



S O T L O D	CASTLE METALS 3400 N WOLF RD FRANKLIN PARK, IL 60131-1319	Shipping Information		Material Cert Number	
		DATE Shipped: 06/09/2010 Via: SJ & K TRUCK Bill: 3-82294		667592 m2012R2	
				Revision Date	
				10/08/2013	

Item 3 of 3	
Material	316/316L Stainless Steel in accordance with Castle Metals specification 3316-98 Rev 32, ASTM A 193-07, ASME SA 193 2007 Edition, 2009 Addenda, ASTM A 276-08a, ASTM A 479-08, ASME SA 479 2007 Edition, 2009 Addenda, Chemistry of ASTM A 182-09a, Chemistry of ASME SA 182 2007 Edition, 2009 Addenda, AMS 5648K, AMS 5653F, AMS QQ-S-763B, NACE MRO175
Heat Treat	per Specification
Destructive Test	per Specification
Finish	Rough Machine to sizes shown Straightness = 1/8" in 5 FT
Reference	Access Code: 31022
Size	OD Random Len (inches) 11 108 to 156
Surface	500 RMS Saw Cut

Heat Number	# of Pieces	(MILL - UNIVERSAL STAINLESS)
G16348	1	MSDS Previously Sent

Note: Additional prefix letter stamped on product with heat number is for our inventory purposes only and not relevant to heat number.

Chemical Composition (Wt. %)

C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Al	V
0.017	1.67	0.024	0.023	0.27	10.23	16.68	2.10	0.25	<0.01	0.05
N	B	Cb	Co	Sn	Ti	W				
0.082	0.003	0.02	0.08	0.004	<0.01	<0.05				

Mechanical Properties:

Pcs	Tensile PSI	Yield ¹ PSI	Elongation %	Reduction of Area %	Comments
1	74,994	33,329	61.7	78.3	LONGITUDINAL

¹(Offset: .2%)

Brinell Hardness Results:

Pcs	3000 Kg Load
1	170


Jerry Giessinger

Corporate Quality Assurance Manager
 This certification has been created and reviewed in
 compliance with the Scot Forge QMS

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



CASTLE METALS

Material Cert Number
667592 m2012R2

Other Testing or Inspections:

Solution anneal at 1925 degrees F for 10 hours

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE UNITED STATES

QUENCH MEDIA - WATER
 QUENCHANT 57 DEGREES F AT START OF QUENCH
 QUENCHANT 60 DEGREES F AT END OF QUENCH

6.15:1 FORGING REDUCTION FROM ORIGINAL INGOT

MICRO-EXAM PERFORMED PER ASTM E-112 WITH RESULTS OF GS = 2.

MACROETCH PERFORMED PER ASTM E381 WITH RESULTS OF S1,R1,C1;
NO PIPE, CRACKS, ETC.CORROSION SENSITIVE PERFORMED PER ASTM A262 WITH RESULTS OF
0% DITCHING OBSERVED.

CAST METHOD - INGOT

MELTED AND MANUFACTURED IN THE U.S.A.

NO WELD REPAIRS PERFORMED

Compliance Statements:

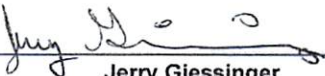
We certify that the material listed was not processed with mercury bearing instruments and/or equipment which might cause contamination, nor was mercury handled in the immediate vicinity during the manufacturing process. We also certify that the material was not processed or cleaned with low melting point materials as alloying constituents, i.e. lead, zinc, cadmium, tin, antimony, bismuth, sulfur, or their compounds.

In accordance with the requirements of the Pressure Equipment Directive, all testing, inspection, and documentation is produced in accordance with EN 10204:2004 Type 3.1 and ISO 10474 Type 3.1.B

Material provided has been produced by Scot Forge under an approved quality program as defined within the Scot Forge Quality Management System Manual, Revision 4, dated 10/15/12.

The products supplied are in compliance with the quantity and quality requirements of the purchase order and specifications noted. The test reports represent the actual attributes of the items furnished and the test results are in full compliance with all applicable specifications and order requirements.

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 Jerry Giessinger
 Corporate Quality Assurance Manager
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