

G14760

# SCOT FORGE



8001 Winn Rd., Box 8  
Spring Grove, IL 60081  
847/587-1000  
FAX 847/587-2000

H00160 0 SS  
Heat # G14760

PO # 01-12444

## MATERIAL CERTIFICATION

S C O T F O R G E	Shipping Information	Material Cert Number
	Revision Date	613042 d3363R1
	09/17/2008	
CASTLE METALS 3400 N WOLF RD FRANKLIN PARK, IL 60131-1319		

<b>Item 1 of 1</b>	
Material  Heat Treat Destructive Test Finish  Reference Size  Surface	316/316L Stainless Steel in accordance with Castle Metals specification 3316-98 Rev 29, ASTM A 193-07 (except paragraph 7.3), ASME SA 193 (except paragraph 6.3) 2007 Edition, ASTM A 276-08, ASTM A 479-06a, ASME SA 479 2007 Edition, Chemistry of ASTM A 182-08a, Chemistry of ASME SA 182 2007 Edition, AMS 5648K, AMS 5653F  per Specification per Specification  Rough Machine to sizes shown Straightness = 1/8" in 5 FT  Access Code: 31025  OD Random Len (inches) 15 96 to 120  500 RMS Saw Cut

Heat Number	# of Pieces	(MILL - UNIVERSAL STAINLESS)
G14760	2	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	V	N
0.020	1.78	0.020	0.022	0.27	10.18	16.60	2.04	0.20	0.06	0.090

**Mechanical Properties:**

Pcs	Tensile PSI	Yield <sup>1</sup> PSI	Elongation in 2 - %	Reduction of Area %	Comments
1	76,602	37,065	62.4	75.8	LONGITUDINAL

<sup>1</sup>(Offset: .2%)

**Brinell Hardness Results:**

Pcs	3000 Kg Load
1	179
1	170

Approved by: Richard Gabrys  
 RICHARD GABRYS  
 QUALITY ASSURANCE DIR.

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### CASTLE METALS

Material Cert Number  
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#### Other Testing or Inspections:

Solution anneal at 1900 degrees for 12.5 hours

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE UNITED STATES

4.89:1 FORGING REDUCTION FROM ORIGINAL INGOT

CAST METHOD - INGOT

Co = <0.05

NO WELD REPAIRS PERFORMED

QUENCH MEDIA - WATER  
QUENCHANT 71 DEGREES F AT START OF QUENCH  
QUENCHANT 74 DEGREES F AT END OF QUENCH

CORROSION SENSITIVE TEST PERFORMED PER ASTM A262 WITH RESULTS  
OF 0% DITCHING OBSERVED

MICRO EXAM PERFORMED PER ASTM E112 WITH RESULTS OF GS - 2

MACRO ETCH PERFORMED PER ASTM E381 WITH RESULTS OF S1, R1, C1

CASTLE METALS CORP.  
DATE RCVD 9/17/08  
IAC 3/6/05  
APPROVED BY

#### 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 and approved quality program as defined within the Scot Forge QA Manual, Revision Dated 10/11/04.

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

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.

Approved by:   
RICHARD GABRYS  
QUALITY ASSURANCE DIR.