



R & M Forge & Fittings

6455 Wesco Way

Houston, TX 77041

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www.rmforge.com

### MATERIAL TEST REPORT

Date: 11/18/2020

PO# 2020-1174	Line Item: 1	R&M S/O#: 44774
DESCRIPTION: ROUGH MACHINED 1/4" ALLOWANCE - 250 RMS 21.0" OD X 6.0" THK		
TAG: JOB# 1579		
HEAT NUMBER: S7644		QTY. Shipped: 2 PCS.
Spec: ASME SA182 F51 (S31803) & PER NACE MR0175		Mill: ELLWOOD (USA)

	C	MN	P	S	SI	NI	CR	MO	CU	V	CB/NB
LADLE	.023	1.49	.024	<.001	.46	6.02	22.38	3.25			
PRODUCT											
	N	AL	CE	FE	TI	W	SB	SN	AS	CB+TA	J-FACTOR
LADLE	.1920										
PRODUCT											

Mechanical Properties	
YIELD (PSI) 0.2% OFFSET	68,200
TENSILE (PSI)	103,700
ELONG. (%) 2"	44.0
R/A (%)	79.0
HARDNESS	248
CVN (FT/LBS)	55-57-58
AVG.	56.7
LAT. EXP.	.038-.038-.039
SHEAR (%)	50-50-50
CVN TEMP.	-40F

Heat Treatment
SOLUTION ANNEALED @ 1900-1950F FOR 4.25 HOURS / WATER QUENCHED

Requirements & Other Results
EF LR VD
FULLY KILLED
PER EN 10204 3.1
MELTED AND MANUFACTURED IN USA
CVN @ -40F PER UHA-51
.015 MIN LATERAL EXPANSION

**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 18th day of November 2020

  
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 Janela Lian Tan/Quality Assurance

ANS

**CERTIFIED TEST REPORT**

Date: 4/16/20

Report of Tests of: (8), 16" RD Billets - Grade DUPLEX Mult(s)

Customer's Order: 9520-1

Date of Order: 1/13/20

Our Shop Order: H000250990

Specification: MPS-2220 REV. 2

**CHEMICAL ANALYSIS**

Heat #	C	Mn	P	S	Si	Ni	Cr	Mo	V	Cu	Al	W	B	N
S7644	.023	1.49	.024	<.001	.46	6.02	22.38	3.25	.065	.17	.009	.025	.0036	.1920

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

This material was fully killed.

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

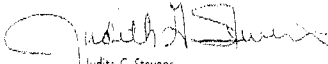
The material was melted and produced in the USA, in accordance with the ENS Quality Manual REV. 4 dtd. 10/10/18 which meets the intent of the latest revisions of AS9100D, ISO 9001:2015, ISO 10012-1, MIL-I-45208, NCA-3800, and 10-CFR-50 App. B for quality assurance, inspection and calibration systems.

Material forged to 16" RD Billet from 34"x 34" ingot.

The material is capable of ASTM A182/A182M-19 for grades UNS S32205 (F 60) & UNS S31803 (F51)

Material capable of meeting the intermetallic phase requirements of ASTM A923 Test Methods A, B, and C after appropriate solution heat treatment.

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



Heat: **S7644**

Order: **9520-1**

**CERTIFIED TEST REPORT REVISION LOG**

Date	Approved By	Description
4/16/2020	JStevens	Elements: Added W [.025]