

ORIGINAL



Material Test Report

Heat Code: ZWE ✓

Ameriforge Ltd.

An AFGlobal Company

13770 Industrial Rd. Houston, TX 77015

Sales: (713) 868-4421 Fax: (713) 455-8366

ISO 9001:2008 Certified

PO: /	Sales Order: /	Line: /
Item Code: 9999H61985-0031R /		Qty Shipped: 98
Item Desc: 04.00 150-900 HUB -		
Supplier: STEEL DYNAMICS		Supplier Heat: CA103370
Spec: ASME SA350/M-01E LF2 CL1 & RMES 61-0072 rev 4 (Hubs)		

Element	(%wt)	Ladle	Product	EPCRA	CAS#	Element	(%wt)	Ladle	Product	EPCRA	CAS#
C	Carbon	0.19 ✓	0.20			Cr	Chromium	0.08 ✓	0.06	✓	7440-47-3
Mn	Manganese	1.13 ✓	1.12	✓	7439-96-5	Mo	Molybdenum	0.01 ✓	0.02		
P	Phosphorous	0.009 ✓	0.008			V	Vanadium	0.03 ✓	0.04		
S	Sulphur	0.00 ✓	0.002			Co	Columbium	0.00 ✓	0.00		
Si	Silicon	0.28 ✓	0.28			Al	Aluminum	0.03 ✓	0.024		
Cu	Copper	0.17 ✓	0.18	✓	7440-50-8	C.E.		0.42 ✓			
Ni	Nickel	0.06 ✓	0.06	✓	7440-02-0						

Mechanical Testing		Heat Treat	
Test Lab	AFG	Norm. Temp. (F)	1675
Test Bar Size	Sacrificial Piece ✓	Norm. (Hrs)	4 ✓
HBW	156 - 156 ✓	Norm. Cooling Type	AIR ✓
Elg (%)	39 ✓	Norm. Location	atg
RA (%)	70 ✓	Other ✓	
Tensile Specimen Size (in)	.245		
Tensile (ksi)	78.5 ✓		
Yield (ksi)	48.9 ✓		
Gauge Length	1		
Specimen Orientation	longitudinal	VD	Y
LCVN Charpy Temp. (F)	-50 ✓	Gr.Sz	5.8
LCVN (ft lbs)	33 - 77 - 31 ✓	Reduction Ratio (Parts)	14.9:1
LAvg 3(ft-lbs)	47	Made to Fine Grain Practice	YES
L Min (ft-lbs)	31		
% Shear	15 - 30 - 15		
Lat. Exp.	.026 - .051 - .029		

The recording of false, fictitious, or fraudulent statement or entries on this document may be punishable as a felony under federal statute.

EPCRA Supplier Notification: This product may contain one or more toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act (Title III of the Superfund Amendments and Reauthorization Act of 1986) and 40 C.F.R. Part 372. Potentially reportable chemicals are indicated with a checkmark in the "EPCRA" column and a Chemical Abstract Services (CAS) registry number is provided for each such chemical in addition to the percent by weight of the chemical present in this product. It is your responsibility alone to determine whether your facility is required to submit a Toxic Release Inventory Report under EPCRA Section 313.

Certification No.: 1244102

Certification Date: 4/12/2016

Issued By: Jacqueline Boston ✓

This report is issued in compliance with the requirements of EN10204 3.1 / ISO 10474 3.1.b

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The material on this report is in accordance with:
ASME SA350/M-01E LF2 CL1, RMES 61-0072 rev 4.

Product compliant with NACE MR0175/ISO 15156-2:2009 Annex A (A.2.1.2, A2.1.3).

Product compliant with NACE MR0103-2012, Section 2.1.2 and 2.1.4.

Flange dimensions to ASME B16.5 - 2013.

- * No Weld repair performed.
- * Ladle Chemical Analysis results are reported from the raw material suppliers MTR.
- * Tensile taken from a round specimen. Measurement of elongation after fracture.
- * Yield strength was determined using the .2% offset method.
- * All material supplied under this order is certified to be free of mercury contamination and no mercury bearing equipment was used in manufacturing, fabrication or testing.
- * When reported on MTR: Tensile Testing Per ASTM E8; Brinell Hardness Per ASTM E10; Charpy Testing Per ASTM E23
- * AF Global manufactures materials according to a certified Quality Management System conforming to ISO 9001:2008 and PED 97/23/EC, Annex 1, Section 4.3

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Rina Sane - Metallurgical Lab Manager

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