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Frisa Forjados SA, de C.V.  
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Sta. Catarina, N.L., México

CERTIFIED COMPANY  
ISO 9001: 2015

Material Test Report No.708858

Certificate per: EN 10204:2004 3.1  
Client: SAMUEL, SON & CO., LIMITED

Spec: ASME SA182/SA182M F51 (S31803) Ed.  
2017

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Qty	Date	P.O. Number	Part No.	Job Order
1	12/07/2019	W67522C		583298
<b>Description</b> Forged Disc 18.620" X 0.000" X 5.250" .MELTING PRACTICE: EAF AOD .SERIAL NUMBER NOTE: 01 .LINE ITEM: 1				

**HEAT: 64521 (1/1) PCS  
CHEMICAL ANALYSIS**

HEAT No.		C %	Mn %	P %	S %	Si %	Ni %	Cr %	Mo %
64521	Ladle	0.01600	1.56000	0.02400	0.00030	0.32000	5.58000	22.07000	3.23000
Supplier									
ITA	Ladle	N %							
		0.19000							

Hardness (HBW) PCS	
Hardness	243
	243

**HEAT TREATMENT**

Quantity	Heat Treat Lot No.	Heat Treatment	Temp (°F)	Time (hrs)	Cooling Medium	Quench M. Temp. (°F)
1 PCS	577688	Solution annealed	1922	5.00	Water	

Heat: 64521

Track ID: 187/016-19

**MECHANICAL PROPERTIES**

**TENSILE TEST**

Orientation	Position	Location	Heat Treat Lot No.	Yield Strength (PSI)	Tensile Strength (PSI)	Elong. (%)	RA (%)	Tens. Tens °F	Temp °F	Time	Cycle
Long	1/4 T		577679	72800	113300	36	76	77			

Heat: 64521

**HARDNESS HBW QTC**

Orientation	Position	Location	Heat Treat Lot No.	Point	Hardness	Temp °F	Time	Cycle
Long	1/4 T		577679		241			
Long	1/4 T		577679		242			

WE HEREBY CERTIFY THAT ALL TEST RESULTS AND PROCESS INFORMATION CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY AND MEET THE PURCHASE ORDER / SPECIFICATIONS REQUIREMENTS.

NO WELDING REPAIRS IS ALLOWED AND USED IN FRISA ALL MATERIALS ARE MERCURY FREE

CER F-001-3

Gloria Carolina Lugo Perez

QUALITY ASSURANCE ENGINEER

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**OBSERVATIONS**

- . FORGING RATIO: 11.4 TO 1
- . QTC SIZE (4 X 4 X 12)
- . TENSILE TEST: 0.500" DIAMETER SPECIMEN AND 2.0" GAUGE LENGTH
- . FURNACE CALIBRATED AND SURVEYED PER API 6A ANNEX M 20th EDITION REQUIREMENTS
- . HARDNESS ON TEST SPECIMEN IS REPRESENTED BY TWO VALUES.
- . TESTING ACCORDING TO ASTM A370 REV.17
- . NACE MR0175 / ISO 15156-3

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