2.5 EFFECTS OF ALLOYING ELEMENTS ON THE IRON- CARBON (Fe-C) SYSTEM

Alloy steels are those steels which contain other elements like Ni,Mn,Cr,Mo,V etc. These elements are added to plain carbon to improve one or more of the following properties.

1.Greater strength,hardness,toughness at low and high temperature.

2.High hardenability

3.Greater wear resistance

4. Improve machinability

Effects of alloying elements on steel

The following factors are the effects of alloying elements on steel.

1.Formation of carbide

2.Solid solution strengthening

3.Neutral elements

4.Graphitising elements

5.Hardenability

1.Formation of carbides:

Certain alloying elements combine with carbon present in steel to form their respective carbides.The carbides increase wear resistance of steel.

2.Solid solution strengthening

Solid solutions provide hardness and strength to plain carbon steel.

3.Neutral elements:

Cobalt is the only element that does not form carbide .

4.Graphitising elements:

These elements try to decompose carbides into graphite .Ex.Si,Al and Cu.

5.Hardenability:

Even a small percentage of (0.002%) of boron increases the hardenability.
