

**TABLE II-4  
PHYSICAL PROPERTIES OF ALNICO MATERIALS**

MMPA Brief Designation	Original MMPA Class	IEC Code Reference	Density		Tensile Strength		Transverse Modulus of Rupture		Hardness (Rockwell C)	Coefficient of Thermal Expansion 10 <sup>-6</sup> per °C	Electrical Resistivity Ohm-cm x 10 <sup>-6</sup> (at 20°C)
			lbs/in <sup>3</sup>	g/cm <sup>3</sup>	psi	Pa x 10 <sup>6</sup>	psi	Pa x 10 <sup>6</sup>			
1.4/0.48	Alnico 1	R1-0-1	0.249	6.9	4,000	28	14,000	97	45	12.6	75
1.7/0.58	Alnico 2	R1-0-4	0.256	7.1	3,000	21	7,000	48	45	12.4	65
1.35/0.50	Alnico 3	R1-0-2	0.249	6.9	12,000	83	23,000	158	45	13.0	60
5.5/0.64	Alnico 5	R1-1-1	0.264	7.3	5,400	37	10,500	72	50	11.4	47
6.5/0.67	Alnico 5 DG	R1-1-2	0.264	7.3	5,200	36	9,000	62	50	11.4	47
7.5/0.74	Alnico5-7	R1-1-3	0.264	7.3	5,000	34	8,000	55	50	11.4	47
3.9/0.80	Alnico 6	R1-1-4	0.265	7.3	23,000	158	45,000	310	50	11.4	50
5.3/1.9	Alnico 8	R1-1-5	0.262	7.3	10,000	69	30,000	207	55	11.0	53
5.0/2.2	Alnico 8HC	R1-1-7	0.262	7.3	10,000	69	30,000	207	55	11.0	54
9.0/1.5	Alnico 9	R1-1-6	0.262	7.3	7,000	48	8,000	55	55	11.0	53
1.5/0.57	Alnico 2	R1-0-4	0.246	6.8	65,000	448	70,000	483	45	12.4	68
3.9/0.63	Alnico 5	R1-1-10	0.250	6.9	50,000	345	55,000	379	45	11.3	50
2.9/0.82	Alnico 6	R1-1-11	0.250	6.9	55,000	379	100,000	689	45	11.4	54
4.0/1.7	Alnico 8	R1-1-12	0.252	7.0	50,000	345	55,000	379	45	11.0	54
4.5/2.0	Alnico 8HC	R1-1-13	0.252	7.0			55,000	379	45	11.0	54

NOTE: Alnico permanent magnet materials lack ductility, and are inherently extremely brittle. They should not be designed for use as structural components. Measurement of properties such as hardness and tensile strength is not appropriate or feasible on commercial materials but values are shown above for comparison. This data, determined experimentally under controlled laboratory conditions, is a composite of information available from industry and research sources.

**TABLE II-5  
THERMAL PROPERTIES OF ALNICO MATERIALS**

Brief Designation	Original MMPA Class	IEC Code Reference	Reversible Temperature Coefficient % Change per °C			Curie Temperature		Max. Service Temperature	
			Near B <sub>r</sub>	Near Max. Energy Prod.	Near H <sub>c</sub>	°C	°F	°C	°F
1.5/0.57	Alnico 2	R1-0-4	-0.03	-0.02	-0.02	810	1490	450	840
5.5/0.64	Alnico 5	R1-1-1	-0.02	-0.015	+0.01	860	1580	525	975
3.9/0.80	Alnico 6	R1-1-4	-0.02	-0.015	+0.03	860	1580	525	975
5.3/1.9	Alnico 8	R1-1-5	-0.025	-0.01	+0.01	860	1580	550	1020
5.0/2.2	Alnico 8HC	R1-1-7	-0.025	-0.01	+0.01	860	1580	550	1020
9.0/1.5	Alnico 9	R1-1-6	-0.025	-0.01	+0.01	860	1580	550	1020

NOTE: The above data is a composite of information available from industry and research sources.