



# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.l.  
 Telefono 0444.968211 - Fax 0444.963836  
 Stab.: 39100 BOLZANO (Italia) - Via A. Volta 4/37  
 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. **MEST249606 / 2018 /**  
 Prüfung/Tess/Essai

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

Stato di fornitura: **Forged - Annealed FORGED**  
 Lieferzustand  
 Delivery state  
 Etat de livraison

Produttore:  
 Hersteller/Item/Usine productrice

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

Ordine nr: **802006870 Replacement sto**  
 Bestel /  
 Your order  
 Commande

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

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



Conferma ordine nr: **E118002298**  
 Werks-/Our/Order/Ref. nr.

Qualità: **316/316L**  
 Werkstoff/Grade/Nuance

Punzone del Collaudatore:  
 Stempel des Werksachverständigen  
 Inspector's stamp/Planch de l'essayeur

**MR**

Avviso di Spedizione: **D-VI18014535**  
 Lieferanzeige/Packing list/B.L.

Marca: **APML**  
 Markenbezeichnung  
 Brand / Nuance

Punzonatura: **316/316L**  
 Kennzeichnung  
 Marking  
 Marqueage

| SPECIFICHE :                             | Nota:  |
|--|--|
| Anforderungen / Requirements / Exigences | Aufzeichnungen / Notes / Notes   |
| VSI 0 316/316L A                         |  |
| AIISI 316/316L                           |  |
| AMS 5648 M S31600 A                      |  |
| AMS 5653 H S31603 A                      |  |
| AMS-QQ-S-763 D 316/316L A                |  |
| ASME SA182 2017 S31600/03 A (0)          | (0)Section II Part A 2017 EDITION For products machined directly from bar refer to ASME SA479. |
| ASME SA193 2017 B8M CLASS 1 (1)          | (1)Section II Part A 2017 EDITION  |
| ASME SA276 2017 S31600/03 A (2)          | (2)Section II Part A 2017 EDITION  |
| ASME SA320 2017 B8M CLASS1 (3)           | (3)Section II Part A 2017 EDITION  |
| ASME SA479 2017 S31600/03 A (4)          | (4)Section II Part A 2017 EDITION  |
| ASTM A182 2016 S31600/03 A (5)           | (5)For products machined directly from bar refer also to ASTM A479.                            |
| ASTM A193 2016 B8M CLASS 1               |  |
| ASTM A262 2015 PRACTICE E                |  |
| ASTM A276 2017 S31600/03 A               |  |
| ASTM A314 2015 S31600/03                 |  |
| ASTM A320 2017A B8M CLASS1               |  |
| ASTM A370 2017                           |  |
| ASTM A473 2001 S31600/03 (6)             | (6)Chemical analysis only.   |
| ASTM A479 2018 S31600/03 A               |  |
| MIL-S-862 B/1 316/316L                   |  |
| NACE MR0103 2015 S31600/03 A (7)         | (7)ANSI/NACE MR0103/ISO 17945 November 23, 2015  |
| NACE MR0175 2015 S31600/03 A (8)         | (8)ANSI/NACE MR0175/ISO 15159-3, third edition November 23, 2015                               |
| QQ-S-763 F 316/316L A                    |  |

Tolleranza: ASTM A484-18 TABLE 3

| Pos. nr.                              | Oggetto  | Dimensioni - In                       | Lunghezza - In              | Colata                     | Pezzi                         | Peso - LB                  | Lotto nr.                   |
|---------------------------------------|--|---------------------------------------|-----------------------------|----------------------------|-------------------------------|----------------------------|-----------------------------|
| Pos. nr.<br>Item nr.<br>Nr. de partie | Oggetto<br>Product description<br>Description du produit | Abmessungen<br>Dimension<br>Dimension | Longe<br>Length<br>Longueur | Schmelze<br>Heat<br>Goutte | Stückzahl<br>Pieces<br>Pièces | Gewicht<br>Weight<br>Poids | Lotnr.<br>Lot nr.<br>Lettre |
| 0070                                  | Round  | 8,5000                                | 233/ 233                    | 277051                     | 1                             | 3.867                      | 802510710                   |

P.O.#: **P119789**  
 R#: **R155648**  
 ITEM#: **509378**  
 HEAT#: **277051**  
 BRANCH#: **875**

Provided by: ENCORE METALS DIVISION OF RMCI

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 Bestell  
 Your order  
 Commande

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

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



Conferma ordine nr. E118002298  
 Works/Our Order/Ref. nr.

