McMASTER-CARR®

# Certificate

330-995-5500
330-995-9600 (fax)
cle.sales@mcmaster.com

| Purchase Order | Order Date | Placed By | McMaster-Carr Number | Number of Certificates |
|---|---|---|---|---|
| P1449239 | 4/13/2022 | Jane Beattey | 7481364-01 | 1 |

| Line | | Product | Ordered | Status | Certificate |
|---|---|---|---|---|---|
| 1 | 9210K42 | Easy-to-Machine 304 Stainless Steel Rod, 3/16" Diameter, 6 Feet Long | 1 each | 1 each delivers April 14 | 139–8048 |

**Your order is subject only to our terms and conditions, available at www.mcmaster.com or from our Sales Department.**

**CERTIFICATE OF TESTS** **ABNAHMEPRUEFZEUGNIS** **CERTIFICAT DE CONTROLE**

CERT SERIAL# 001202184

CARPENTER
Carpenter Technology Corporation
101 West Bern Street, Reading, Pa. 19601
Tel: (610) 208-2000 (800) 338-4592

- THE RECORDING OF FALSE, FICTICIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHED AS A FELONY UNDER FEDERAL STATUTES INCLUDING FEDERAL LAW, TITLE 18, CHAPTER 47.
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04/30/20
CUSTOMER / BESTELLER / CLIENT

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F & R CENTERLESS INCORPORATED

138 ROUTE 513
FRENCHTOWN NJ 08825

ALN

| CUSTOMER ORDER NO./BESTELL-NR./N° DE COMMANDE | CARPENTER NO./WERKS-NR./N° DE REFERENCE INTERNE | DATE/DATUM/DATE | WEIGHT/GEWICHT/POIDS |
|---|---|---|---|
| 11192019-01 LINE 3 | W54398 | 04/30/20 | 1766.000 |

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE : 756162

PRODUCT DESCRIPTION: PROJECT 70+ TYPE 304/304L STAINLESS ANL COLD WORKED GROUND
PART NUMBER: 30470187R6

SPECIFICATION: AMS 5639 REV J (01/ /17)
AMS 5647 REV K (01/ /17)
AMS-QQ-S-763 REV D STABILIZED (03/ /15)
QQ-S-763F (06/27/96)
ASTM A276/A276M CONDITION A REV 17
ASTM-F899-19

SIZE 0.192500 IN.( 4.89 MM) RD BAR

HEAT CHEMISTRY(WT%): (TEST METHOD IS SHOWN IN PARENTHESIS)

| C (COM) | MN(XRF) | SI(XRF) | P (XRF) | S (COM) | CR(XRF) |
|---|---|---|---|---|---|
| 0.018 | 1.74 | 0.57 | 0.021 | 0.023 | 18.34 |

| NI(XRF) | MO(XRF) | CU(XRF) | N (FUS) |
|---|---|---|---|
| 10.24 | 0.37 | 0.82 | 0.02 |

COUNTRY OF ORIGIN FOR MELT: USA

INTERGRANULAR CORROSION TESTED TO ASTM-A262, PRACTICE E - ACCEPTABLE.

ANNEALED MICROSTRUCTURE FREE FROM CONTINUOUS GRAIN BOUNDARY CARBIDE PRECIPITATION (NETWORK).

MATERIAL SUPPLIED MEETS THE TECHNICAL REQUIREMENTS OF THE SPECIFICATION(S) NOTED ON THIS ORDER.

THIS MATERIAL CONFORMS TO THE TECHNICAL REQUIREMENTS OF THE AMS SPECIFICATION REFERENCED ABOVE.

INTERGRANULAR CORROSION TESTED TO ASTM-A262, PRACTICE E (COPPER SULFATE TEST)- ACCEPTABLE

THIS HEAT MELTED BY THE ELECTRIC ARC/AOD PROCESSES

CONTINUED ON NEXT PAGE

FORM F2-365

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HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE : 756162

HARDNESS AS SHIPPED 248HBW ( 99HRBW) (MIDRADIUS)

| | L |
|---|---|
| (T)RANSVERSE (L)ONGITUDINAL | |
| YIELD STRENGTH, (0.20 %) KSI(MPA) | 77.0( 531) |
| TENSILE STRENGTH, KSI(MPA) | 100.0( 689) |
| ELONGATION IN .80", % | 40.0 |
| REDUCTION OF AREA, % | 74.0 |

CONTINUED ON NEXT PAGE

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MATERIAL HAS BEEN MELTED AND MANUFACTURED IN THE USA WHICH IS A QUALIFYING COUNTRY TO DFARS REQUIREMENTS 252.225-7014 WITH ALTERNATE 1 FOR QUALIFYING COUNTRY 225.872.1, SUPERSEDED BY DFARS REQUIREMENTS DFARS 252.225-7008 AND 252.225-7009.

