



R & M Forge & Fittings

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www.rmforge.com

### MATERIAL TEST REPORT

Date: 11/11/2020

PO# 2020-1179	Line Item: 1	R&M S/O#: 44782
DESCRIPTION: FORGED TO FINISH 20.375" OD X 15.25" ID X 4.75" THK		
TAG: JOB# 1584		
HEAT NUMBER: S8130		QTY. Shipped: 1 PC.
Spec: ASME SA182 F316/316L & PER NACE MR0175		Mill: ELLWOOD (USA)

	C	MN	P	S	SI	NI	CR	MO	CU	V	CB/NB
LADLE	.016	1.51	.028	.026	.48	10.51	17.39	2.28			
PRODUCT											
	N	AL	CE	FE	TI	W	SB	SN	AS	CB+TA	J-FACTOR
LADLE	.0804										
PRODUCT											

Mechanical Properties	
YIELD (PSI) 0.2% OFFSET	40,000
TENSILE (PSI)	79,000
ELONG. (%) 2"	59.0
R/A (%)	77.0
HARDNESS	145
CVN (FT/LBS) AVG.	
LAT. EXP.	
SHEAR (%)	
CVN TEMP.	

Heat Treatment
SOLUTION ANNEALED @ 1950F FOR 4.5 HOURS / WATER QUENCHED

Requirements & Other Results
EF LR VD
PER EN 10204 3.1
MELTED AND MANUFACTURED IN USA

**COMMENTS:**

THIS PRODUCT HAS NOT COME IN CONTACT WITH MERCURY OR MERCURY COMPOUNDS. NO WELDING PERFORMED.

**CERTIFICATION OF CONFORMANCE**

THIS IS TO CERTIFY THAT THE ITEMS DESCRIBED ON THIS DOCUMENT ARE IN FULL CONFORMANCE WITH ALL REQUIREMENTS OF YOUR PURCHASE ORDER AND MATERIAL SPECIFICATIONS.

We hereby certify that all test results and process information contained herein are correct and true as contained in the records of the company.

This 11th day of November 2020

Janela Lian Tan/Quality Assurance

INS

**CERTIFIED TEST REPORT**

Date: 10/9/20

Report of Tests of: (8), 8" RD Billets - Grade 316/316L Mult(s)

Customer's Order: WU-2546-20

Date of Order: 10/8/20

Our Shop Order: H000255502

Specification: SA182 316/316L

**CHEMICAL ANALYSIS**

Heat #	C	Mn	P	S	Si	Ni	Cr	Mo	V	Cu	Al	B	Nb	N
s8130	.016	1.51	.028	.026	.48	10.51	17.39	2.28	.178	.32	.006	.0026	.018	.0804

The material was melted using the electric furnace-ladle refined-vacuum oxygen decarburization-vacuum degassed process and was subsequently bottom poured.

The material was melted and produced in the USA, in accordance with the ENS Quality Manual REV. 4 dtd. 10/10/18 which meets the intent of the latest revisions of AS9100D, ISO 9001:2015, ISO 10012-1, MIL-I-45208, NCA-3800, and 10-CFR-50 App. B for quality assurance, inspection and calibration systems.

Reduction Ratio: 6.68:1

Material forged to 8" RD Billet from 20"x20" ingot.

This material meets the chemistry requirements of ASME BPVC.II.A-2019 SA182/SA182M for grades S31600 (F316) and S31603 (F316L).

I certify that the reported results and statements of the certificate represent the actual attributes of the material furnished and are in full compliance with all purchase order/ specification requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punishable as a felony under Federal Statutes. During the manufacturing process, tests, and inspections, the material did not come in direct contact with mercury or any of its compounds nor with any mercury containing device employing a single boundary of containment. No welding or weld repair was performed on this material. The material was produced free of radioactive elements.

Judith G. Stevens  
Manager of Quality Assurance