



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

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

Certificato nr. **MEST294988 / 2018 /**
 Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Cliant
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/Werke/Usine productrice

ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: 805006980 STOCK
 Bestell
 Your order
 Commande

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

Marchi di Fabbrica:
 Zeichen des Lieferwerkes
 Trade marks
 Signes de fabrique productrice



Conferma ordine nr: EI18005885
 Werkst/Our Order/Ref nr.

Qualità: 316/316L
 Werkstoff/Grade/Nuance

Punzone del Collaudatore:
 Stempel des Werkstschwerständigen
 Inspector's stamp/Ptison de l'essayeur

MR

Avviso di Spedizione: D-VI18022865
 Lieferanzeige/Packing list/VBL

Marca: APML
 Markenbezeichnung
 Brand / Nuance

Punzonatura: 316/316L
 Kennzeichnung
 Marking
 Marquage

| SPECIFICHE: | Nota: |
|--|--|
| 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 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 15156-3, third edition November 23,2015 |
| QQ-S-763 F 316/316L A | |

Tolleranza: ASTM A484-18 TABLE 3

| Pos. nr. | Oggetto | Tolleranza/Allowance/Tolerance | | Lunghezza - in | Colata | Pezzi | Peso - LB | Lotto nr. |
|--------------|----------------------|--------------------------------|-------------|----------------|---------|-----------|-----------|-----------|
| | | Dimensioni - in | Abmessungen | | | | | |
| Pos. nr. | Objekt | Dimension | Abmessung | Label | Schmelz | Stückzahl | Gewicht | Losnr. |
| Id. de poste | Produit de réception | Dimension | Dimension | Length | Heat | Pieces | Weight | Lot n. |
| | Descr. du produit | | | Length | Code | | Poids | |
| 0080 | Round | 13,0000 | | 141/ 141 | 277752 | | 5.454 | 815400550 |

Vicenza, 13/09/18

VCC008 - MEST294988

(Mod. MCE2) WCC008023/2444/000/077-01123-0

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

M.RIZZOTTO

Pagina - 1 di 3

HT# 277752.



Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.l.
 Telefono 0444.888211 - Fax 0444.883836
 Stab.: 38100 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

Certificato nr. MEST294988 / 2018 /
 Prüfung/Test/Essai

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

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

Produttore:
 Hersteller/Arm/Usine productrice

ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: 805006980 STOCK
 Bestell
 Your order
 Commande

Tipo di Elaborazione: E+AOD
 Erzeugniszustand
 Making process
 Mode of elaboration

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



Conferma ordine nr: EI18005885
 Werks/Our Order Ref. nr.

Qualità: 316/316L
 Werkstoff/Grade/Alliance

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

MR

Avviso di Spedizione: D-VI18022865
 Lieferanzzeit/Packing Dts/V.L.

Marca: APML
 Markenbezeichnung
 Brand / Marque

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 | Prova/Pruebe Spezialanforderung Largitud Especial Especial Weld Diam. Thickness Esp. de esp. de mm | OF | Posiz. Segge Position Lieu | Snervamento Yield Stress Limite élastique Rp 0,2% k.s.t. | Snervamento Yield Stress Limite élastique | Resistenza Tensile strength Rm k.s.t. | Allungamento Elongation Allongement | | Strizione Reduction of area Réduction | Resistenza Impact Value Résistance | Durezza Hardness Dureté HB |
|---|--|----|-------------------------------------|--|---|--|---|---------|---|--|-------------------------------------|
| | | | | | | | E Ad % | RA % | | | |
| Valori richiesti Anforderung/Required values Valeur demandées | | | min | 30 | - | 75 | - | 40 | - | 50 | 140 |
| | | | max | | | 115 | | | | | 223 |
| A | 12,5 | 68 | L | 40 | | 82 | | 60 | | 74 | 173 |

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

| Code | Heat | min - max | 1,25 | 16,50 | 2,00 | 10,00 | 10,00 | 0,040 | 0,020 | 0,100 | - | - | - | - |
|---------------|-------|--------------|------|-------|------|-------|-------|-------|-------|-------|-------|---|---|---|
| Schmelze/Code | | 0,030 | 2,00 | 18,00 | 1,00 | 16,00 | 16,00 | | 0,030 | | | | | |
| | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | |
| 277752 | 0,019 | 0,38 | 1,70 | 16,88 | 2,03 | 0,36 | 10,04 | 0,149 | 0,031 | 0,025 | 0,089 | | | |

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.
 Annealing temperature : 1940° F for 5 h/water.
 Micro and macro etch test : OK
 Reduction ratio = 4,7 : 1
 Material is DFARS Compliant

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

Controllo antimiscelanza: OK
 Verwechslungsprüfung: spezialanalytisch durchgeführt
 Antimixing testing performed: OK
 Contrôle antimélange fait: r.a.s.

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

Vicenza, 13/09/18

VCC008 - MEST284688

(Mod. MCE2) 04/09/2015 14:04:00 07/07/2015 10

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

M.RIZZOTTO *M. Rizzotto*

Pagina - 2 di 3



Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.l.
 Telefono 0444.888211 - Fax 0444.883836
 Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
 Telefono 0471.824111 - Fax 0471.824497

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

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

Certificato nr. **MEST294988 / 2018 /**

Nach/According to/Selon

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**
 Lieferzustand
 Delivery state
 Etat de livraison

Produttore:
 Hersteller/Hersteller/Usine productrice

ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: **805006980 STOCK**
 Bestell
 Your order
 Commande

Tipo di Elaborazione: **E+AOD**
 Erhitzungsprozess
 Heating process
 Mode d'élaboration

Marchi di Fabbrica:
 Zeichen des Lieferwerkes
 Trade marks
 Signes de fabrique productrice



Conferma ordine nr: **EI18005885**
 Werk/Our Order/Ref nr.

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

Punzone del Collaudatore:
 Stempel des Werksschwerstündigen
 Inspector's stamp/Plombon de l'essayeur

MR

Avviso di Spedizione: **D-VI18022865**
 Lieferanzeige/Packing list/B.L.

Marca: **APML**
 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 acc. Pressure Equipment Directive [97/23/EC] Annex 1, s., 4.3 and 2014/68/EU by TÜEV 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, **13/09/18**

VCC008 - MEST294988

(Mod. MCE2) www.valbruna.com

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

M. RIZZOTTO

Pagina - 3 di 3