



**Frisa Forjados SA, de C.V.**

Valentín G. Rivero No. 127 Los Treviño  
 C.P. 66350  
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 Fax: +52(81) 8336-2153  
 Sta. Catarina, N.L., México

CERTIFIED COMPANY  
**ISO 9001: 2015**

Material Test Report No.674098

Certificate per: **EN 10204:2004 3.1**

Client: **ASA ALLOYS**

Spec: **A182/A182M Grade F316/316L Rev. 17**

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Qty	Date	P.O. Number	Part No.	Job Order
5	30/06/2018	PO44397		544874
<b>Description</b> Forged Disc 33.750" X 0.000" X 6.550" .MELTING PRACTICE: EAF AOD .SERIAL NUMBER NOTE: 01, 02, 03, 04, 05 .LINE ITEM: 1				

**HEAT: 60974 (5/5) PCS**

**CHEMICAL ANALYSIS**

HEAT No.		C %	Mn %	P %	S %	Si %	Ni %	Cr %	Mo %
60974	Ladle	0.01300	1.73000	0.02700	0.00050	0.38000	10.63000	16.75000	2.10000
<b>Supplier</b>		<b>N %</b>							
ITA	Ladle	0.06900							

Hardness (HBW) PCS	
Hardness	153
	153

**HEAT TREATMENT**

Quantity	Heat Treat Lot No.	Heat Treatment	Temp. (°F)	Time at Temp (Hrs)	Cooling Medium	Quench. M. Temp. (°F)
5 PCS	542557	Solution annealed	1922	5.00	Water	

Heat: 60974

Track ID: 299/037-17

**MECHANICAL PROPERTIES**

**TENSILE TEST**

Orientation	Position	Location	Heat Treat Lot No.	Yield Strength (PSI)	Tensile Strength (PSI)	Elong. (%)	A.R. (%)	Temp Tens °F	Post Welding HT		
									Temp °F	Time	Cycle
Long	1/4 T		521601	40800	83200	57	79	77			

Heat: 60974

**HARDNESS HBW QTC**

Orientation	Position	Location	Heat Treat Lot No.	Point	Hardness	Post Welding HT		
						Temp °F	Time	Cycle
Long	1/4 T		521601		158			
Long	1/4 T		521601		154			

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

Aneliz Carolina González Gutiérrez  
 QUALITY ASSURANCE ENGINEER

C215669  
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OBSERVATIONS
. FORGING RATIO: 6.6 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. . FURNACE TEMPERATURE MONITORING AND RECORDING METHOD: AIR THERMOCOUPLE . TESTING ACCORDING TO ASTM A370 REV.14 . NACE MR0175 / ISO 15156-3

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