



R & M Forge & Fittings
6455 Wesco Way
Houston, TX 77041

MATERIAL TEST REPORT

(713) 896 - 4081 (713) 896 - 6206
www.rmforge.com

Shipped to:

Date: 04/21/2021

Customer:	PO# 2021-1243	Line Item: 1	R&M S/O#: 45021
	DESCRIPTION: ROUGH MACHINED 1/4" ALLOWANCE & DRILLED 2" ID THRU CENTER ±0.5" 34" OD X 6.50" THK		
	TAG: JOB# 1628		
	HEAT NUMBER: S8056	QTY. Shipped: 1 PC.	
Spec: ASTM A182 F316/316L	2020 EDITION / LATEST ADDENDA		Mill: ELLWOOD (USA)

	C	MN	P	S	SI	NI	CR	MO	CU	V	CB/NB
LADLE	.019	1.58	.028	.003	.34	10.69	17.66	2.05			
PRODUCT											
	N	AL	CE	FE	TI	W	SB	SN	AS	CB+TA	J-FACTOR
LADLE	.0853										
PRODUCT											

Mechanical Properties		Heat Treatment		Requirements & Other Results	
YIELD (PSI)	38,200	SOLUTION ANNEALED @ 1950-2000F FOR 4.75 HOURS / WATER QUENCHED		EF LR VD FULLY KILLED PER EN 10204 3.1 PER NACE MR0175	
0.2% OFFSET					
TENSILE (PSI)	83,000				
ELONG. (%) 2"	58.0				
R/A (%)	79.0				
HARDNESS	131				
CVN (FT/LBS)					
AVG.					
LAT. EXP.					
SHEAR (%)					
CVN TEMP.					

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 21st day of April 2021


Janella Lian Tan/Quality Assurance

ANS

CERTIFIED TEST REPORT

Date: **3/26/21**

Report of Tests of: **(3), 20" RD - Grade ASTM A182 316/316L Billets(s)**

For Company:

Customer's Order: **10893-1**

Date of Order: **6/2/20**

Our Shop Order: **H000254743**

Specification: **ASTM A182 316/316L**

CHEMICAL ANALYSIS

Heat #	C	Mn	P	S	Si	Ni	Cr	Mo	V	Cu	Al	N		
S8056	.019	1.58	.028	.003	.34	10.69	17.66	2.05	.054	.33	.006	.0853		

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

This material was fully killed.

CTR is in compliance with EN 10204 3.1.

Meets the intent of ROHS, REACH CONFLICT FREE MINERALS SEC Legislation.

Material manufactured in accordance with PED 2014/68/EU Annex I, Paragraph 4.3

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.

Material forged to 20" RD Billet from 34"x47" ingot.

The material meets the chemistry requirements of ASTM A182/A182M-20 and ASME SA182 (2019) for grades UNS S31600 (316) & UNS S31603 (316L)

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

Company:

Heat: **S8056**

Order: **10893-1**

CERTIFIED TEST REPORT REVISION LOG

Date	Approved By	Description
3/17/2021	JStevens	Statements: Removed [This material meets the chemistry requirements of ASTM A182/A182M-20 for UNS S31600 (316) and S31603 (316L).]
3/17/2021	JStevens	Statements: Added [The material meets the chemistry requirements of ASTM A182/A182M-19 and ASME SA182 (2019) for grades UNS S31600 (316) & UNS S31603 (316L)]
3/26/2021	JStevens	Statements: Removed [The material meets the chemistry requirements of ASTM A182/A182M-19 and ASME SA182 (2019) for grades UNS S31600 (316) & UNS S31603 (316L)]
3/26/2021	JStevens	Statements: Added [CTR is in compliance with EN 10204 3.1.]
3/26/2021	JStevens	Statements: Added [Material manufactured in accordance with PED 2014/68/EU Annex I, Paragraph 4.3]
3/26/2021	JStevens	Statements: Added [The material meets the chemistry requirements of ASTM A182/A182M-20 and ASME SA182 (2019) for grades UNS S31600 (316) & UNS S31603 (316L)]