

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 18, 1992
 S.O.#: EMG006
 P.O.#: DLA-300-90-C-0032
 Specification: P-110A, Rev. R1.

Material Description:

Item 1 - Lot No. 4828, One (1) Beryllium Billet, Grade A (Type I).
 Gross Weight: 3562.5 lbs.
 Net Weight: 3068.0 lbs.

K-180

FILED

CHEMICAL COMPOSITION: (WT. %)					MECHANICAL PROPERTIES														
Element	Top 4828	Bot. 4828	Date of Test	Direct.	DIR Y.P.	FTU (Ksi)	FTY (Ksi)	% EL	Yld./Ult.	Temp.									
Be	99.2	99.2		Top:															
BeO	.7	.7	4/20/92	Long.	34.0	49.0	32.8	3.5	.69	Room									
Fe	.09	.09	"	Long.	None	48.5	33.9	2.7	.70	Room									
C	.08	.08	"	Trans.	34.9	52.5	33.9	5.8	.64	Room									
Al	.04	.04	"	Trans.	34.0	52.1	33.4	6.0	.65	Room									
Mg	.02	.01	"	Trans.	11.8	15.6	11.4	17.4	.76	1200°									
Si	.03	.03																	
Mn	<.01	<.01		Bot.:															
Cr	<.01	<.01	4/13/92	Long.	None	47.6	32.4	3.0	.68	Room									
Ni	.01	.01	"	Long.	None	47.3	32.2	2.9	.68	Room									
Ti	<.01	<.01	"	Trans.	33.3	53.3	33.0	6.2	.62	Room									
Cu	<.01	<.01	"	Trans.	33.2	52.6	32.9	5.9	.63	Room									
S	<.01	<.01	"	Trans.	11.7	15.5	11.1	16.8	.75	1200°									
U	<.01	<.01																	
					DENSITY gm/cc:			AVG GRAIN SIZE: (Microns)											
					99.96 % Theoretical			<table border="1"> <tr> <td></td> <td>Avg.</td> <td>Max.</td> </tr> <tr> <td>Top</td> <td>12.3</td> <td>42</td> </tr> <tr> <td>Bot.</td> <td>13.5</td> <td>55</td> </tr> </table>				Avg.	Max.	Top	12.3	42	Bot.	13.5	55
	Avg.	Max.																	
Top	12.3	42																	
Bot.	13.5	55																	
					RADIOGRAPHIC INSP. PER			PENETRANT INSP. PER											
					P110A, R1			P110A, R1 & MIL-STD-6866											
					ADDITIONAL INFORMATION:														
Batch No.					Ultrasonic inspection per P110A, R1.														
(Metallic) Other Elem. ea.					X-ray No. H-5571														
Others Total					<i>DA/DWSZ</i> <i>Clarence McSaxil 19 May 92</i>														

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. 4828

K 180

R.P. Garner
BRUSHWELLMAN INC. R. P. Garner
 QUALITY CONTROL