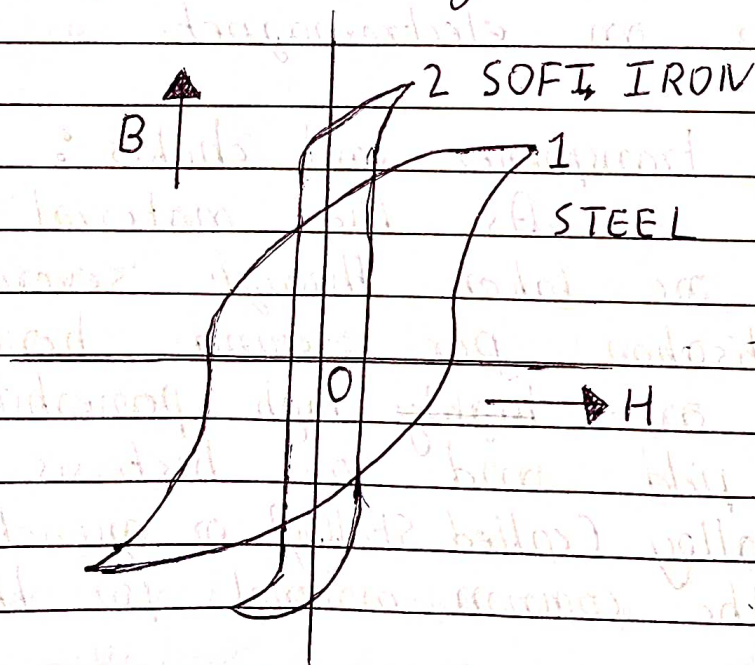


* Importance of Hysteresis :

The hysteresis curve gives all the informations about properties of a magnetic materials: permeability, susceptibility, retentivity, coercivity and hysteresis loss. It also helps in selection of materials for different purposes. The slope of B-H curve gives permeability, that of I-H curve gives susceptibility. The interception on the B-H curve on B-axis gives retentivity and that on H-axis gives coercivity. The area of B-H loop gives hysteresis loss per unit volume per cycle.

(1) For permanent magnets :



The material for a permanent magnet should have high retentivity and high coercivity. However, the latter is of more primary

consideration than former because a permanent magnet must be able to retain its magnetism against demagnetising effects such as variation in temperature, mechanical ill-treatment etc. In fig. material 1 (steel) is more suitable for permanent magnet than soft iron.

(2) For electromagnets :

The material for construction of electromagnet must have high value of μ for low value of magnetising field and low coercivity is must because an electromagnet is a temporary magnet and hence it has to loose magnetism when current is off. Permendur (50% iron + 50% cobalt) is common material for an electromagnet.

(3) For cores of transformer and chokes :

As the material used in these cases are taken through several cycles of magnetisation per second hence chief requirements are - highly high permeability at small magnetising field and low hysteresis loss. Silicon-iron alloy (called Stalloy) or Mumetal (Fe + Ni + Cu + Cr) is the common material for this purpose.