



C190277

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

In conformità a: **EN 10204 (2004), 3.1 / ISO 10474 (2013), 3.1**

Certificato nr. **MEST102836 / 2017 /**
 Prüfung/Test/Essai

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

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

Produttore:
 Hersteller/Usine productrice

ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: **705006397 Stock - Canada**
 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: **EI17006261**
 Werks/Our Order/Ref. nr.

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

Punzone del Collaudatore:
 Stempel des Werkstättenverständigen
 Inspector's stamp/Pointon de l'essayeur

MR

Avviso di Spedizione: **D-VI17020796**
 Lieferanzeige/Packing list/B.L.

Marca: **APML**
 Markenbezeichnung
 Brand / Nuance

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

| SPECIFICHE : | Note: |
|--|--|
| Anforderungen / Requirements / Exigences | Aufzeichnungen / Notes / Notes |
| VSI 0 316/316L A | |
| AISI 316/316L | |
| AMS 5648 M S31600 A | |
| AMS 5653 H S31603 A | |
| AMS-QQ-S-763 D 316/316L A | |
| ASME SA182 2015 S31600/03 A (0) | (0)SECTION II PT.A 2015 EDITION For products machined directly from bar refer to ASME SA479. |
| ASME SA193 2015 B8M CLASS1 (1) | (1)SECTION II PT.A 2015 EDITION |
| ASME SA276 2015 S31600/03 A (2) | (2)SECTION II PT.A 2015 EDITION |
| ASME SA320 2015 B8M CLASS1 (3) | (3)SECTION II PT.A 2015 EDITION |
| ASME SA479 2015 S31600/03 A (4) | (4)SECTION II PT.A 2015 EDITION |
| ASTM A182 2016 S31600/03 A (5) | (5)For products machined directly from bar refer also to ASTM A479. |
| ASTM A193 2016 B8M CLASS1 | |
| ASTM A262 2015 PRACTICE E | |
| ASTM A276 2016 S31600/03 A | |
| ASTM A314 2015 S31600/03 | |
| ASTM A320 2015A B8M CLASS1 | |
| ASTM A370 2017 . | |
| ASTM A473 2001 S31600/03 (6) | (6)Chemical analysis only. |
| ASTM A479 2017 S31600/03 A | |
| MIL-S-862 B/1 316/316L | |
| NACE MR0103 2010 S31600/03 A | |
| NACE MR0175 2015 S31600/03 A (7) | (7)ANSI/NACE MR0175/ISO 15156-3, third edition November 23,2015 |
| QQ-S-763 F 316/316L A | |

Tolleranza: ASTM A484-16 TABLE 3

Tolleranza/Allowance/Tolerance

| Pos. nr. Pos. nr. Item nr. Nr. de piece | Oggetto Gegenstand Product description Descript. du produit | Dimensioni - In Abmessungen Dimension Dimension | Lunghezza - In Länge Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pieces | Peso - LB Gewicht Weight Poids | Lotto nr. Laser. Lot nr. Lot nr. |
|--|--|--|---|--------------------------------------|--|---|---|
| 0030 | Round | 11,0000 | 141/ 144 | 273233 | | 7.922 | 630103770 |

Vicenza, **13/07/17**

VCQ005 - MEST102836

(Mod. MCE2)

989F9C2A4C0276549F20F8CA211038483

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

M.RIZZOTTO

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Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.l.
Telefono 0444.968211 - Fax 0444.963838
Stab.: 38100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

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Marchi di Fabbrica:
Zeichen des Lieferwerkes
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MR

Avviso di Spedizione: **D-VI17020796**
Lieferanweisung/Packing list/S.L.

Marca: **APML**
Markenbezeichnung
Brand / Marque

Punzonatura: **316/316L**
Kurzzeichnung
Marking
Marquage

| TEST ALLO STATO DI FORNITURA | | | | | | | | | | | | |
|--|---|-----|---|---|---|---|---|-----------|---|---------|--|--|
| Test on delivery condition / Prüfung auf lieferbarem Produkt / Test a l'état de fourniture / Prueba sobre el material así como entregado | | | | | | | | | | | | |
| TEST | Provette/ Specimen/Éprouvette Long. diam. Spec. Diam. Spec. Circle Width Spec. Thickness Long. diam. Spec. mm | °F | Posiz. Saggio Placement Lecture Disposition | Snervamento Elongation Yield Stress Unité elasticité Rp0,2% t.t.l. | Snervamento Elongation Yield Stress Unité elasticité | Resistenza Tensile strength Rocher strength Rm t.t.l. | Allungamento Elongation Élongation Allongement | | Strizione Elongation Reduction of area Étirage | | Resistenza Kerbschlagarbeit Impact Value Résistance | Durezza Hardness Vickers Dureté HB |
| | | | | | | | E 4d % | E 4d % | RA % | RA % | | |
| Valori richiesti Autoréquis/Requis/Requis Values demandées | | min | | 30 | - | 75 | - | 40 | - | 50 | - | 140 |
| | | max | | | | 115 | | | | | | 223 |
| A | 12,5 | 68 | L | 39 | | 82 | | 63 | | 75 | | 169 |

| TEST ALLO STATO DI FORNITURA | | | |
|--|--------------------------|-----|-----|
| Test on delivery condition / Prüfung auf lieferbarem Produkt / Test a l'état 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 | | | | | | | | | | | | | | |
| Costa Brennstoff/Coûts | Aest max | 0,030 | 1,00 | 1,25 2,00 | 16,50 18,00 | 2,00 3,00 | 1,00 | 10,00 14,00 | 0,040 | 0,020 0,030 | 0,100 | - | - | - |
| | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | |
| 273233 | 0,017 | 0,34 | 1,73 | 16,80 | 2,11 | 0,48 | 10,05 | 0,122 | 0,031 | 0,029 | 0,070 | | | |

| 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 |

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Produced without class I-II Ozone depleting substances.
Solution heat treated free from continuous carbide network.
Micro and macro etch test: OK
Reduction ratio = 4,6 : 1
Annealing temperature: 1940°F for 4,5 h/water.
Material is DFARS Compliant

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

Controllo antimiscelanza: OK
Verwechslungsprüfung: spektroskopisch durchgeführt
Authentic testing performed: OK
Controlle antimelange fait: O.K.

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

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 : 2008, ISO/TS16949 : 2009, AS 9100C

The Quality Management System is Certified acc. 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.

Vicenza, 13/07/17

VCC005 - MEST102836

(Mod. MCE2) VERSIONE 03/07/2016

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

M. RIZZOTTO *[Signature]*

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