SAMPLE DOCUMENT

EST Group
Quality Assurance Department

QADOC2 Manufacturers Certificate of Compliance/Statement of Conformance

Customer: Customer Name

EST Sales Order: 123456

Customer PO: 123456

Manufacturer: EST Group

Supplier: EST Group
2701 Township Line Road
Hatfield, PA 19440

Part Number	Description			
V471LTC	Pop-A-Plug® CPI/Perma Kit .471" Low Temperature Carbon Steel. For Tube ID 0.472-0.515"(11.99-13.08mm). Max Pressure: 1000 PsiG (68.9 BarG). Temperature Range: -50°F (-46°C) To 700°F(371°C). Max Hydrostatic Test Pressure: 1500 PsiG (103 BarG) at ambient temperature. Kit contains(10) plugs with (1) Threaded Go/No-Go Gage.			
Lot Number	**Quality Inspection**	**Performance Testing**	**Pin Heat**	**Ring Heat**
02394329	Passed	Passed	A216713	A216713

Curtiss-Wright EST Group hereby certifies that the materials/items/equipment listed herein were manufactured, sampled, and inspected under our controlled Quality Management System registered to ISO-9001:2015. This document further certifies that listed equipment/service/materials are of the quality specified and conform in all respects with the listed customer purchase order requirements, including specifications, packaging, marking requirements, and physical item identification. Furthermore, all documentation required by the purchase order is accurate, complete, true and is included herein.

We are committed to complying with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, as well as Section 1502 of the Dodd-Frank Act.

During manufacturing, testing and inspection, the items listed did not come in contact with mercury or any of its compounds.

This document shall not be reproduced, except in full, without the prior authorization of EST Group, Quality Assurance.

Authorized by: Sandeep Tom, Quality Engineer 05-17-2023 01:42 PM

Quality Assurance, EST Group Date

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BAR STOCK SPECIALTIES, INC.
11710 CHARLES ROAD
HOUSTON, TX 77041
SALES 713-849-0055
SALES 713-466-3583 FAX

* CERTIFICATE OF TEST *

To: EST GROUP INC
2701 TOWNSHIP LINE ROAD
HATFIELD, PA 19440-1770

Customer P/O # 252050

Our Order # 080129

Line	Qty	UOM	Description	LOT
1	3284	LB	.750 (3/4 DIA.) ROUND BAR ASTM A350 LF2 ASTM SPEC DATE: 12 MELT: U.S.A. CHARPY IMPACTS -50 DEG F= 69/65/67 FT.LBF NORMALIZE: 1670 DEG F/3.5 HRS NO MERCURY/NO WELD REPAIR	032191

				CARBON .21	MANGANESE 1.12
Heat No. A216713	TENSILE (PSI) 75300	YIELD (PSI) 49200	PHOSPHORUS .008	SULFUR .020	SILICON .24
ELONGATION 36	RED. OF AREA 67	HARDNESS (HB) 144	CHROMIUM .13	NICKEL .07	MOLY. .03
			COLUMBIUM .001	COPPER .21	VANADIUM .003

We certify that the material or the fasteners, or both, were manufactured, sampled, tested, and inspected in accordance with the specification listed above and any supplementary requirements or other requirements designated in the purchase/sales order and was found to meet those requirements.

received 9/27/22

RECEIVED SEP 06 2022 BY:

Date: 08/30/22

BAR STOCK SPECIALTIES, INC.

By: Paul King

Paul King
Certification Custodian

Customer Name	Customer PO#	Shipper No	Heat Number
BAR STOCK SPECIALTIES INC	030944	182533	A216713(WDJ)

Steel Dynamics, Inc.
Long Products Group

8000 N. County Road 225 East
Pittsboro, IN 46167
Phone: (317) 892-7000
Fax: (317) 892-7285

Certified Material Test Report

Cert # : 370083
Work Order : 361626
Load # : 397374
Size : 1"
Grain Practice : Al Fine Grain (5-8) per ASTM A29

Mill Order : 2200650
Sales Order : 268021-1
Reference # :
Shape : Round

Heat # : A216713
Customer : U.S. Alloys
Reference Desc :
Grade : A350/LF2 Chem
Reduction Ratio : 184.9 to 1

Issued : 2/26/2022 00:32:16
PO # : 20586-1
End Use : 263492
Length : 20'
Disposition : Rolled Prime

Ladle Chemistry Analysis (ASTM A29)

C	Mn	P	S	Si	Al	Cu	Ni	Cr	Mo	Sn	N	V	Cb	B	Ca	W	Ti	DI
0.21	1.12	0.008	0.020	0.24	0.032	0.21	0.07	0.13	0.03	0.008	0.0092	0.003	0.001	0.0002	0.0009	0.000	0.000	1.00

Pb	Co	As	Sb	Zr	Bi	H(ppm)	O(ppm)	Ceq	J-Factor
0.000	0.005	0.004	0.005	0.000	0.001	1.5		0.45	231

Product Check Analysis (ASTM A29)

	C	Mn	P	S	Si	Al	Cu	Ni	Cr	Mo	Sn	N	V	Cb	Ti	B	Ca	O
Front																		
Back																		

Jominy (ASTM A255)

	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J12	J14	J16	J18	J20	J24	J28	J32
Calc'd Standard																		

