



Acciaierie Valbruna S.p.A.

38100 VICENZA (Italia) - Vialo della scienza, 25 z.l.
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CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

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

Certificato nr. **MEST221104 / 2018 /**
 Prüfung/Test/Essai

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

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

Produttore:
 Hersteller/Usine productrice

ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: **802006872 STOCK REPLACEMENT**
 Bestell
 Your order
 Commande

Tipo di Elaborazione: **E+AOD**
 Erhebungsart
 Making process
 Mode d'elaboration

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



Conferma ordine nr: **EI18002458**
 Werk/Our Order/Ref. nr.

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

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

MR

Avviso di Spedizione: **D-VI18008372**
 Lieferanweisung/Packing list/B.L.

Marca: **APML**
 Markenbezeichnung
 Brand / Nuance

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

SPECIFICHE:

Anforderungen / Requirements / Exigences

Nota:

Auzeichnungen / Notes / Notes

- VSI D 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)**
- ASME SA193 2015 B8M CLASS 1 (1)**
- ASME SA276 2015 S31600/03 A (2)**
- ASME SA320 2015 B8M CLASS1 (3)**
- ASME SA479 2015 S31600/03 A (4)**
- ASTM A182 2015 S31600/03 A (5)**
- ASTM A193 2015 B8M CLASS 1**
- ASTM A262 2015 PRACTICE E**
- ASTM A276 2015 S31600/03 A**
- ASTM A314 2015 S31600/03**
- ASTM A320 2017A B8M CLASS1**
- ASTM A370 2017**
- ASTM A473 2001 S31600/03 (6)**
- ASTM A479 2017 S31600/03 A**
- MIL-S-862 B/1 316/316L**
- NACE MR0103 2015 S31600/03 A (7)**
- NACE MR0175 2015 S31600/03 A (8)**
- QQ-S-763 F 316/316L A**

- (0)SECTION II PT.A 2015 EDITION For products machined directly from bar refer to ASME SA479.
- (1)SECTION II PT.A 2015 EDITION
- (2)SECTION II PT.A 2015 EDITION
- (3)SECTION II PT.A 2015 EDITION
- (4)SECTION II PT.A 2015 EDITION
- (5)For products machined directly from bar refer also to ASTM A479.
- (6)Chemical analysis only.
- (7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
- (8)ANSI/NACE MR0175/ISO 15156-3, third edition November 23,2015

A110729
509382
Load # 50648

Tolleranza: ASTM A484-18 TABLE 3

| Pos. nr. Pos. nr. Item nr. Nr. de pozitie | Oggetto Object Product description Description de produit | Tolleranza/Allowance/Tolerance | | Lunghezza - In Länge Length Longueur | Colata Schmelze Cast Coulée | Pezzi Stücke Pieces Pièces | Peso - LB Gewicht Weight Poids | Lotto nr. Lose Lot nr. Lotus |
|--|--|--|--|---|--------------------------------------|-------------------------------------|---|---------------------------------------|
| | | Dimensioni - In Abmessungen Dimensions Dimensions | | | | | | |
| 0110 | Round | 11,0000 | | 132/ 132 | 275168 | | 3.640 | 713905951 |

Vicenza, 20/03/18

VCC008 - MEST221104

(Mod. MCE2) NON UTILIZZARE IN CASO DI DUBBIO

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

M. RIZZOTTI

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ANS



Acciaierie Valbruna S.p.A.

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

In conformità a: **EN 10204 (2004), 3.1 / ISO 10474 (2013), 3.1** Certificato nr. **MEST221104 / 2018 /**
Nach/According to/Belon Füfung/Exam/Exam

| | | |
|---|--|--|
| Cliente / Besteller/Purchaser/Cliant VALBRUNA CANADA LTD 6724 HOLTGATE CRESCENT L5T 5Z1 - MILTON, ONT L8T 5Z1 - CA | Stato di fornitura: Forged - Annealed FORGED <small>Lieferzustand Delivery state Etat de livraison</small> | Produttore: Hersteller/Hersteller ACCIAIERIE VALBRUNA S.P.A. |
| Ordine nr: 802006872 STOCK REPLACEME <small>Bestell Your order Commande</small> | Tipo di Elaborazione: E+AOD <small>Ergebniszustand Melting process Mode d'elaboration</small> | Marchi di Fabbrica: Zeichen des Lieferanten Trade marks Signes de l'usine productrice |
| Conferma ordine nr: EI18002458 <small>Werkauf Order/Bestellnr.</small> | Qualità: 316/316L <small>Werkstoff/Grade/Qualität</small> | Punzone del Collaudatore: Stempel des Werkstoffverständigen Inspector's stamp/Plaque de l'essayeur |
| Avviso di Spedizione: D-VI18008372 <small>Lieferanweisung/Packing list/V.L.</small> | Marca: APML <small>Markenbezeichnung Brand/Mark</small> | Punzonatura: 316/316L <small>Kenzeichnung Marking Marquage</small> |



