

4. 5 Soft and Hard Magnetic Materials

S.No	Soft magnetic materials	Hard magnetic materials
1	They can be easily magnetized and demagnetized	They cannot be easily magnetized and demagnetized
2	They have narrow hysteresis loop	They have broad hysteresis loop
3	Hysteresis loss is small due to small hysteresis loop area.	Hysteresis loss is large due to large hysteresis loop area.
4	Coercivity and retentivity are small.	Coercivity and retentivity are large.
5	They have low eddy current loss	They have large eddy current loss
6	Magnetic energy stored is small.	Magnetic energy stored is large.
7	Susceptibility and permeability are large.	Susceptibility and permeability are small.
8	Movement of domain wall is easy and hence large magnetization is produced even for small applied field.	Movement of domain walls is difficult due to the presence of impurities. Hence large field is required to produce required magnetization.
9	They are free from strains and impurities.	They have impurities and large defects.
10	E.g. Ferrites, Iron, Garnet, Silicon alloys.	E.g., Tungsten steel, cobalt steel, carbon steel.
11	They are used to make temporary magnets. They are also used in switching devices, electromagnets, matrix storage computers.	They are used to make permanent magnets. These magnets are used in magnetic detectors, microphones and magnetic separators.