UNLESS OTHERWISE NOTED, ALL TESTING WAS PERFORMED AT READING OR THE FOLLOWING SATELLITE LOCATIONS. TEST BY LOCATION CAN BE PROVIDED UPON REQUEST.

ADDRESS OF TESTING LOCATIONS:

| | |
|---|---|
| READING - 101 WEST BERN ST, | READING, PA 19601 |
| SHALMET - 116 PINEDALE INDUSTRIAL RD, | ORWIGSBURG, PA 17961 |
| ATHENS - 22110 THOMAS L HAMMONDS RD, | TANNER, AL 35671 |
| HARTSVILLE - 205 TALLEY METALS LANE, | MCBEE, SC 29101 |

UNLESS OTHERWISE STATED, THE TEST WERE PERFORMED TO THE LATEST REVISION OF THE STANDARDS LISTED BELOW: 1) BEND TEST - ASTM E290, 2) CHARPY IMPACT - ASTM E23, 3)COEFFICIENT OF LINEAR THERMAL EXPANSION - ASTM E228, 4)FRACTURE TOUGHNESS - ASTM E399, 5) BRINELL HARDNESS - ASTM E10, 6)ROCKWELL HARDNESS-ASTM E18, 7)MICRO VICKERS HARDNESS-ASTM E92, 8)KNOOP HARDNESS-ASTM E92, 9)MACRO VICKERS HARDNESS-ASTM E92, 10)STRESS RUPTURE/CREEP RUPTURE-ASTM E139, 11)STRESS RUPTURE(COMBINATION)-ASTM E292, 12)ROOM TEMPERATURE TENSILE-ASTM E8, 13)ELEVATED ROOM TEMPERATURE TENSILE-ASTM E21, 14)DECARBURIZATION-ASTM E1077 15)DELTA FERRITE AMS 2315, 16)GRAIN SIZE-ASTM E112, 17)INCLUSION CONTENT/MICROCLEANLINESS-ASTM E45, 18) INTERGRANULAR ATTACH - ASTM A262, 19)INTERGRANULAR CORROSION-ASTM A262, 20)MACRO ETCH&TESTING - ASTM A604/E381, 21)PITTING CORROSION - ASTM A923, 22)CREVICE CORROSION-ASTM G48, 23) HARDNESS CONVERSIONS - ASTM E140, 24)XRF-ASTM E572/E1085/E2465, 25) OES - ASTM E415/E1086, 26)COM - ASTM E1019, 27)FUS - ASTM E1019, 28)MS - CARPENTER METHODS 206.8500/206.8530.
THIS ORDER WAS MANUFACTURED IN ACCORDANCE WITH CARPENTER SPECIALTY ALLOYS OPERATIONS QUALITY PROGRAM MANUAL, REVISION 37 DATED 07/31/2019.

CARPENTER'S QUALITY MANAGEMENT SYSTEM WAS REGISTERED TO ISO 9001, AS9100, AND AS9120. THIS CERTIFICATION OF TEST IS TYPE 3.1 PREPARED IN ACCORDANCE WITH EN 10204 (DIN 50049). WE HEREBY CERTIFY THAT THE ABOVE TEST DATA ARE IN ACCORDANCE WITH THE PURCHASE ORDER AND SPECIFICATION REQUIREMENTS, AS DOCUMENTED IN THIS CERTIFICATE OF TESTS.

TEST METHODS ARE PER THE ASTM STANDARDS ON FILE AND IN EFFECT AT TIME OF ORDER ACCEPTANCE, STANDARD PRACTICES, OR AS AGREED UPON BETWEEN CARPENTER & CUSTOMER.

CONTINUED ON NEXT PAGE

FORM F2-366

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DECISION RULE: UNLESS OTHERWISE SPECIFIED IN A CUSTOMER/INDUSTRY SPECIFICATION, CARPENTER TECHNOLOGY CORPORATION WILL DETERMINE ACCEPTABILITY OF ANY TEST RESULT BY COMPARISON OF THE RESULT WITH THE SPECIFICATION LIMITS, WITHOUT ANY ADDITIONAL CONSIDERATION OF THE MEASUREMENT UNCERTAINTY. WHEN REQUESTED, CARPENTER TECHNOLOGY CORPORATION WILL PROVIDE UNCERTAINTY BUDGETS FOR ANY TEST RESULT THAT IS NOT ADDRESSED BY THE INDUSTRY STANDARD.

JAZMIN RODRIGUEZ
ANALYST I - QUALITY SPECIFICATIONS
CARPENTER TECHNOLOGY CORPORATION

FORM F2-366

Jazmin Rodriguez

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