Qualità: 316/316L  
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Punzone del Collaudatore:  
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Punzonatura: 316/316L  
 Kennzeichnung  
 Marking  
 Marquage

### 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 | Provoita/ Preboita<br>specimen/Éprouvette<br>Larg diam. Spess.<br>Berie Diam. Dicke<br>Wich Diam. Thickness<br>Larg. diam. épais<br>mm | °F | Fesz.<br>Saggio<br>Probes<br>Lancer<br>Éprouvette<br>t | Sneramento<br>Suokpence<br>Yield Stress<br>Limite élastique<br>Rp 0,2% | Sneramento<br>Stoekgrate<br>Yield Stress<br>Limite élastique | Resistenza<br>Zugfestigk.<br>Tensile strength<br>Résistance à l'éclat<br>Rm | Allungamento<br>Bruehstung<br>Élongation<br>Allongement<br>E 4d |    | Strizione<br>Enschürung<br>Réduction d'area<br>Striction<br>RA |   | Resilienza<br>Kerbschlagwert<br>Impact Value<br>Resilience | Durezza<br>Härte<br>Hardness<br>Dureté<br>HB |
|------|--|----|--|--|--|---|---|----|--|---|--|--|
|      | min<br>max   |    |  | 30<br>-  | 75<br>115  | -   | 40<br>58  | -  | 50<br>73   | - | 140<br>223   |  |
| A    | 12,5   | 68 | L  | 39   | 63   | 58  | 73  | 65 |  |   |  |  |

### 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 |     | 4   |

Mechanical properties according to ASTM A370.

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Collato / Heat<br>Schmelze/Coulee | min -<br>max | 1,25<br>2,00 | 16,00<br>18,00 | 2,00<br>3,00 | 10,00<br>14,00 | 0,040<br>0,030 | 0,020<br>0,100 |       |       |       |       |
|-----------------------------------|--------------|--------------|----------------|--------------|----------------|----------------|----------------|-------|-------|-------|-------|
| 277051                            | C %          | Si %         | Mn %           | Cr %         | Mo %           | Cu %           | Ni %           | Co %  | P %   | S %   | N %   |
|                                   | 0,012        | 0,27         | 1,75           | 16,87        | 2,08           | 0,48           | 0,02           | 0,124 | 0,032 | 0,023 | 0,076 |

### 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 = 7,6 : 1  
 Annealing temperature : 1940° F for 4 h/water.  
 Material is DFARS Compliant

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

Controllo antimiscelanza: OK  
 Verwechslungsprüfung: spektralanalytisch durchgeführt  
 Antimixing testing performed: OK  
 Contrôle antimélange fait: r.e.s.

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

Vicenza, 18/05/18

VCC008 - MEST249606

(Mod. MCE2) VCP/180229/1804/1808/1809/1810/1811/1812/1813/1814/1815/1816/1817/1818/1819/1820/1821/1822/1823/1824/1825/1826/1827/1828/1829/1830/1831/1832/1833/1834/1835/1836/1837/1838/1839/1840/1841/1842/1843/1844/1845/1846/1847/1848/1849/1850/1851/1852/1853/1854/1855/1856/1857/1858/1859/1860/1861/1862/1863/1864/1865/1866/1867/1868/1869/1870/1871/1872/1873/1874/1875/1876/1877/1878/1879/1880/1881/1882/1883/1884/1885/1886/1887/1888/1889/1890/1891/1892/1893/1894/1895/1896/1897/1898/1899/1900

Il collaudatore di stabilimento / der Werkssachverständige / Works Inspector / L'agent d'usine

M. RIZZOTTO

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

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



Conferma ordine nr: E118002298  
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Stempel des Werkssachverständigen  
Inspector's stamp/Plaque de l'assesseur

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Lieferanzeige/Packing list/B.L.

Marca: APM L  
Markenbezeichnung  
Brand / Nuance

Punzonatura: 316/316L  
Kennzeichnung  
Marking  
Marquage

Melted and manufactured in Italy No welding or weld repair Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination through Portal System when it leaves the production plant.

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

The Quality Management System Is Certified according Pressure Equipment Directive ("97/23/EC") Annex 1, s. 4.3 and 2014/68/EU by TUEV and LLOYD'S  
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.

Maximal and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.

The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

Provided by: ENCORE METALS DIVISION OF RMCL

Vicenza, 18/05/18

VCC008 - MEST249606

(Mod. MCE2) MEST249606 (MEST249606)

Il collaudatore di stabilimento / der Werkssachverständige / Works inspector / L'agent d'usine

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