP5	10	CODO R.L. 12 X 90 CED 20	323	491	46	144	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	MD4	43431	0.3080	0.194	0.589	0.004	0.000	0.320	0.028	0.107	0.011	0.001	0.002	0.000
HF	MC4	43020	0.3220	0.211	0.575	0.002	0.002	0.311	0.028	0.114	0.006	0.001	0.002	0.000
HF	TYG5	11686	0.3460	0.190	0.770	0.013	0.003	0.280	0.080	0.060	0.027	0.040	0.000	0.000
HF	TXUX	10916	0.3380	0.190	0.740	0.010	0.002	0.290	0.050	0.097	0.029	0.040	0.000	0.000
HF	TXP5	12167	0.3270	0.190	0.690	0.010	0.018	0.280	0.050	0.077	0.020	0.040	0.000	0.000

Notas:
Formado en caliente a 780°C-840°C, enfriado al aire; Formado en frío normalizado a 840°C max.
Tiempo de permanencia 10'.
Inspeccion Dimensional: Satisfactoria.
Visual dimensional check: Satisfactory.
F. FORMADO EN CALIENTE/HOT FORMED CF: FORMADO EN FRIOCOLD FORMED

Notas:
Hot formed fittings in a range from 780°C to 840°C. Cooled in still air.
Cold formed normalized at 840°C max.
Holding time 10'.
Visual dimensional check: Satisfactory.

Gerente de Aseguramiento de Calidad:
Quality Assurance Manager:

ING. JOSE MARTINEZ MACIAS

CC-008