| TEST ALLO STATO DI FORNITURA | | | | | | | | | | | |
|--|--|-----|---------------------------------|---|--|---|--|----|---|---|--|
| Test on delivery condition / Prüfung auf lieferbarem Produkt / Test à l'état de fourniture / Prueba sobre el material así como entregado | | | | | | | | | | | |
| TEST | Proveita/ Previa Spalten/Spalten Long. diam. Spalt. Ø dia. Diam. Dia. Wid. diam. Durchm. Long. diam. ø dia. mm | F | Posiz. Seggio Anlage Lage | Snervamento Dehnung Yield Stress Limite élastic Rp 0,2% kN/mm² | Snervamento Dehnung Yield Stress Limite élastic kN/mm² | Resistenza Zugfestigkeit Tensile strength Resistencia a tracción Rm kN/mm² | Allungamento Dehnung Elongation Allongement | | Strizione Einschnürung Reduction of Area Striction RA | Resilienza Kerbschlagenergie Impact Value Resilience RA | Durezza Härte Hardness Dureza HB |
| | | | | | | | E 4d | % | | | |
| Vakni richieste <small>Anforderung/Waagenwert Voraussetzung</small> | | min | | 30 | - | 75 | - | 40 | - | 50 | 140 |
| | | max | | | | 115 | | | | | 223 |
| A | 12,5 | 68 | L | 39 | | 82 | | 62 | | 74 | 169 |

| TEST ALLO STATO DI FORNITURA | | | |
|--|-----|-----|---|
| Test on delivery condition / Prüfung auf lieferbarem Produkt / Test à 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 | | | | | | | | | | | | |
| Colata Heat Schmelze/Cast | mm - | 1,25 | 16,50 | 2,00 | 10,00 | 14,00 | 0,040 | 0,020 | 0,100 | | | |
| | max. 0,030 | 1,00 | 18,00 | 3,00 | 14,00 | 14,00 | 0,040 | 0,030 | 0,100 | | | |
| | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | |
| 275168 | 0,016 | 0,40 | 1,37 | 16,81 | 2,03 | 0,62 | 10,06 | 0,128 | 0,028 | 0,030 | 0,081 | |

| 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 | 6 | 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 = 4,6 : 1
 Annealing temperature : 1940° F for 5 h/water.
 Material is DFARS Compliant

| | | |
|---|--|---|
| Sono state soddisfatte tutte le condizioni richieste <small>Die gestellten Anforderungen sind erfüllt The material has been furnished in accordance with the requirements Le material a été livré conforme aux exigences</small> | Controllo antimiscelazione: OK <small>Verwechslungsprüfung: spektroskopisch durchgeführt Antimixing testing performed: OK Contrôle antimélange fait: O.K.</small> | Controllo visivo e dimensionale: soddisfa le esigenze <small>Beichtigung und Abmessung: ohne Beanstandung Visual inspection and dimensional check satisfactory Contrôle visuel et dimensionnel: satisfaisant</small> |
|---|--|---|



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Produttore:
 Hersteller/Hersteller

ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: 802006872 STOCK REPLACEME
 Bestell
 Your order
 Commande

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

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



Conferma ordine nr: EI18002468
 Werk/Our Order/Refer.

Qualità: 316/316L
 Werkstoff/Grade/Usance

Punzone del Collaudatore:
 Stempel des Werkstoffverständigen
 Inspector's stamp/Peinon de l'essayeur

MR

Avviso di Spedizione: D-VI18008372
 Lieferanzeige/Warning letter

Marca: APLM
 Markenbezeichnung
 Brand / Marque

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 : 2008, IATF 16949 : 2016, 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, 20/03/18

VQC006 - MEST221104

(Mod. VCB2) INSPECTION CERTIFICATE

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

M. RIZZOTTI

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