Tubacero
Ave. Guerrero N° 3729 Nte.
Col. Del Norte
Monterrey N.L. México
C.P. 64500
Tel: (81) 83055555

# CONSTANCIA DE INSPECCION
## INSPECTION CONSTANCY

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|---|---|
| N° CONSTANCIA (CONSTANCY N°): | 151958 |
| CLIENTE (CUSTOMER): | PLESA ANAHUAC Y CIAS., S.A. DE C.V. |
| ORDEN DE COMPRA (PURCHASE ORDER): | 22601 |
| DIRECCION (ADDRESS): | AV. VALLE DE LAS ALAMEDAS # 66-D COL. SAN FCO. CHILPAN TULTITLAN, EDO. DE MEXICO C.P. 54940 |

| ORDEN DE PREPARACION (PREPARATION ORDER) | ORDEN DE TRABAJO (JOB ORDER) | DIAMETRO (SPECIFIED OUTSIDE DIAMETER) | ESPESOR (SPECIFIED WALL THICKNESS) | ESPECIFICACION (SPECIFICATION) | GRADO (PIPE GRADE) | CONDICION DE ENTREGA (DELIVERY CONDITION) | PSL (PSL) | TIPO DE TUBO (TYPE OF PIPE) | PROVEEDOR (SUPPLIER) | FECHA (DATE) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5B-705-2015 | 33678 | 12.750" | 0.225" | API 5L 45 ED./A.S.T.M. | X-42/B/A538 | - | 1 | HFW/ERW | AHMSA | 4/12/15 |

### ENSAYO DE TENSION (TENSILE TEST) — UNIDADES (UNITS) PSI — TAMAÑO (SIZE): 14

| N° DE TUBO / N° DE SERIE / QUALIFICATION (PIPE NUMBER) | NUMERO COLADA (NUMBER) (HEAT) | A | B | C | D | (YS) | (TS) | % E | Y/T |
|---|---|---|---|---|---|---|---|---|---|
| 98 | 152600 | - | 1 | T | 4 | | 74200 | | |
| | | | | | 5 | 56500 | 72100 | 35 | 0.78 |
| 8 | 152598 | - | 1 | T | 4 | | 71900 | | |
| | | | | | 5 | 58200 | 72400 | 33 | 0.80 |
| 121 | 152601 | - | 1 | T | 4 | | 79800 | | |
| | | | | | 5 | 57100 | 73000 | 35 | 0.78 |
| CRITERIO DE ACEPTACION (ACCEPTANCE CRITERIA) * MIN | | - | | | | 42100 | 60200 | 25 | - |
| ** MAX | | - | | | | - | - | - | - |

ENSAYO DOBLEZ GUIADO (GUIDED BEND TEST); ENSAYO DE IMPACTO CHARPY (CHARPY IMPACT TEST); ENSAYO DWT (DWT TEST); ENSAYO DE DUREZA (HARDNESS TEST); TAMAÑO DE GRANO (GRAIN SIZE): -

### ANALISIS QUIMICO (%) CHEMICAL ANALYSIS (%)

| Heat | G | C | Mn | P | S | Si | Al | Cu | Cr | Ni | Mo | Ti | Nb | B | V | N | Als | Ca | Pcm | CE | Nb+V | V+Nb+Ti |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 152600 | H | 0.18 | 0.82 | 0.020 | 0.005 | 0.13 | 0.032 | 0.020 | 0.032 | 0.023 | 0.007 | 0.003 | 0.000 | 0.0004 | 0.004 | - | - | - | - | - | 0.00 | 0.01 |
| | P | 0.18 | 0.82 | 0.020 | 0.005 | 0.13 | 0.031 | 0.020 | 0.032 | 0.023 | 0.007 | 0.003 | 0.000 | 0.0003 | 0.004 | - | - | - | - | 0.31 | 0.00 | 0.01 |
| | P | 0.17 | 0.83 | 0.019 | 0.005 | 0.13 | 0.032 | 0.021 | 0.033 | 0.024 | 0.007 | 0.002 | 0.000 | 0.0003 | 0.004 | - | - | - | - | 0.32 | 0.00 | 0.01 |
| 152598 | H | 0.16 | 0.81 | 0.017 | 0.005 | 0.12 | 0.039 | 0.021 | 0.038 | 0.019 | 0.006 | 0.003 | 0.000 | 0.0001 | 0.002 | - | - | - | - | - | 0.00 | 0.01 |
| | P | 0.16 | 0.81 | 0.017 | 0.005 | 0.12 | 0.039 | 0.021 | 0.036 | 0.019 | 0.006 | 0.003 | 0.000 | 0.0001 | 0.002 | - | - | - | - | 0.21 | 0.00 | 0.01 |
| | P | 0.18 | 0.82 | 0.018 | 0.004 | 0.13 | 0.040 | 0.020 | 0.037 | 0.019 | 0.005 | 0.003 | 0.000 | 0.0001 | 0.002 | - | - | - | - | 0.31 | 0.00 | 0.01 |
| 152601 | H | 0.17 | 0.83 | 0.020 | 0.004 | 0.12 | 0.037 | 0.035 | 0.032 | 0.020 | 0.005 | 0.003 | 0.000 | 0.0003 | 0.002 | - | - | - | - | - | 0.00 | 0.01 |
| | P | 0.17 | 0.83 | 0.020 | 0.004 | 0.13 | 0.037 | 0.035 | 0.032 | 0.020 | 0.005 | 0.003 | 0.000 | 0.0003 | 0.002 | - | - | - | - | 0.32 | 0.00 | 0.01 |
| | P | 0.17 | 0.84 | 0.021 | 0.003 | 0.14 | 0.038 | 0.034 | 0.033 | 0.019 | 0.004 | 0.004 | 0.000 | 0.0003 | 0.003 | - | - | - | - | 0.32 | 0.00 | 0.01 |
| Acceptance MAX | | 0.28 | 1.20 | 0.030 | 0.030 | - | - | 0.400 | 0.400 | 0.400 | 0.150 | - | - | 0.001 | 0.080 | - | - | - | - | - | 0.06 | 0.15 |

