Tenaris

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

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|---|---|
| 24492 | 1 DE 1 |

Tubos de Acero de Mexico, S.A.
Carr. Mty-Laredo Km 24.2
Apartado Postal 43
(65550) C. de Flores, N.L. Mex.
(52) 81 8305 9600 tel.
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| | | | |
|---|---|---|---|
| Vendido a: / Sold to: TUVANSA MONTERREY | Pedido del Cliente No: / Customers Order No: 10085 | Lista de Empaque: / Packing List: 12616 | Fecha/Date: 8 de Abril de 2011 |

| | | |
|---|---|---|
| Especificaciones y Grados / Standard or Specification and Steel Grade<br>**Seamless Fittings according to ASTM A 234 WPB-07, NACE MR 01.75-2003**<br>**Conform to ASME II Ed. 2001 ASME SA-234,Grade WPB, NACE MR0103-2003** | Dimensiones y tolerancias / Dimension and tolerances<br>**ASME B 16.9 - 2007 and ASME B 16.28 - 1994** | **Factura/Invoice:**<br>**Bocas / Ends**<br>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 | S42235 | 19 | CODO 4 X 90° R.L. CED-STD | 331 | 508 | 32 | 137 | | | | | |
| 2 | S42775 | 92 | CODO 4 X 90° R.L. CED-STD | 325 | 505 | 33 | 140 | | | | | |
| 3 | S42774 | 9 | CODO 4 X 90° R.L. CED-STD | 325 | 505 | 33 | 140 | | | | | |
| 4 | S44010 | 228 | CODO 4 X 90° R.L. CED-STD | 328 | 489 | 31 | 137 | | | | | |
| 5 | T52308 | 16 | CODO 8 X 45° CED-XS | 327 | 480 | 44 | 120 | | | | | |
| 6 | T50879 | 29 | CODO 8 X 45° CED-XS | 295 | 482 | 44 | 91 | | | | | |
| 7 | S43735 | 11 | CODO 2 X 45° CED-STD | 351 | 504 | 30 | 126 | | | | | |
| 8 | T51306 | 24 | CODO 14 X 45° CED-STD | 313 | 488 | 42 | 122 | | | | | |
| 9 | S32307 | 16 | CODO 2 1/2 X 45° CED-STD | 314 | 485 | 31 | 122 | | | | | |
| 10 | R71005 | 168 | CODO 1 X 90° R.L. CED-STD | 329 | 462 | 46 | 110 | | | | | |
| 11 | T37883 | 9 | RED. CONC. 12 X 10 CED-XS | 306 | 489 | 30 | 113 | | | | | |

## 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 | S42235 | 42235 | 0.330 | 0.190 | 0.770 | 0.012 | 0.001 | 0.330 | 0.030 | 0.028 | 0.020 | 0.034 | 0.002 | 0.001 |
| HF | S42775 | 42775 | 0.320 | 0.180 | 0.750 | 0.012 | 0.002 | 0.300 | 0.040 | 0.024 | 0.010 | 0.015 | 0.002 | 0.002 |
| HF | S42774 | 42774 | 0.320 | 0.180 | 0.750 | 0.012 | 0.002 | 0.300 | 0.040 | 0.024 | 0.010 | 0.015 | 0.002 | 0.002 |
| HF | S44010 | 44010 | 0.330 | 0.200 | 0.720 | 0.009 | 0.001 | 0.300 | 0.020 | 0.020 | 0.010 | 0.012 | 0.002 | 0.002 |
| HF | T52308 | 52308 | 0.310 | 0.180 | 0.690 | 0.011 | 0.001 | 0.280 | 0.040 | 0.062 | 0.023 | 0.030 | 0.000 | 0.000 |
| HF | T50879 | 50879 | 0.310 | 0.180 | 0.660 | 0.014 | 0.002 | 0.290 | 0.040 | 0.049 | 0.014 | 0.030 | 0.000 | 0.000 |
| HF | S43735 | 43735 | 0.310 | 0.180 | 0.720 | 0.011 | 0.001 | 0.270 | 0.020 | 0.020 | 0.010 | 0.019 | 0.002 | 0.002 |
| HF | T51306 | 51306 | 0.310 | 0.180 | 0.660 | 0.011 | 0.001 | 0.260 | 0.040 | 0.050 | 0.022 | 0.030 | 0.000 | 0.000 |
| HF | S32307 | 32307 | 0.330 | 0.190 | 0.710 | 0.012 | 0.002 | 0.260 | 0.050 | 0.039 | 0.010 | 0.028 | 0.001 | 0.001 |
| HF | R71005 | 71005 | 0.310 | 0.170 | 0.720 | 0.009 | 0.002 | 0.210 | 0.050 | 0.018 | 0.018 | 0.080 | 0.001 | 0.001 |
| CF | T37883 | 37883 | 0.340 | 0.190 | 0.780 | 0.011 | 0.002 | 0.280 | 0.040 | 0.056 | 0.013 | 0.030 | 0.000 | 0.000 |

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 (Tuberia Sin Costura) conforme ASTM A106 Grado B con Nº:

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 suplier Raw material (Seamless Pipe) certs conform to ASTM A106 Grade B Nº:

10053806 10058145 10058145 11007338 11013915
10051538 11004276 10041124 468319 2270324 10056194

"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 820°C-980°C, enfriado al aire; Formado en frio normalizado a 940°C max.
Tiempo de permanencia 10'.
Inspección Dimensional: Satisfactoria.
HF: FORMADO EN CALIENTE/HOT FORMED

Notes:
Hot formed fittings in a range from 820°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