



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

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 www.rmforge.com

### MATERIAL TEST REPORT

Date: 03/05/2021

Customer:	PO# 2021-1221	Line Item: 2	R&M S/O#: 44929
	DESCRIPTION: ROUGH MACHINED 1/4" ALLOWANCE - 250 RMS 11.0" OD X 3.0" THK		
	TAG: JOB# 1605, 1606, 1607		
	HEAT NUMBER: 901629		QTY. Shipped: 1 PC.
Spec: ASME SA182 F51 (S31803)	2019 EDITION / LATEST ADDENDA		Mill: COGNE (ITALY)

	C	MN	P	S	SI	NI	CR	MO	CU	V	CB/NB
LADLE	.013	1.17	.023	.0006	.47	5.80	22.57	3.17			
PRODUCT											
	N	AL	CE	FE	TI	W	SB	SN	AS	CB+TA	J-FACTOR
LADLE	.180										
PRODUCT											

Mechanical Properties	
YIELD (PSI) 0.2% OFFSET	70,300
TENSILE (PSI)	102,900
ELONG. (%) 2"	46.0
R/A (%)	81.0
HARDNESS	258-258
CVN (FT/LBS) AVG.	166-175-209 183.33
LAT. EXP.	.074-.078-.086
SHEAR (%)	80-80-100
CVN TEMP.	-40F

Heat Treatment
SOLUTION ANNEALED @ 1922F FOR 5 HOURS / WATER QUENCHED

Requirements & Other Results
EAF AOD
PER NACE MR0175
CVN @ -40F PER UHA-51
.015 MIN LATERAL EXPANSION
PER EN 10204 3.1
FERRITE CONTENT: 60%

**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 5th day of March 2021

  
 Janela Ljan Tan/Quality Assurance

*INS*



COGNE ACCIAI SPECIALI S.p.a.

ITALY 11100 AOSTA - VIA PARAVERA, 16  
TEL +39 0165.3021 - FAX +39.0165.302296  
CAP. SOC. 1'5.000.000 EUR INT. VERS.  
C.F. 02187360967  
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems  
certified according to ISO 9001, IATF 16949,  
EN 9100 and ISO 14001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)  
DOCUMENT NUMBER 2019048429  
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CUSTOMER: COGNE SPECIALTY STEEL USA, INC  
CUSTOMER'S ORDER: Oda: US01 4900077254  
MANUFACTURER'S WORKS: AOSTA, VIA PARAVERA 16 - ITALY  
PRODUCER OF THE DOC: QUALITY DEPARTMENT  
MANUFACTURER'S WORKS ORDER NO: 50371393 /10 MARK OF THE MANUFACTURER: COGNE  
DISPATCH NOTE: 81299629 /10 WEIGHT: 6228 LB

THE CERTIFIED PRODUCTS ARE COMPLYING TO THE PURCHASE ORDER  
INTERNAL SPEC: ASTM A182  
PRODUCT: 54331 FUC FORGED ROUND FORGED TOLERANCE: + 0,40188 - 0,40188  
SURFACE FINISH: FORGED  
PRODUCT DELIVERY CONDITION: GR ROUGH  
PRODUCT DIMENSIONS (Inch): 10.039 LENGTH (inch) 00157 /00276  
GRADE: F51/F60 INTERNAL GRADE: 329A  
IDENTIFICATION HEAT NO: 901629 IDENTIFICATION LOT NO: 795500  
MARKING OF THE PRODUCT: F51

STEELMAKING EAF + AOD  
REDUCTION RATIO 4.9  
INITIAL STATUS 0.0

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284

Control lot No. - Weight :020000806484 - 90,847 KG

ELEMENTS	C	Si	Mn	P	S	N	Al	Cr	Mo	Ni
OBTAINED	0.013	0.47	1.17	0.023	0.0006	0.18	0.014	22.57	3.17	5.80
ELEMENTS	Ti	Cu	Sn	V	W	Co	B	Ca	CV_F8	
OBTAINED	0.010	0.24	0.004	0.080	0.020	0.06	0.0024	0.0027	36	

CV\_F8 - CR+3.3\*MO+16\*N2

WE GUARANTEE FERRITE CONTENTS (ACCORDING TO ASTM E562/02)

BETWEEN 40% AND 60%

ULTRASONIC TEST :(EN10228-4, CL.3): SATISFACTORY.

RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.

GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

MATERIAL FREE FROM MERCURY CONTAMINATION

NO WELDING REPAIR ON THE MATERIAL.

REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: ASTM A182/A182M- 18a, ASME SA-182/SA-182M 2017.

REDUCTION RATE >3:1

SAWABLE MATERIAL.

THE PRODUCT SATISFIES CE DIRECTIVES EU: 2015/863 (ROHS3) - 2011/65 (ROHS2) - 2000/53 - 2002/95(ROHS) 2003/11 - 2005/618.