



# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.  
 Telefono 0444.968211 - Fax 0444.963836  
 Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/57  
 Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004), 3.1 / ISO 10474 (2013), 3.1  
 Nach/According to/Selon

Certificato nr. MEST854822 / 2021 /  
 Prüfungs/Tess/Essai

Cliente / Besteller/Purchaser/Client  
**VALBRUNA CANADA LTD**  
 8724 HOGGATE CRESCENT  
 L5T 5Z1 - MILTON, ONT L5T 5Z1 - CA

Stato di fornitura: Hot rolled Polished Annealed  
 Lieferzustand: Peeled  
 Etal de livraison:

Produttore:  
 Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: 109008995 Stock - Canada  
 Bestell: Your order  
 Commande

Tipo di Elaborazione: E+AOD  
 Erhmelungsart: Melting process  
 Mode d'elaboration

Marchi di Fabbrica:  
 Zeichen des Lieferwerkes  
 Trade marks  
 Signes de l'usine productrice



Conferma ordine nr: EI21012066  
 Works/Our Order/Ref.nr.

Qualità: 316/316L  
 Werkstoff/Grade/Nuance

Punzone del Collaudatore:  
 Stempel des Werksachverständigen  
 Inspector's stamp/Pointon de l'assayeur

MR

Avviso di Spedizione: D-BZ21011454  
 Lieferanweisung/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )  
 Markenbezeichnung: Brand / Nuance

Punzonatura: 316/316L  
 Kennzeichnung: Marking  
 Marquage

| SPECIFICHE :                             | Note:  |
|--|--|
| Anforderungen / Requirements / Exigences | Anmerkungen / Notes / Notes  |
| VSI 0, 316/316L A                        |  |
| AISI . 316/316L                          |  |
| AMS 5648 M S31600 A                      |  |
| AMS 5653 J S31603 A                      |  |
| AMS-QQ-S-763 D 316/316L A                |  |
| ASME SA182 2019 S31600/03 A (0)          | (0)Section II Part A 2019 EDITION For products machined directly from bar refer to ASME SA479. |
| ASME SA193 2019 B8M CLASS 1 (1)          | (1)Section II Part A 2019 EDITION  |
| ASME SA276 2019 S31600/03 A (2)          | (2)Section II Part A 2019 EDITION  |
| ASME SA320 2019 B8M CLASS 1 CLASS1 (3)   | (3)Section II Part A 2019 EDITION  |
| ASME SA479 2019 S31600/03 A (4)          | (4)Section II Part A 2019 EDITION  |
| ASTM A182 2021 S31600/03 A (5)           | (5)For products machined directly from bar refer also to ASTM A479.                            |
| ASTM A193 2020 B8M CLASS 1               |  |
| ASTM A262 PR. E 2015 316/316L (6)        | (6)Reapproved 2021   |
| ASTM A276 2017 S31600/03 A               |  |
| ASTM A314 2019 S31600/03                 |  |
| ASTM A320 2018 B8M CLASS 1 CLASS1        |  |
| ASTM A370 2020 .                         |  |
| ASTM A473 2021 S31600/03 (7)             | (7)Chemical analysis only.   |
| ASTM A479 2020 S31600/03 A               |  |
| MIL-S-862 B/1 316/316L                   |  |
| NACE MR0103 2015 S31600/03 A (8)         | (8)ANSI/NACE MR0103/ISO 17945 November 23, 2015  |
| NACE MR0175 2015 S31600/03 A (9)         | (9)ANSI/NACE MR0175/ISO 15156-3, third edition November 23 2015                                |
| QQ-S-763 F 316/316L A                    |  |

Tolleranza: ASTM A484-20B TABLE 7

Tolerance/Allowance/Tolerance

| Pos. nr.                              | Oggetto  | Dimensioni - In                       | Lunghezza - in               | Colata                     | Pezzi                      | Peso - LB                  | Lotto nr.           |
|---------------------------------------|--|---------------------------------------|------------------------------|----------------------------|----------------------------|----------------------------|---------------------|
| Pos. nr.<br>Item nr.<br>No. de partie | Gegenstand<br>Product description<br>Descr. du produit | Abmessungen<br>Dimension<br>Dimension | Length<br>Length<br>Longueur | Schmelze<br>Heat<br>Coulée | Stücke<br>Pieces<br>Pieces | Gewicht<br>Weight<br>Poids | Lose-<br>Lot<br>Lot |
| 0040                                  | Round  | 2,0000                                | 128/ 156                     | 287157                     |                            | 1.898                      | 127014180           |

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

|  |   |   |                  |
|--|---|---|------------------|
| Vicenza, 14/12/2021<br>VCO052 - MEST854822 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina<br>1 di 3 |
|--|---|---|------------------|

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# Acciaierie Valbruna S.p.A.

