



Tenaris Group

CERTIFICADO DE PRUEBAS EN FABRICA

Tubos de Acero de México, S.A.
 Km 433.7 Carr. México-Veracruz
 Via Xalapa
 (91697) Veracruz, Ver. México
 (52) 229 989 1100 tel

| | | | | |
|---|--|--|---|--|
| CLIENTE / PURCHASER TUBOS CONEXIONES Y TANQUES S.A. DE C.V. | Confirmación de Venta / Sales Confirmation 048571/04 | Número / Number 02013796 | Fecha / Date 08/09/2002 | Página / Page 1/4 |
| Tipo de Tubo / Type of Pipe CONDUCCION / LINE PIPE | SEAMLESS | Orden Cliente / Purchaser Order BIX42 PSL1 | Compañía de Inspección / Inspection Company | |
| Norma / Standard or Specification API 5L/ASTM A106/ASME SA106/ASTM A53, JULIO 1, 2000/99/1995-A95/99B | Grado de Acero / Steel Grade BIX42 PSL1 | Extremos / Ends BISELADO NORMAL / NORMAL BEVEL | Inspector / Inspector | |
| Dimensiones / Dimensions 14.00 X 0.375 INCH | Cédula / Schedule 355.60 X 9.50 MM | Peso Nominal / Nominal Weight 18.00 / 21.30 FT | Longitud / Length 5.50 / 6.50 MTS | Superficie / Surface BARNIZADO / VARNISHED |
| | | | | Cantidades / Quantities 12 Pzas / Pcs |

PRUEBAS DE TENSION / TENSILE TEST

| Heat | Probeta / Sample | Característica de la Probeta / Specimen Characteristics | Temp de Test / Temp | Fluencia / Yield Strength | | Resistencia / Tensile Strength | | Relación F/R / Rate YS/UTS | Alargamiento / Elongation | | Reducción de Área / Reduction of Area | Dureza / Hardness Tipo / Type |
|-------|------------------|---|---------------------|---------------------------|------|--------------------------------|-------------------------------|----------------------------|---------------------------|------|---------------------------------------|-------------------------------|
| | | | | KG/MM2 | EUL | KG/MM2 | 42.15 | | MM | % | | |
| | | | | Offset | 0.5% | TMmin TMax LMin LMax | TMmin TMax LMin LMax | MM | % | Min | Max | |
| 95326 | 19068 | C/B | ST | Rec | T | 38.00 x 9.60 | 364.80 | 36.79 | 51.52 | 0.71 | 39 | BHN |
| 95326 | 19069 | C/B | ST | Rec | T | 38.20 x 9.60 | 366.72 | 34.11 | 50.67 | 0.67 | 39 | BHN |

ENSAYOS TECNOLOGICOS / TECHNOLOGICAL TEST

| Apilamiento / Flattening Test | Curvado / Bend Test | Abocardado / Flaming Test | N/A | Pestañado / Flange Test | Anillo Extendido / Ring Expanding Test | Tracción de Anillo / Ring Tensile Test |
|-------------------------------|---------------------|---------------------------|------------|-------------------------|--|--|
| BUENO / GOOD | N/A | N/A | N/A | N/A | N/A | N/A |

C/B = Cuerpo / Body
 L = Longitudinal / Longitudinal
 Tra = Probeta tratada en laboratorio / Specimen with heat treatment at Laboratory
 Min = Mínimo / Minimum
 LMin = Longitudinal Mínimo / Longitudinal Minimum
 RU = Recalque / Upset
 T = Transversal / Transverse
 TR = Templado y Revenido / Quenched and Tempered
 Max = Máximo / Maximum
 LMax = Longitudinal Máximo / Longitudinal Maximum
 Rec = Rectangular / Strip specimen
 1=API 2=ISO 3=ASTM 4=DIN 5=AFNOR 6=UNI
 N = Normalizado / Normalized
 TA = Temperatura Ambiente / Room Temperature
 TMin = Transversal Mínimo / Transverse Minimum
 Ori = Orientación / Orientation
 TMax = Transversal Máximo / Transverse Maximum
 Cil = Cilíndrica / Round bar specimen
 A = Recocido / Annealed
 NR = Normalizado y Revenido / Normalized and Tempered
 SR = Relevado de Esfuerzo / Stress Relief
 M/A=No Aplica / Does Not Apply / Rolled

