

## B. Material Properties

Design Study For The BABAR Superconducting Solenoid - May 1995

TABLE B.2 - Mechanical and thermal properties of some materials used in the solenoid design

Material	Temp K	Yield MPa	Tensile MPa	Young GPa	Thermal contraction $\Delta L/L$ 300 $\rightarrow$ 4.2 k	Therm. Conduct. $Wm^{-1}K^{-1}$
Al 99.998	295	13	45	71	0.00415	240
	4	14	50	78		4000
Fiberglass epoxy I	295	245		12	0.006	
	4			18		
Fiberglass epoxy II	295	280		27	0.0021	
	4			33		
Ti (6Al4V)	295	890		109	0.00152	7.5
	4	1725		129		1.3
Cu/NbTi 1.8/1	295		530	110	0.00231	
	4	360	800	130		

## APPENDIX B

### B. MATERIAL PROPERTIES

**TABLE B.1 - Mechanical and physical properties of some aluminum alloys**

Material	Temp K	Yield MPa	Tensile MPa	Elong. %	Weld- ability	Young GPa	Therm. Conduct. $Wm^{-1}K^{-1}$	Electr. Resist. $\mu W cm$
5083	295	235	335	15	Excell.	71.5	120	5.66
	77	274	455	31.5		80.2	55	3.32
	4	279	591	29		80.9	3.3	3.03
6061	295	291	309	16.5	Good	70.1		3.94
	77	337	402	23		77.2		1.66
	4	379	483	25.5		77.7		1.38
2219	295	371	466	11	readily	77.4	120	5.7
	77	440	568	14		85.1	56	
	4	484	659	15		85.7	3	2.9