

BRUSHWELLMAN

ENGINEERED MATERIALS

MATERIAL CERTIFICATION

Customer: Defense Logistics Agency, Defense National Stockpile
1745 Jefferson Davis Highway
Suite 100, Crystal Square 4
Arlington, VA 22202

Date: May 5, 1993
S.O.#: EMG006
P.O.#: DLA-300-90-C-0032
Specification: P-110A
Rev. R1.

Material Description:

Item 3 - Lot No. 4875, One (1) Beryllium Billet, Grade A, Type I.
Gross Weight: 3533.0 lbs.
Net Weight: 3084.0 lbs.

CHEMICAL COMPOSITION: (WT. %)				MECHANICAL PROPERTIES															
Element	Top 4875	Bot. 4875	Date of test	Direct	Y.P. Dir.	Tens (Ksi)	Comp (Ksi)	% EL	Yld/Ult	Temp.									
Be	99.7	99.2		Top:															
BeO	.8	.8	5/3/93	Long.	None	52.7	33.9	3.3	.64	Room									
Fe	.10	.09	4/27/93	Long.	None	52.4	34.6	3.6	.66	Room									
C	.07	.10	5/03/93	Trans.	None	56.6	33.9	3.3	.64	Room									
Al	.04	.04	4/27/93	Trans.	None	55.9	34.3	5.9	.61	Room									
Mg	.03	.01	4/27/93	Trans.	11.1	44.8	10.7	13.0	.75	1200°									
Si	.03	.03		Bot:															
Mn	< .01	< .01	5/03/93	Long.	None	54.2	34.9	3.1	.64	Room									
Cr	< .01	< .01	4/22/93	Long.	None	54.1	34.9	3.0	.64	Room									
Ni	< .01	.01	5/03/93	Trans.	None	56.8	34.9	3.1	.64	Room									
Ti	< .01	< .01	4/22/93	Trans.	None	57.2	35.1	5.5	.61	Room									
Cu	< .01	< .01	4/22/93	Trans.	None	15.9	12.6	9.6	.79	1200°									
S	< .01	< .01																	
U	< .01	< .01																	
DENSITY: gm/cc:					AVG GRAIN SIZE: (Microns)														
100 % Theoretical					<table border="1"> <tr> <td></td> <td>Avg.</td> <td>Max.</td> </tr> <tr> <td>Top.</td> <td>10.5</td> <td>41.6</td> </tr> <tr> <td>Bot.</td> <td>9.7</td> <td>43.0</td> </tr> </table>							Avg.	Max.	Top.	10.5	41.6	Bot.	9.7	43.0
	Avg.	Max.																	
Top.	10.5	41.6																	
Bot.	9.7	43.0																	
RADIOGRAPHIC INSP. PER					PENETRANT INSP. PER														
P110A, R1					P110A, R1 and MIL-STD-6866														
ADDITIONAL INFORMATION:																			
Batch No.					Ultrasonic inspection per P110A, R1.														
(Metallic)					X-ray No. H-6117. Ww J. Till														
Other Elem. ea.					6 May '93 DLA/DNSZ														
Others Total																			

This is to certify that the above material satisfies the requirements of Specification see above
Drawing _____ Purchase Order see above and was removed from Pressing No. 4875

R. P. Garner

BRUSHWELLMAN INC.

QUALITY CONTROL

R. P. Garner