	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
Calc'd Metric															

	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J12	J14	J16	J18	J20	J24	J28	J32
Front																		
Back																		

Microcleanliness (ASTM E45)

Method A								Method C (SAE J422)		Method E	
AT	AH	BT	BH	CT	CH	DT	DH	S	O	SAM "B"	SAM "D"

Microcleanliness (DIN 50602)

K			M
S	O	Tot	Tot

Decarb

Depth	% of Diameter

Grainsize

Austenitic	Ferritic
8	

Macrostructure (ASTM E381)

S	R	C

Magnetic Particle Inspection

Frequency	Severity

Mechanical Properties (ASTM A370)

Tensile Properties

Tensile Strength	0.2% Yield Strength	% Elong (2")	% ROA	0.35% EUL Yield Strength

Hardness

(MR)	(Surf)

Steel Dynamics - Engineered Bar Products has a quality system in place which has been certified ISO 9001:2015 compliant, including PED certification.

Comments/Specs

Electric Arc Furnace Melted - Vacuum Tank Degassed --- Material has been fully killed. --- NACE MR-01-75 / ISO 15156 -2009 --- Normalize --- ASTM A350-12 LF2 Class 1 --- ASTM A696-90a Grade C --- ASTM A875-19 Grade 70 --- ASME SA350-04 LF-2 Class 1, 2 --- ASME SA105-04 --- ASME SA696-04 Gr C --- ASME SA875-04 Gr 70 --- DIN EN 10204:2004 Paragraph 3.1 --- Cameron MR-005 Rev C1 --- NACE MR0103-2007 --- NACE MR0103-2003 --- Complies with EN 10204 type 3.1 --- Pres Equip Direct(PED) 97/23/EC/7/2 Anx I, Par 4.3 --- EAF Melted, Vacuum Tank Degas, Bloom Strand Cast --- ASTM A576-17 --- EAF Melted, Ladle Refined, Vacuum Tank Degas --- U.S. Alloys Spec LF2-HN Rev 4 dtd 9-4-18 --- ASTM A105/A105M -21

Condition : Normalize, Straighten

I hereby certify that the content of this report is correct and accurate, and that all tests and operations performed on this material were in compliance with applicable material specifications and purchaser designated requirements.

Jonathan Vallosio - Rolling Mill Metallurgist (ES)

Any alteration to this report voids Steel Dynamic's warranting of results. No weld repair has been performed on this material. This material is not radioactive and has not been exposed to radioactivity while under the control of Steel Dynamics. This material has not been exposed to mercury while under the control of Steel Dynamics. Unless otherwise noted, this material was melted, continually cast, and rolled in the USA; w all testing performed by Steel Dynamics.

Steel Dynamics Rev Level : [108] - 664

Retrieved on : 02/26/22 00:32:09

SEP 06 2022

BY.

Customer Name	Customer PO#	Shipper No	Heat Number
BAR STOCK SPECIALTIES, INC	030944	182533	A216713(WDJ)

Steel Dynamics, Inc.
Long Products Group
Engineered for Success

6000 N. County Road 226 East
Pittsboro, IN 46167
Phone: (317) 892-7000
Fax: (317) 892-7286

Certified Material Test Report
Heat Treatment Addendum

Cert # : 370083
Work Order : 361626
Load # : 397374
Size : 1"

Mill Order : 2200650
Sales Order : 268021-1
Reference # :
Shape : Round

Heat # : A216713
Customer : U.S. Alloys
Reference Desc :
Grade : A350/LF2 Chem

Issued : 2/26/2022 00:32:16
PO # : 20586-1
End Use : 263402
Length : 20'

Normalize		Austenitize		Quench Media			Temper		Stress Relieve	
Time	Temp	Time	Temp	Type	Time	Temp	Time	Temp	Time	Temp
3.5 hrs	1670 F	hrs	°F		min	°F	hrs	°F	hrs	F

* Furnaces are calibrated to API 6A Annex M, and use atmospheric thermocouples.
** Tensile and CVN from 12" prolongation from longitudinal orientation of Heat Treated Bar

Charpy Impact (ASTM E23) (v-notch | 10mm x 10mm)

Sample ID	Orientation	Location		Temp(F)	Impact Energy (ft-lbs) 1	2	3	Avg	Lateral Expansion (0.001") 1	2	3	Avg	% Shear 1	2	3	Avg
37300	Longitudinal	Mid-Radius	Q1	-50	69	65	67	67	42	40	43	42	60	60	60	60

Hardness (ASTM A370)

Sample ID	Location		HB
37300	Mid-Radius	Q1	141
37310	Mid-Radius	Q2	144

Tensile (ASTM A370)

Sample ID	Orientation	Location		Tensile	0.2% Yield	%ROA	%E (2")
37300	Longitudinal	Mid-Radius	Q1	75,300 psi	49,200 psi	67	36

TEST REPORT FURNISHED
BY U.S. ALLOYS, INC.
ITEM LF2
HT. CODE WDJ CLR CODE Green
DATE 3/2/2022 APP.BY SBL

I hereby certify that the content of this report is correct and accurate, and that all tests and operations performed on this material were in compliance with applicable material specifications and purchaser designated requirements.

Jonathan Vallealo - Bar Finishing Metallurgist

Any alteration to this report voids Steel Dynamic's warranting of results.