DIFFERENCES BETWEEN SOFT AND HARD MAGNETIC MATERIALS

Property	Soft Ferromagnetic Materials	Hard Ferromagnetic Materials
Magnetization & Demagnetization	Easily magnetized and demagnetized	Difficult to magnetize and demagnetize
Retentivity	Small	Large
Coercivity	Small	Large
Hysteresis Loss	Low	High
Magnetostatic Energy	Small	Large
Magnetic Susceptibility & Permeability	Large	Small
Permanent Magnetization	Cannot be permanently magnetized	Can be permanently magnetized
Domain Wall Movement	Easy	Difficult
Irregularities (Strains & Impurities)	Few irregularities	More irregularities
Behavior After Removing External Field	Loses magnetism readily	Retains magnetism
Common Applications	Used in electromagnets	Used in permanent magnets
Examples	Al-Ni-Co Alloy, Iron-Silicon Alloys, Ferrous-Nickel Alloys, Ferrites, Garnets	Iron-Nickel-Aluminum Alloys, Copper-Nickel-Iron Alloys, Copper-Nickel-Cobalt Alloys, Cobalt Steel
Diagram