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| PRUEBA HIDROSTATICA (HYDROSTATIC TEST) | PRESION (PRESSURE) 1280 Psi; TIEMPO DE PRUEBA (HOLDING TIME) 5 s |
| PRUEBA DE ULTRASONIDO (ULTRASONIC TEST) | ESTANDAR DE REFERENCIA (REFERENCE STANDARD) 29 |
| METODO DE PND EN SOLDADURA (METHOD OF WELD NDE) | SOLDADURA LONGITUDINAL (LONGITUDINAL WELD): RAYOS X (X RAY) (RT) INDICADOR DE CALIDAD DE IMAGEN (IQI) N/A; TIPO Y TAMAÑO (TYPE AND SIZE) |
| | JUNTAS (JOINTERS WELD): RAYOS X TIEMPO REAL (X RAY) (RT) INDICADOR DE CALIDAD DE IMAGEN (IQI) N/A; TIPO Y TAMAÑO (TYPE AND SIZE) N/A |
| TRATAMIENTO TERMICO SOLDADURA (HEAT TREATMENT WELD) | TEMPERATURA (TEMPERATURE) 1800°F MIN |
| PRUEBA DE APLASTAMIENTO (FLATTENING TEST) | 0° OK 90° OK |

**CLAVE (KEY):**

A. %FACTOR DE EXPANSION PARA TUBERIA EXPANDIDA EN FRIO (% EXPANSION FACTOR FOR COLD EXPANDED PIPE)

B. TIPO (TYPE)
1 MUESTRA EN TIRA (STRIP TEST PIECE)
2 APLANADO (FLATTENED)
3 SIN APLANAR (UNFLATTENED)

C. FRECUENCIA DE PRUEBA (FREQUENCY OF TEST)
H COLADA (HEAT)
P PRODUCTO (PRODUCT)
R REMUESTREO (RETESTING)
T UNIDAD DE PRUEBA (TEST UNIT)

CRITERIOS DE ACEPTACION (ACCEPTANCE CRITERIA)
* CUALQUIER COLADA (ANY HEAT)
** PROMEDIO DE LAS COLADAS (ALL HEAT AVERAGE)
*** PROMEDIO MINIMO DE LAS COLADAS (ALL HEAT AVERAGE MIN.)

D. LOCALIZACION Y ORIENTACION (ORIENTATION AND LOCATION) (THE SOURCE)
4 CORDON DE SOLDADURA (SEAM WELD) 1W
5 CUERPO DEL TUBO (PIPE BODY) 1T180
6 CUERPO DEL TUBO (PIPE BODY) 1L90
7 CORDON DE SOLDADURA (SEAM WELD) 3W
8 CUERPO DEL TUBO (PIPE BODY) 3T90
9 CORDON DE SOLDADURA (SEAM WELD) 3 HAZ
10 CUERPO DEL TUBO (PIPE BODY) 2T90
11 2W
12 TRANSVERSAL (TRANSVERSE)
13 LONGITUDINAL (LONGITUDINAL)

E. SIZE (TAMAÑO)
14 1.500" X 0.225"
15 CILINDRICA (ROUND BAR) 0.500"
16 CILINDRICA (ROUND BAR) 0.350"
17 FULL SIZE (COMPLETO)
18 3/4"
19 2/3"
20 1/2"

F. TIPO DE RANURA DWTT (DWTT TYPE OF NOTCH)
21 CHEVRON (CHEVRON)
22 PRENSADA (PRESSED)

G. LOCALIZACION (LOCATION)
23 EXTERIOR (OUTSIDE)
24 INTERIOR (INSIDE)
25 CENTER (CENTRO)

H. ESTANDAR DE REFERENCIA (REFERENCE STANDARD)
26 BARRENO (DRILLED HOLE) 1/16"
27 RANURA RECTANGULAR (RECTANGULAR NOTCH N 5)
28 BARRENO 1.2 mm DIAMETER MIDWALL STANDARDIZATION
29 RANURA RECTANGULAR (RECTANGULAR NOTCH) N 10
30 BARRENO (DRILLED HOLE) 3.2 mm

NOTAS (NOTES):

HACEMOS CONSTAR QUE EL MATERIAL DESCRITO HA SIDO FABRICADO, MUESTREADO, PROBADO E INSPECCIONADO DE ACUERDO CON LA ESPECIFICACION API 5L 45 ED. SD/A.S.T.M. Y QUE LOS RESULTADOS SON COMO APARECEN EN LOS REGISTROS DE LA COMPAÑIA.

WE HEREBY VERIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH API 5L 45 ED./A.S.T.M. AND THAT THESE TEST RESULT, ARE AS THEY APPEAR IN RECORDS OF THE COMPANY.

Ing. Samuel Montoya Laguna
CED. PROF. 6812341
JEFE DE LABORATORIO
(HEAD OF LABORATORY)