

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: June 14, 1994
 S.O.#: EMG006
 P.O.#: DLA-300-90-C-0032
 Specification: P-110A
 Rev. R1.

Material Description:

Item 2 - Lot No. 4941HT, One (1) Beryllium Billet, Grade A, Type I.
 Gross Weight: 3318.5 lbs.
 Net Weight: 2868.5 lbs.

R - 79

RECEIVED

CHEMICAL COMPOSITION: (WT. %)					MECHANICAL PROPERTIES														
Element	Top	Bottom	Date	Direct	Y.P.	FTU	FTY	%EL	Y1d/Y1f	Temp									
	4941HT	4941HT	of Test		DIR.	(Ksi)	(Ksi)												
Be	99.6	99.6		Top:															
BeO	1.0	1.1	5/25/94	Long.	None	47.0	33.3	2.8	.71	Room									
Fe	.10	.10	"	Long.	34.2	48.1	33.7	2.4	.71	Room									
C	.07	.07	5/27/94	Trans.	None	51.6	34.2	5.4	.66	Room									
Al	.03	.03	"	Trans.	None	51.5	34.9	4.8	.68	Room									
Mg	.02	.02	"	Trans.	12.5	17.7	11.8	10.4	.71	1200°									
Si	.02	.02		Bottom															
Mn	<.01	<.01	5/23/94	Long.	None	48.1	33.4	2.9	.69	Room									
Cr	<.01	<.01	"	Long.	None	48.7	32.1	3.1	.66	Room									
Ni	.01	.01	5/23/94	Trans.	35.8	54.1	34.4	5.4	.66	Room									
Ti	<.01	<.01	5/25/94	Trans.	None	50.7	31.6	3.8	.62	Room									
Cu	<.01	<.01	"	Trans.	12.0	18.6	12.6	13.4	.69	1200°									
S	<.01	<.01																	
U	<.01	<.01																	
					DENSITY, gm/cc:			AVG GRAIN SIZE: (Microns)											
					99.4% Theoretical			<table border="1"> <tr> <td></td> <td>Avg.</td> <td>Max.</td> </tr> <tr> <td>Top</td> <td>11.5</td> <td>58.0</td> </tr> <tr> <td>Bottom</td> <td>12.6</td> <td>41.5</td> </tr> </table>				Avg.	Max.	Top	11.5	58.0	Bottom	12.6	41.5
	Avg.	Max.																	
Top	11.5	58.0																	
Bottom	12.6	41.5																	
					RADIOGRAPHIC INSP. PER			PENETRANT INSP. PER											
					P-110A, R1			P-110A, R1 and MIL-3...											
					ADDITIONAL INFORMATION:														
					Ultrasonic inspection per P-110A-R1.														
					X-ray No. H-6681.														
					<i>14 Jun 94</i> <i>Robert L. Skruck, OAS</i>														
Batch No.																			
(Metallic) Other Elem. ea.																			
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. 4941HT

R.P. Garner / R.L. McManus
BRUSHWELLMAN INC.
QUALITY CONTROL
 R.P. Garner