

DC53 & Surface Treatments

DC53 is well suited for supporting a wide variety of surface treatments which include Case Harden Nitride as well as Physical Vapor Deposition (PVD), Chemical Vapor Deposition (CVD) and Thermal Diffusion (TD) otherwise known as Thermal Reactive Diffusion (TRD). Parts should be finished to size and polished prior to applying the surface treatment. A light polish after coating is also beneficial. This is particularly important when applying surface treatments on form, draw, and extrusion tooling.

No special process or heat treat is required when applying low temperature surface treatments such as Nitriding and PVD coatings. Higher temperature surface treatments utilizing the CVD and TRD process coatings may be applied however, annealing, post hardening, and tempering is highly recommended. A tip to minimize size change in the form of growth when CVD coating is to temper at 500° C (930° F) to 510° C (950° F) in the pre-heat treat process before coating.

Size change and distortion are to be expected when applying high temperature surface treatments regardless of how they are applied. The amount of size change will vary depending on the overall size and geometry of the item being coated as well as any differences between the pre and post heat treat processes.

In some cases, high temperature surface treatments can be applied to parts in the annealed condition prior to receiving any heat treat. This technique is best suited for small parts where overall size change will be minimal. DC53 can utilize the surface treatment process temperatures in place of the austenitizing phase of the heat treat process if applied at 1,030° C (1,885° F) to harden the part. The part should be double tempered per the heat treat instructions to achieve the desired hardness.

These are general guidelines and recommendations when considering surface treatments on DC53. Slight variations may be necessary based on specific application concerns. Contact the surface treatment company for details on how to best apply their process to your tooling.