



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

Numero:
Number:
25816

Pagina/Page:
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Unidad de Acreditación
Case Accredited No. 242
Acreditado Por/By
(65559) C. de Fomento, S.A.
(52) 81 8285 8600 tel.
(52) 81 8205 9630 fax.

| | | | | | | | |
|---|--|--|--------------------|------------------------------------|--------------------------|-------------|--------------------|
| Vendido a: Sold to: | TUVANSA MONTERREY | Pedido del Cliente No: Customers Order No: | 11826 - 12117 | Lista de Empaque: Packing List: | 13330 | Fecha/Date: | 22 de Mayo de 2012 |
| 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 | 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 | T59968 | 54 | CODO 6 X 90° R.L. CED-STD. | 297 | 491 | 31 | 153 | | | | | |
| 2 | T59967 | 325 | CODO 6 X 90° R.L. CED-STD. | 288 | 476 | 30 | 158 | | | | | |
| 3 | T59906 | 21 | CODO 6 X 90° R.L. CED-STD. | 334 | 487 | 34 | 104 | | | | | |
| 4 | T59118 | 490 | TEE 4 CED-STD | 305 | 480 | 36 | 161 | | | | | |
| 5 | T59630 | 30 | TEE RED. 10 X 4 CED-STD | 307 | 461 | 37 | 144 | | | | | |
| 6 | T56665 | 6 | TEE RED. 10 X 4 CED-STD | 295 | 467 | 35 | 108 | | | | | |
| 7 | T50526 | 1 | CODO 12 X 45° SHC-8C | 309 | 474 | 37 | 92 | | | | | |
| 8 | T58293 | 45 | TEE RED. 8 X 4 CED-STD | 317 | 490 | 41 | 100 | | | | | |
| 9 | T59684 | 82 | TEE RED. 8 X 4 CED-STD | 356 | 469 | 30 | 136 | | | | | |
| 10 | T56767 | 1 | TEE RED. 8 X 4 CED-STD | 315 | 492 | 45 | 111 | | | | | |
| 11 | S48018 | 169 | CODO 3 X 90° R.C. CED-STD | 307 | 474 | 31 | 109 | | | | | |

| 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 | T59968 | 59968 | 0.300 | 0.170 | 0.670 | 0.013 | 0.001 | 0.290 | 0.050 | 0.068 | 0.014 | 0.030 | 0.000 | 0.000 |
| HF | T59967 | 59967 | 0.300 | 0.170 | 0.670 | 0.014 | 0.001 | 0.280 | 0.050 | 0.072 | 0.018 | 0.030 | 0.000 | 0.000 |
| HF | T59906 | 59906 | 0.320 | 0.190 | 0.680 | 0.014 | 0.002 | 0.300 | 0.040 | 0.075 | 0.015 | 0.040 | 0.000 | 0.000 |
| HF | T59118 | 59118 | 0.330 | 0.180 | 0.820 | 0.015 | 0.000 | 0.340 | 0.050 | 0.045 | 0.010 | 0.030 | 0.000 | 0.000 |
| HF | T59630 | 59630 | 0.320 | 0.190 | 0.680 | 0.009 | 0.001 | 0.280 | 0.050 | 0.061 | 0.024 | 0.040 | 0.000 | 0.000 |
| HF | T56665 | 56665 | 0.310 | 0.180 | 0.670 | 0.010 | 0.001 | 0.280 | 0.050 | 0.072 | 0.025 | 0.040 | 0.000 | 0.000 |
| HF | T50526 | 50526 | 0.310 | 0.170 | 0.690 | 0.013 | 0.003 | 0.270 | 0.060 | 0.060 | 0.019 | 0.030 | 0.000 | 0.000 |
| HF | T58293 | 58293 | 0.300 | 0.170 | 0.670 | 0.006 | 0.002 | 0.280 | 0.060 | 0.052 | 0.016 | 0.030 | 0.000 | 0.000 |
| HF | T59684 | 59684 | 0.310 | 0.180 | 0.660 | 0.017 | 0.002 | 0.280 | 0.060 | 0.071 | 0.023 | 0.040 | 0.000 | 0.000 |
| HF | T56767 | 56767 | 0.330 | 0.190 | 0.700 | 0.015 | 0.003 | 0.270 | 0.060 | 0.068 | 0.025 | 0.040 | 0.000 | 0.000 |
| HF | S48018 | 48018 | 0.340 | 0.200 | 0.730 | 0.010 | 0.002 | 0.280 | 0.050 | 0.060 | 0.020 | 0.020 | 0.001 | 0.002 |

Certificamos que los resultados de los Analisis Quimicos y Pruebas Mecanicas 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 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) certa conform to ASTM A106 Grade B N°:

| | | | | |
|----------|----------|----------|----------|----------|
| 12023997 | 12023702 | 12016119 | 12010850 | 12018607 |
| 11061783 | 10051539 | 12002317 | 12026101 | 11048477 |
| 11046230 | | | | |

"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-650°C, enfriado al aire.
Hot formed fittings in a range from 620°C to 650°C, cooled in still air.

Nota:
Formado en frío normalizado a 940°C max.
Cold formed normalized at 940°C max.

Tempo de permanencia 10'.
Holding time 10'.

Inspección Dimensional: Satisfactoria.
Visual dimensional check: Satisfactory

HF: FORMADO EN CALIENTE/HOT FORMED
CP: FORMADO EN FRIJO/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.

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