

CLIENTE / Customer / Client  
**TUBOS MONTERREY, S.A. DE C.V.**  
**PONIENTE 122 NO. 603**  
**COL. INDUSTRIAL VALLEJO**  
**C.P. 02300 - MEXICO, D.F.**

**CERTIFICADO DE INSPECCION**  
**Works Certificate - Certificat d'Usine**  
 DIN 50049 / 3.1.B.  
 EN 10204 / 3.1.B.



**ULMA**  
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**PRODUCTO** ACCESORIOS  
 Article - Product SU PEDIDO N.º  
 Your Order No. **I-025 (01.09.03)**  
 Votre Cde. N.º

**NORMAS APLICABLES** **ASME B16.11-01**  
 Requirements - Normes applicables

**MATERIAL CORRESPONDIENTE** **ASTMA105N-01**  
 Material Correspondent - Qualité **ASME SA105N**

**MODO DE FUSION (\*)** **NACE MIR-01-75/03**  
 Steel making - Elaboration de l'acier

E = Elec. Y = Oxigeno básico

FECHA: **12/12/2003** No. N.º **91816**  
 Date-Date: No.-N.º Page: **1**

DE of. - de **01/09/2003**  
 Date-Date

Certified acc. PED 97/23/EC  
 by TÜV Rheinland  
 N.º 01 202 EQ 02 7443

**MARCA DEL FABRICANTE**  
 Mark of factory  
 Marque du fabricant



**37551**

**DEPARTAMENTO**  
 Section

**GARANTÍA CALIDAD**

| PARTIDA<br>Item<br>Poste | CANTIDAD<br>Quantity<br>Quantité | DESCRIPCION<br>Description<br>Description | OBSERVACIONES<br>Remarks<br>Observations (*) | COLADA N.º<br>Heat No.<br>N.º Coulee | RESISTENCIA<br>T. Strength<br>Resist Rupt<br>N/mm2 | LIMITE ELAST.<br>Yield Point<br>Limite élastique<br>N/mm2 | ALARGAM.<br>Elongation<br>Allongement<br>Lo, % | ESTIRCON<br>Reduction A<br>Striction % | RESILIENCIA<br>Impact energy<br>Resilience<br>Joules | MEDIA<br>AVERAGE<br>MOTRYME | DUREZA<br>Hardness<br>Dureté<br>HB |
|--------------------------|----------------------------------|---|--|--------------------------------------|--|---|--|--|--|-----------------------------|------------------------------------|
| 2                        | 204                              | CODO90 1,1/2 3000LB NPT A105N             | NE   | 241A3 ✓                              | 520  | 323   | 31,70  | 62,90                                  |  |                             | 150                                |
| 16                       | 400                              | MANGUITO 2 3000LB NPT A105N               | NE   | 160A3                                | 527  | 319   | 32,90  | 65,00                                  |  |                             | 152                                |
| 18                       | 105                              | MANGUITO 2 3000LB NPT A105N               | NE   | 160A3                                | 527  | 319   | 32,90  | 65,00                                  |  |                             | 152                                |
| 23                       | 30                               | BUSSING 3X2 NPT A105N                     | NE   | FCP                                  | 529  | 327   | 31,70  | 55,90                                  |  |                             | 154                                |

**COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE**

| COLADA<br>Heat<br>Coulee<br>No | C %   | Si %  | Mn %  | P %   | S %   | Cr %  | Ni %  | Mo %  | Nb %  | V %   | Cu %  | CEQ % |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 160A3                          | 0.190 | 0.290 | 1.190 | 0.013 | 0.026 | 0.007 | 0.060 | 0.020 | 0.002 | 0.002 | 0.220 | 0.413 |
| 241A3                          | 0.180 | 0.280 | 0.860 | 0.024 | 0.002 | 0.130 | 0.170 | 0.040 | 0.001 | 0.001 | 0.310 | 0.390 |
| FCP                            | 0.200 | 0.200 | 0.990 | 0.012 | 0.022 | 0.080 | 0.050 | 0.000 | 0.000 | 0.003 | 0.190 | 0.398 |

- Las dimensiones y la condición superficial se hallaron satisfactorias
- Dimension and surface condition were found acceptable
- Les dimensions et états de surface sont satisfaisants
- Los materiales citados cumplen las normas aplicables
- Manufacturing requirements are satisfied
- Les normes applicables sont respectées



(\*) OBSERVACIONES: **N\_NORMALIZADO A 900 C Y ENFRIADO EN AIRE EN CALMA**

Remarks  
 Observations