Este documento certifica que los productos descritos aquí fueron manufacturados, probados y/o inspeccionados de acuerdo con la especificación de referencia y satisface los correspondientes requerimientos. Este certificado se emite mediante un sistema computarizado y es válido con firma electrónica. En el certificado original el logotipo Tenaris (verde) está impreso en la hoja. En caso de que el poseedor del certificado entregue una fotocopia del mismo, deberá garantizar la conformidad con el original, y se hace responsable por cualquier uso ilegal o no autorizado. Cualquier alteración o modificación en el original será sujeta a la ley. This is to certify that the products described here in were manufactured, sampled, tested and/or inspected in accordance with the specification referenced and meets the requirements in respect. This certificate is issued by a computerized system and is valid with electronic signature. On the original certificate the trade-mark green coloured Tenaris is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one, taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

DICA 777 04 0

CERTIFICADO DE PRUEBAS EN FABRICA

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| Norma / Standard or Specification API 5L/ASTM A106/ASME SA106/ASTM A53, JULIO 1, 2000/99/1995-A95/99B | Grado de Acero / Steel Grade B/X42 PSL1 | Peso Nominal / Nominal Weight 54.57 LBF/FT | Longitud / Length 18.00 / 21.30 FT | Superficie / Surface BARNIZADO / VARNISHED |
| Dimensiones / Dimensions 14.00 X 0.375 INCH 355.60 X 9.50 MM | Cédula / Schedule | Longitud / Length 5.50 / 6.50 MTS | Superficie / Surface BARNIZADO / VARNISHED | Superficie / Surface BARNIZADO / VARNISHED |

ENSAYOS DE DUREZAS / HARDNESS TEST

| Colada / Heat | 95326 | Lecturas Obtenidas / Obtained Readings | | | Obtenido / Obtained |
|----------------------|---------|--|------|------|---------------------|
| Probeta / Sample | 19068 | 1 | 2 | 3 | P/A Var |
| Quadrante / Quadrant | DE / OD | 75.4 | 74.7 | 74.3 | 74.8 |
| | C / MW | 75.9 | 76.6 | 78.5 | 77.0 |
| 1 | | | | | |
| HRB | DI / ID | 77.4 | 77.6 | 77.0 | 77.3 |
| | | | | | 2.5 |
| REQUERIDO / REQUIRED | Min | Max | P/A | Var | |
| HRC | | 22.00 | | | |

| Colada / Heat | 95326 | Lecturas Obtenidas / Obtained Readings | | | Obtenido / Obtained |
|----------------------|---------|--|------|------|---------------------|
| Probeta / Sample | 19069 | 1 | 2 | 3 | P/A Var |
| Quadrante / Quadrant | DE / OD | 74.5 | 74.1 | 74.4 | 74.3 |
| | C / MW | 76.6 | 76.1 | 76.5 | 76.4 |
| 1 | | | | | |
| HRB | DI / ID | 77.2 | 76.4 | 77.0 | 76.9 |
| | | | | | 2.5 |
| REQUERIDO / REQUIRED | Min | Max | P/A | Var | |
| HRC | | 22.00 | | | |

| Colada / Heat | | Lecturas Obtenidas / Obtained Readings | | | Obtenido / Obtained |
|----------------------|---------|--|-----|-----|---------------------|
| Probeta / Sample | | 1 | 2 | 3 | P/A Var |
| Quadrante / Quadrant | DE / OD | | | | |
| | C / MW | | | | |
| | | | | | |
| | DI / ID | | | | |
| REQUERIDO / REQUIRED | Min | Max | P/A | Var | |

| Colada / Heat | | Lecturas Obtenidas / Obtained Readings | | | Obtenido / Obtained |
|----------------------|---------|--|-----|-----|---------------------|
| Probeta / Sample | | 1 | 2 | 3 | P/A Var |
| Quadrante / Quadrant | DE / OD | | | | |
| | C / MW | | | | |
| | | | | | |
| | DI / ID | | | | |
| REQUERIDO / REQUIRED | Min | Max | P/A | Var | |

| Colada / Heat | | Lecturas Obtenidas / Obtained Readings | | | Obtenido / Obtained |
|----------------------|---------|--|-----|-----|---------------------|
| Probeta / Sample | | 1 | 2 | 3 | P/A Var |
| Quadrante / Quadrant | DE / OD | | | | |
| | C / MW | | | | |
| | | | | | |
| | DI / ID | | | | |
| REQUERIDO / REQUIRED | Min | Max | P/A | Var | |

