

Tuberia y válvulas del Norte, S.A. de C.V.
 Remisión 27028 Fecha 4/10/11
 No. Piezas: 20 Colada 592140

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

Numero: 24892
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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 9630 fax.

Vendido a: TUVANSA MONTERREY
 Sold to: TUVANSA MONTERREY
 Pedido del Cliente No: 10862 - 10118 - 10984
 Customers Order No: 10862 - 10118 - 10984
 Lista de Empaque: 12841
 Packing List: 12841
 Fecha/Date: 2 de Septiembre de 2011

Especificaciones y Grados / Standard or Specification and Steel Grade
 Seamless Fittings according to ASTM A 234 WPB-07, NACE MR 01.75-2003
 Conform to ASME II Ed. 2001 ASME SA-234, Grade WPB, NACE MR0103-2003

Dimensiones y tolerancias / Dimension and tolerances
 ASME B 16.9 - 2007 and ASME B 16.28 - 1994

Factura/Invoice:
 Bocas / Ends
 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 HBW | DIMENSIONES SAMPLE DIM mm | 1 Joules | 2 Joules | 3 Joules | PROMEDIO AVERAGE Joules |
| 1 | TS1309 | 35 | CODO 12 X 45° CED-XS | 310 | 483 | 45 | 122 | | | | | |
| 2 | TS0961 | 1 | CODO 12 X 45° CED-XS | 303 | 482 | 45 | 120 | | | | | |
| 3 | S42357 | 100 | CODO 6 X 90° R.L. CED-STD | 284 | 471 | 37 | 130 | | | | | |
| 4 | TS5440 | 1008 | CODO 6 X 45° CED-STD | 311 | 474 | 40 | 122 | | | | | |
| 5 | TS4537 | 77 | CODO 8 X 90° R.L. CED-XS | 300 | 482 | 42 | 118 | | | | | |
| 6 | TS4400 | 23 | CODO 8 X 90° R.L. CED-XS | 293 | 467 | 43 | 114 | | | | | |
| 7 | S20808 | 192 | RED. CONC. 3 X 2 CED-STD | 279 | 425 | 30 | 120 | | | | | |
| 8 | TS5089 | 64 | CODO 10 X 90° R.L. CED-XS | 301 | 480 | 43 | 122 | | | | | |
| 9 | S45796 | 505 | CODO 4 X 90° R.L. CED-XS | 310 | 488 | 33 | 145 | | | | | |
| 10 | S42140 | 179 | CODO 4 X 90° R.L. CED-XS | 311 | 475 | 36 | 154 | | | | | |
| 11 | S42828 | 43 | CODO 5 X 45° CED-STD | 303 | 474 | 36 | 142 | | | | | |

| ANALISIS QUIMICO / CHEMICAL ANALYSIS | | | | | | | | | | | | | | |
|--------------------------------------|------------------|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| PROCESO PROCESS | COLADA HEAT CODE | COLADA/HEAT M.P./MOTHER PIPE | %C.E. | %C | %Mn | %P | %S | %SI | %Cr | %Cu | %Mo | %Ni | %V | %Nb |
| HF | TS1309 | 51309 | 0.300 | 0.170 | 0.660 | 0.012 | 0.001 | 0.280 | 0.050 | 0.051 | 0.017 | 0.030 | 0.000 | 0.000 |
| HF | TS0961 | 50961 | 0.310 | 0.180 | 0.670 | 0.011 | 0.003 | 0.270 | 0.030 | 0.056 | 0.028 | 0.040 | 0.000 | 0.000 |
| HF | S42357 | 42357 | 0.330 | 0.190 | 0.750 | 0.012 | 0.001 | 0.310 | 0.030 | 0.040 | 0.010 | 0.019 | 0.002 | 0.002 |
| HF | TS5440 | 55440 | 0.300 | 0.170 | 0.690 | 0.008 | 0.001 | 0.290 | 0.040 | 0.060 | 0.013 | 0.030 | 0.000 | 0.000 |
| HF | TS4537 | 54537 | 0.320 | 0.190 | 0.670 | 0.010 | 0.001 | 0.300 | 0.060 | 0.060 | 0.019 | 0.030 | 0.000 | 0.000 |
| HF | TS4400 | 54400 | 0.008 | 0.180 | 0.660 | 0.008 | 0.003 | 0.270 | 0.030 | 0.046 | 0.015 | 0.030 | 0.000 | 0.000 |
| CF | S20808 | 20808 | 0.330 | 0.190 | 0.820 | 0.014 | 0.001 | 0.280 | 0.010 | 0.024 | 0.010 | 0.015 | 0.001 | 0.001 |
| HF | TS5089 | 55089 | 0.310 | 0.180 | 0.680 | 0.010 | 0.002 | 0.280 | 0.040 | 0.056 | 0.011 | 0.030 | 0.000 | 0.000 |
| HF | S45796 | 45796 | 0.350 | 0.200 | 0.770 | 0.013 | 0.000 | 0.290 | 0.050 | 0.032 | 0.020 | 0.015 | 0.001 | 0.002 |
| HF | S42140 | 42140 | 0.330 | 0.190 | 0.750 | 0.011 | 0.000 | 0.300 | 0.030 | 0.018 | 0.010 | 0.010 | 0.002 | 0.002 |
| HF | S42828 | 42828 | 0.320 | 0.180 | 0.770 | 0.012 | 0.001 | 0.320 | 0.030 | 0.037 | 0.020 | 0.020 | 0.003 | 0.002 |

Certificamos que los resultados de los Análisis Químicos y Pruebas Mecánicas son verdaderos o una copia fiel de los certificados enviados por el Fabricante y/o el proveedor.
 de Materia Prima (Tubería Sin Costura) conforme ASTM A106 Grado B con N°. We certify that result of chemical analysis and mechanical test are true and correct copy of the test certificate issued by the manufacturer and/or supplier Raw material (Seamless Pipe) certs conform to ASTM A106 Grade B N°.
 10049543 10042590 10053815 11030361 11016572 11016572 368889 11022169 11030471 11034977 11008316
 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".

Notas: Formado en caliente a 620°C-980°C, enfriado al aire; Formado en frío normalizado a 940°C max. mpo de permanencia 10'. Verificación Dimensional: Satisfactoria. FORMADO EN CALIENTE/HOT FORMED

Notas: 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

Quality Manager / Jefe de Calidad:
 ING. WALDO GALLEGOS GALVAN

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.

CC-008