

Brief Information of Covered Welding Rods for Surfacing or Hardfacing

Welding deposit a kind of alloy metal on a workpiece is surfacing or hardfacing and it is for improving the performance of abrasion resistance, corrosion resistance, heat-resisting or change the hardness of the workpiece. Surfacing (hardfacing) is widely used for repair and maintenance workpieces which are abraded or corroded to achieve greater, faster, better and more economical results, e.g. welding deposit a layer of abrasion-resisting alloy on an abraded normal mild steel workpiece not only to get good integrative mechanical properties but also reducing cost too much.

Getting satisfactory effect of surfacing (hardfacing) is complicated and it must choose appropriate welding rod according to the different objective and different welding technology should be applied to different welding rod and to different workpiece. The major problem of surfacing (hardfacing) is crack and it is bound up with the carbon content and quantity of alloy elements in both of weld metal and weldment. Preheating and postweld slow cooling are the main processes to prevent crack and preheating temperature should be judged by the carbon equivalent (C_{eq}) in the welding rod.

The formula of C_{eq} for the carbon steels and low alloy steels as follows:
 $C_{eq} = C + 1/6Mn + 1/24Si + 1/5Cr + 1/4Mo + 1/15Ni$

Preheating Temperature ($^{\circ}C$)

C_{eq} (%)	0.40	0.50	0.60	0.70	0.80
Temperature	Up 100 $^{\circ}C$	Up 150 $^{\circ}C$	Up 200 $^{\circ}C$	Up 250 $^{\circ}C$	Up 300 $^{\circ}C$

The hardness, abrasion resistance and heating-resisting of deposited metal relative to the welding current and arc length, some alloy elements would be burned lose if welding current is higher and arc length is longer. The chemical composition and hardness is based on the deposited metal that surfacing three layers and different hardness can be obtained via different ways of heat treatment after welding.