| Colada / Heat | | Lecturas Obtenidas / Obtained Readings | | | Obtenido / Obtained |
|----------------------|---------|--|-----|-----|---------------------|
| Probeta / Sample | | 1 | 2 | 3 | P/A Var |
| Quadrante / Quadrant | DE / OD | | | | |
| | C / MW | | | | |
| | | | | | |
| | DI / ID | | | | |
| REQUERIDO / REQUIRED | Min | Max | P/A | Var | |

| Colada / Heat | | Lecturas Obtenidas / Obtained Readings | | | Obtenido / Obtained |
|----------------------|---------|--|-----|-----|---------------------|
| Probeta / Sample | | 1 | 2 | 3 | P/A Var |
| Quadrante / Quadrant | DE / OD | | | | |
| | C / MW | | | | |
| | | | | | |
| | DI / ID | | | | |
| REQUERIDO / REQUIRED | Min | Max | P/A | Var | |

| Colada / Heat | | Lecturas Obtenidas / Obtained Readings | | | Obtenido / Obtained |
|----------------------|---------|--|-----|-----|---------------------|
| Probeta / Sample | | 1 | 2 | 3 | P/A Var |
| Quadrante / Quadrant | DE / OD | | | | |
| | C / MW | | | | |
| | | | | | |
| | DI / ID | | | | |
| REQUERIDO / REQUIRED | Min | Max | P/A | Var | |

NOTES: P/A = Promedio / Average Var = Variación / Variation Min = Mínimo / Minimum Max = Máximo / Maximum
 DE/OD = Diámetro Exterior / Outside Diameter C/MW = Centro / Mid Wall DI/ID = Diámetro Interior / Internal Diameter N/A = No Aplica / Does Not Apply

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Tamsa

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| Dimensiones / Dimensions 14.00 X 0.375 INCH 355.60 X 9.50 MM | Cédula / Schedule 54.57 LB/FT 81.28 KG/M | Longitud / Length 18.00 / 21.30 FT 5.50 / 6.50 MTS | Superficie / Surface BARNIZADO / VARNISHED | Cantidades / Quantities 12 Pzas / Pcs |

Fabricado por / Manufactured by **TAMSA**

Fabricación de acero / Steel making process **Horno de Arco Eléctrico-Horno de Afinación-Máquina de Colada Continua. Acero calmado con aluminio. / Electric Arc Furnace-Ladle Furnace-Continuous Casting Machine. Fully Killed Steel.**

Fabricación de tubo / Pipe manufacturing process **Laminado en caliente sin costura / Seamless hot rolled**

Material libre de contaminación de Mercurio / Material free from Mercury contamination

No reparado por soldadura / No repair by welding

Tratamiento térmico / Heat treatment **Sin tratamiento térmico / Material as rolled**

Control no destructivo / Non destructive test **Satisfactorio / Satisfactory**

Método de inspección / Inspection method *** - EMI - FLVI - MPI -**

Mandril / Drift **Diámetro / Diameter N/A** **Longitud / Length N/A**

Prueba hidráulica / Hydrostatic test pressure **1910 PSI** **05 SEG / SEC**

Notas / Notes

ASTM A53, A106 GR-B API 5L

MATERIAL DE ACUERDO A NACE MR0175-97

ING. SARA GARCIA PAJARES
CERTIFICACION DE CALIDAD NOMBRE Y FIRMA /
QUALITY CERTIFICATION NAME AND SIGNATURE

TAMSA REF: 353198
Fin del Informe / End of Report

Este documento certifica que los productos descritos aquí fueron manufacturados, probados y/o inspeccionados de acuerdo con la especificación de referencia y satisface los correspondientes requerimientos. Este certificado se emite mediante un sistema computarizado y es válido con firma electrónica. En el certificado original el logotipo Tenaris (Verde) está impreso en la hoja. En caso de que el poseedor del certificado entregue una fotocopia del mismo, deberá garantizar la conformidad con el original, y se hace responsable por cualquier uso ilegal o no autorizado. Cualquier alteración y/o falsificación será sujeta a la ley. This is to certify that the products described here in were manufactured, sampled, tested, and/or inspected in accordance with the specification referenced and meets the requirements in all respects. This certificate is issued by a computerized system and is valid with electronic signature. On the original certificate the trade-mark green coloured Tenaris is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one, taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.