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Certificato nr. MEST854822 / 2021 /  
 Prüfung/Test/Essai

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 8724 HOLTGATE CRESCENT  
 L5T 5Z1 - MILTON, ONT L5T 5Z1 - CA

Stato di fornitura: Hot rolled Polished Annealed  
 Lieferzustand: Peeled  
 Delivery state: Peeled  
 Etat de livraison: Peeled

Produttore  
 Hersteller/Werks/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr. 109008995 Stock - Canada  
 Bestell: Your order  
 Commande

Tipo di Elaborazione: E+AOD  
 Erbschmelzungsart: E+AOD  
 Melting process: E+AOD  
 Mode d'elaboration: E+AOD

Marchi di Fabbrica:  
 Zeichen des Lieferwerkes  
 Trade marks  
 Sigles de fusine productrice



Conferma ordine nr: EI21012066  
 Werks/Our Order/Ref.nr.

Qualità: 316/316L  
 Werkstoff/Grade/Nuance

Punzone del Collaudatore:  
 Stempel des Werks: zuverstandigen  
 Inspector's stamp/Poinçon de l'assesseur

MR

Avviso di Spedizione: D-BZ21011454  
 Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )  
 Markenbezeichnung: MVAPML ( MAXIVAL )  
 Brand / Nuance

Punzonatura: 316/316L  
 Kennzeichnung: 316/316L  
 Marking: 316/316L  
 Marquage: 316/316L

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüfung auf lieferbarem produkt / Test a l'etat de fourniture / Prueba sobre el material así como entregado

| TEST   | Provetta / Pretestab<br>Specimen/Éprouvette<br>Larg diam. Spess.<br>Bread. Diam. Dicke<br>With diam. Thickness<br>Larg. diam. épess.<br>mm | °F | Posiz.<br>Saggio<br>Position<br>Location<br>Emplacement | Snervamento<br>Streckgrenze<br>Yield Stress<br>Limite élastique<br>Rp 0,2%<br>k.s.i. | Snervamento<br>Streckgrenze<br>Yield Stress<br>Limite élastique | Resistenza<br>Zugfestigkeit<br>Tensile strength<br>Résistance à traction<br>Rm<br>K.S. | Allungamento<br>Bruchdehnung<br>Elongation<br>Allongement<br>E 4d<br>% | Strizione<br>Einschnürung<br>Reduction of area<br>Striction<br>RA<br>% | Resilienza<br>Kerbschlagarbeit<br>Impact Value<br>Resilience | Durezza<br>Härte<br>Hardness<br>Dureté<br>HB |
|--|--|----|---|--|---|--|--|--|--|--|
|  |  |    |   |  |   |  |  |  |  |  |
| Valori richiesti<br>Anforderungen/Required values<br>Valeurs demandées |  |    |   | 30   | -   | 75   | 40   | 50   | -  | 140  |
| A  | 12,5   | 68 | L   | 39   | -   | 84   | 58   | 73   | -  | 184  |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüfung auf lieferbarem produkt / Test a l'etat de fourniture / Prueba sobre el material así como entregado

| TEST                       | min | max |
|----------------------------|-----|-----|
| A Grain size for ASTM E112 |     | 6   |

Mechanical properties according to ASTM A370.

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat<br>Schmelze/Coulee | min -<br>max | 0,030 | 1,00 | 1,25<br>2,00 | 16,50<br>18,00 | 2,00<br>3,00 | 10,00<br>14,00 | 0,020<br>0,040 | 0,020<br>0,030 | 0,000<br>0,000 | -     | - | - | - |
|----------------------------------|--------------|-------|------|--------------|----------------|--------------|----------------|----------------|----------------|----------------|-------|---|---|---|
| 287157                           | C %          | Si %  | Mn % | Cr %         | Mo %           | Cu %         | Ni %           | Co %           | P %            | S %            | N %   | - | - | - |
|                                  | 0,009        | 0,46  | 1,65 | 16,78        | 2,02           | 0,60         | 10,05          | 0,157          | 0,029          | 0,025          | 0,062 | - | - | - |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

Test standard: ASTM A262-Practice E

| Test                    | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result       |
|-------------------------|----------------------------|----------------------|----------------|----------------|----------------|---|--------------|
| Intergranular corrosion | Sensitization              | 15                   | boil           | 180            | 5              | Absence of cracks   | SATISFACTORY |

Produced without class I-II Ozone depleting substances.  
 Solution heat treated free from continuous carbide network.  
 Micro and macro etch test: OK.  
 Reduction ratio = 14,7 : 1  
 Material annealed 1940°F for 1 h/water cooled.  
 Material is DFARS Compliant

Sono state soddisfatte tutte le condizioni richieste  
 Die gestellten Anforderungen sind i. Anlage erfüllt  
 The material has been furnished in accordance with the requirements  
 Le matériau a été trouvé conforme aux exigences

Controllo ant mescolanza con tecnica XRF/OES portatile : OK  
 Verwechslungsprüfung durch XRF/OES Gerät geführt.  
 Antimixing testing performed with XRF/OES portable : CK  
 Contrôle antimélange svr technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze  
 Besichtigung und Ausmessung: ohne Beanstandung  
 Visual inspection and dimensional checks: satisfactory  
 Contrôle visuel et dimensions: satisfaisant

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