



SN 6293 36 FOE ID34.449

R & M Forge & Fittings

6455 Wesco Way

Houston, TX 77041

(713) 896 - 4081 (713) 896 - 6206

www.rmforge.com

MATERIAL TEST REPORT

Shipped to:

Date: 10/31/2022

Customer:	PO# 2022-1440	Line Item: 1	R&M S/O#: 45859
DESCRIPTION: MACHINED COMPLETE PER DWG +1/4", -0, 250 RMS 40.25" OD X 5.20" THK			
TAG: JOB# 220922			
HEAT NUMBER: S9463		QTY. Shipped: 2 PCS.	
Spec: ASTM A182 F316/316L		2021 EDITION / ADDENDA	
Mill: ELLWOOD (USA)			

	C	MN	P	S	SI	NI	CR	MO	CU	V	CB/NB
LADLE PRODUCT	.017	1.41	.028	.009	.29	10.49	16.59	2.06	.32	.048	
	N	AL	CE	FE	TI	W	SB	SN	AS	CB+TA	J-FACTOR
LADLE PRODUCT	.0837	.004									

Mechanical Properties		Heat Treatment		Requirements & Other Results	
YIELD (PSI)	36,300	SOLUTION ANNEALED @ 1850F FOR 2.5 HOURS / HOLD		EF LR VD	
0.2% OFFSET		SOLUTION ANNEALED @ 1900F FOR 0.5 HOUR / RAMP		FULLY KILLED	
TENSILE (PSI)	80,400	SOLUTION ANNEALED @ 1900F FOR 1 HOUR / HOLD		PER EN 10204 3.1	
ELONG. (%) 2"	60.0	SOLUTION ANNEALED / WATER QUENCHED TP BELOW 500F		PER NACE MR0175	
R/A (%)	82.0				
HARDNESS	179 BHN				
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 31ST day of October 2022

Zachery Atkinson / Quality Assurance

Provided by CPA

www.flowconditioner.com,info@cpacl.ca

ELLWOOD NATIONAL STEEL

3 FRONT STREET, IRVINE, PA 16329



(814) 563-7522
Telefax (814) 563-6330

CERTIFIED TEST REPORT

Date: 7/13/22

Report of Tests of: (1), 24" RD - Grade ASTM A182 316/316 Billet Mult(s)

For Company:

Customer's Order: 14629-1

Date of Order: 1/31/22

Our Shop Order: H000268245

Specification: MPS-1800 REV. NEW

CHEMICAL ANALYSIS

Heat #	C	Mn	P	S	Si	Ni	Cr	Mo	V	Cu	Al	N
S9463	.017	1.41	.028	.009	.29	10.49	16.59	2.06	.048	.32	.004	.0837

Material Certified: S9463-02-B1

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

The material was fully killed.

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

CTR is in compliance with EN 10204 3.1.

Reduction Ratio: 3.69:1

This material was melted and produced in the USA, in accordance with the ENS QA Manual Rev. 5 dated 05/03/2021 which meets the intent of the latest revisions of ISO 10012-1, MIL-I-45208, NCA-3800 and 10CFR50 Appendix B for quality assurance, inspection and calibration systems. ENS QMS is certified to AS9100D and ISO 9001:2015.

Material forged to 24" RD billet from a 40"x53" ingot.

This material meets the chemistry requirements of ASTM A182/A182M-21, ASTM A240-20, ASTM A473-21, and ASTM A479-20 for UNS S31600 (316) and S31603 (316L).

Material capable of MPS-1800 rev NEW

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. Note: The recording of false, fictitious or fraudulent statements or entries on this document may be punishable as a felony under Federal Statute. 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