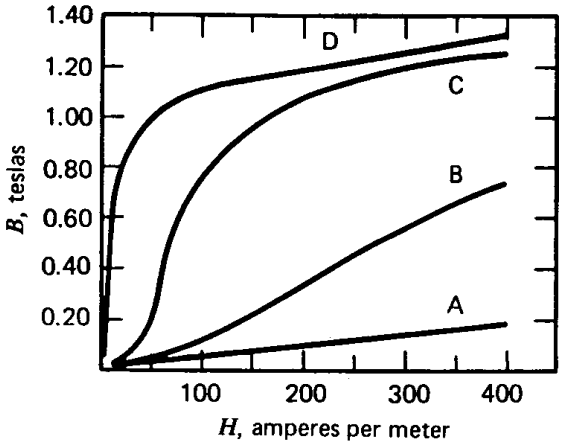
Table 9.2 **Data for Ferromagnetic Materials**

High-Permeability Materials

Material	Percent Composition	Maximum Relative Permeability	Saturation Flux Density B_{sat} (Wb/m^2)	Coercive Force H_c (A/m)
Cold rolled steel	98.5 Fe	2,000	2.10	145
Iron	99.9 Fe	5,000	2.15	80
Mu metal	18 Fe, 75 Ni, 2 Cr, 5 Cu	100,000	0.65	4
Purified iron	99.95 Fe	180,000	2.15	4
78 Permalloy	21.2 Fe, 78.5 Ni, 0.3 Mn	100,000	1.07	4
Supermalloy	15.7 Fe, 79 Ni, 5 Mo, 0.3 Mn	800,000	0.80	0.16

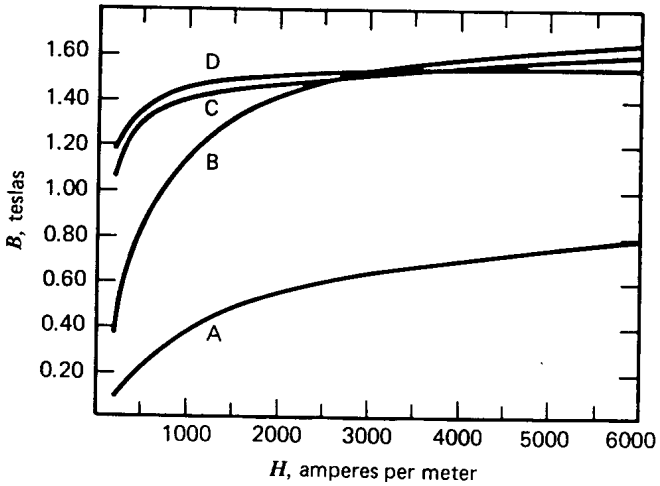
Permanent-Magnet Materials

Material	Percent Composition	Remanent Flux Density B_r (W/m^2)	Coercive Force H_c (A/m)
Alnico II (sintered)	64.5 Fe, 10 Al, 17 Ni, 2.5 Co, 6 Cu	0.69	41,600
Alnico V	53 Fe, 8 Al, 14 Ni, 24 Co, 3 Cu	1.25	44,000
Carbon steel	98.1 Fe, 1 Mn, 0.9 C	1.0	4,000
Platinum-cobalt	77 Pt, 23 Co	0.45	208,000
Remalloy	71 Fe, 17 Mo, 12 Co	1.05	20,000
Tungsten steel	94 Fe, 5 W, 0.3 Mn, 0.7 C	1.03	5,600

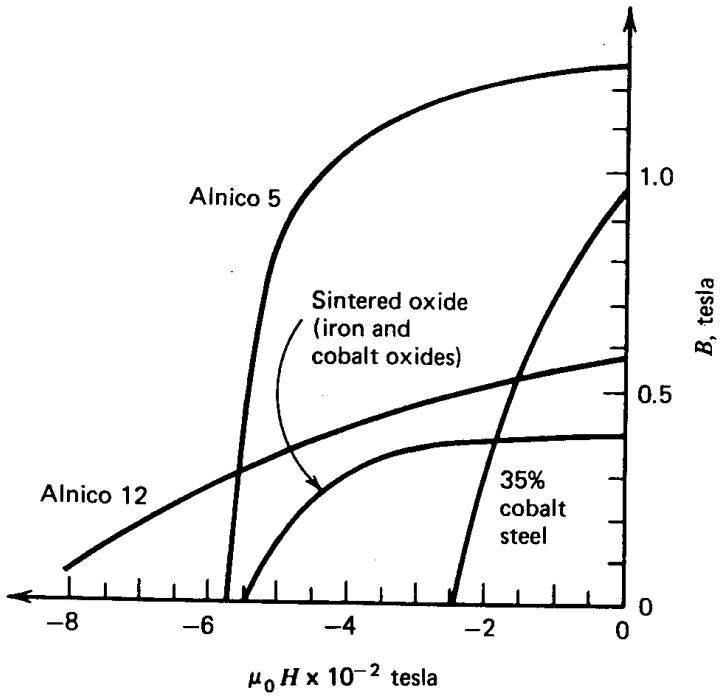


(*a*)

A: Cast iron
B: Cast steel
C: Silicon steel
D: Nickel-iron alloy



(*b*)



(*c*)

Figure 9.8 Hysteresis curves of some ferromagnetic materials. (*a*) and (*b*) High permeability materials, (*c*) Permanent magnetic materials.

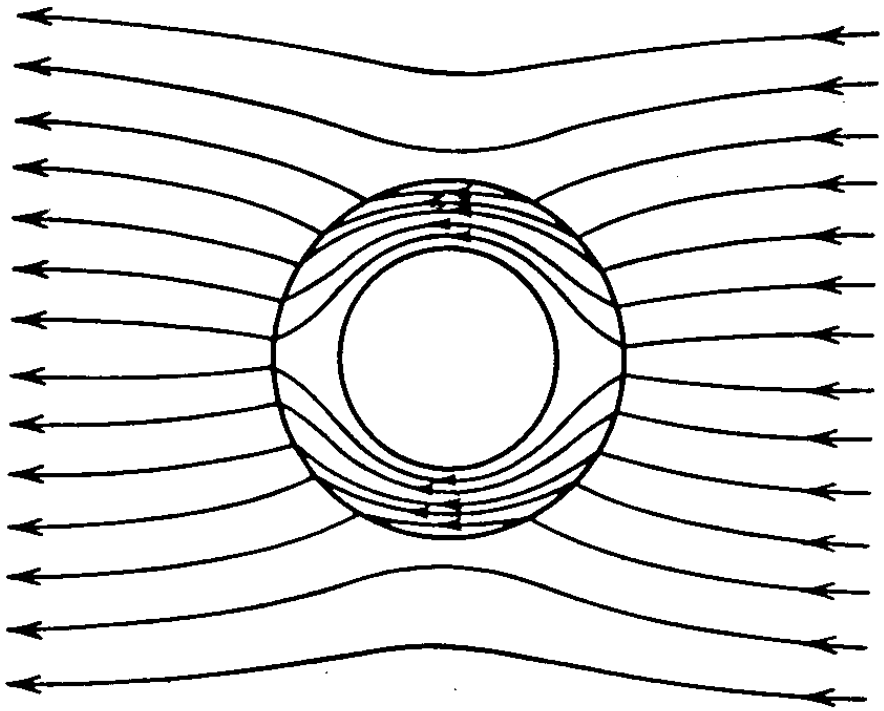


Figure 9.23 The lines of **B** when a ferromagnetic cylindrical shell is placed in an initially uniform magnetic field with its axis normal to the field.