

Hot metal spray powders:

The powder welding process basically uses a simple oxy – acetylene torch where finely divided powder is fed into the flame from a hopper attached to the torch. The powder melts to give a dense coating and forms a strong bond with the base material by surfacing alloying and diffusion. Fluxing elements such as boron and silicon are necessary in the powders for good metallurgical bond. This process is typically used for deposits having thickness between 0.2 – 12 mm, in particular for smaller parts or repairs. The process is applicable only in iron – base, nickel – base or copper – base material. The flow of powder and spreading on base metal depends primarily on two characteristics: powder particle shape and size. The mesh size determines the acceptability of the powder to be used by hot metal spray process. Usual range is between 15 – 160 microns. The shape of powder is very important for the welder as it solely determines the ease of flow of the powder through the nozzle of hot spray gun.

The powder has spherical particles resulting in a smooth flow through the nozzle and higher deposition rate. Ground powders have irregular shape and the flow characteristics are poor.

Advantages of powder spray:

- ✚ Thin layer can be given with hardness upto 65 HRC (upto 0.15 mm thickness)
- ✚ Coating is uniform; hardly any post – machining required.
- ✚ No heat treatment is required
- ✚ Self – fluxing: no slag cleaning required
- ✚ For machine parts, life obtained is much higher.

