- When the ferromagnetic material is placed in external magnetic field (weak), the domains will not rotate but the domains which is already in the direction of magnetic field, its boundary increases and remaining domains will decrease.
- As the strength of magnetic field is increased, more and more domains will align in the direction of external magnetic field.
- Finally, at the certain stage, practically all domains get aligned in the direction of field. This is known as magnetic saturation. At this stage, a ferromagnetic material becomes permanent magnet and retain its magnetic property even if the external field is removed.

Magnetizing Field Intensity or Magnetic Intensity (H):

- The external (applied)magnetic field which produced the induced magnetism in the magnetic material is called magnetizing field and the strength of such magnetic field is called magnetic intensity. It is denoted by 'H'.
- It is the degree to which a magnetic field can magnetizes a material.

Mathematically,

$$H = \frac{B_0}{\mu}$$

Where B_0 is applied magnetic field and μ is permeability of medium ($for\ free\ space: \mu = \mu_0$)

Intensity of Magnetization:

The intensity of magnetization represents the extent to which a specimen is magnetized when placed in a magnetizing field.

Mathematically, it is defined as the magnetic dipole moment per unit volume. It is denoted by I.

$$Intensity\ of\ Magnetiation\ (I) = \frac{Magnetic\ Moment\ (M)}{Volume\ (V)}$$

$$I = \frac{M}{V}$$

For bar magnet,

$$I = \frac{M}{V}\frac{mx2l}{Ax2l}$$

$$I = \frac{m}{A}\text{--------}(1)$$

($M = m \times 2l$ & $V = A \times 2l$, $2l$ is the effective length of a bar magnet.)

Thus, the intensity of magnetization also can be defined as the pole strength per unit area.

- *Its unit is Am^{-1}. It is a vector quantity*
- *Its value depends on nature of material.*

Also, Intensity of magnetization can be written as: $I = \frac{B_{In}}{\mu}$

Where, B_{In} is induced magnetic field inside the material and μ is permeability of medium (for free space: $\mu = \mu_0$)