IMS Systems, Inc.
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5 July 5, 2001

Mr. Bill Ward
US NRC
Washington D.C.
Phone: (301) 415-7038
Fax: (301) 415-5369

Dear Mr. Ward,

I have enclosed a data sheet showing the properties of the G18 heavy metal shielding.

If I can help further, please feel free to contact me.

Very Best Regards,

Frank A. Festa
Project Coordinator
Alternate RSO
IMS Systems Inc.

r to your problems

Type	S17	G17	G17B	G17M	S17,5	G17,5	G17,5B
Density (g/cm³)	17±0,1	17±0,1	17±0,1	17,2±0,1	17,5±0,1	17,5±0,1	17,5±0,1
Tungsten content (mol %)	90	90	90	–	92,5	93	93
Binder phases (elements)	Ni, Cu	Ni, Fe	Ni, Fe	Ni, Fe, Mo	Ni, Cu	Ni, Fe	Ni, Fe
Tensile strength (N/mm²)	650–750	650–780	700–880	700–900	660–800	700–840	750–900
Elongation at rupture (%)	2–6	2–6	10–18*	2–8	2–6	2–6	10–18*
Young's modulus (kN/mm²)	310–330	320–340	320–340	360	330–350	340–360	340–360
Hardness (HV 10)	270–320	280–330	280–330	280–330	280–330	290–330	290–330
Mean coefficient of thermal expansion between 200 and 800 °C (10^{-6}/K)	6,0	6,0	6,0	5,0	5,6	5,6	5,6
Magnetic properties Coercive force (A/m)	paramagnetic 3–4	slightly ferromagnetic 250	250	400	paramagnetic 3–4	slightly ferromagnetic 230	230
Specific electrical resistance ($\mu\Omega \cdot$ cm)	13	17	17	–	12	15	15

Type	S18	G18	G18B	S18,5	G18,5	G19	
Density (g/cm³)	18±0,1	18±0,1	18±0,1	18,5±0,1	18,5±0,1	18,8±0,1	
Tungsten content (mol %)	95	95	95	97,5	97,5	98,5	
Binder phases (elements)	Ni, Cu	Ni, Fe	Ni, Fe	Ni, Cu	Ni, Fe	Ni, Fe	
Tensile strength (N/mm²)	680–850	730–860	760–920	680–850	740–880	680–800	
Elongation at rupture (%)	2–8	2–6	4–10	1–3	1–3	< 2	
Young's modulus (kN/mm²)	340–360	350–380	350–380	350–370	360–380	360–390	
Hardness (HV 10)	300–340	300–340	300–340	320–360	320–360	340–380	
Mean coefficient of thermal expansion between 200 and 800 °C (10^{-6}/K)	5,2	5,2	5,2	5,0	5,0	4,8	
Magnetic properties Coercive force (A/m)	paramagnetic 3	slightly ferromagnetic 220	220	paramagnetic 2–3	slightly ferromagnetic 210	200	
Specific electrical resistance ($\mu\ \Omega \cdot$ cm)	11	13	13	9	10	9	

* higher values on request

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