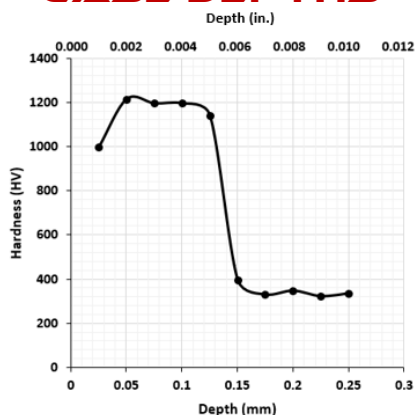


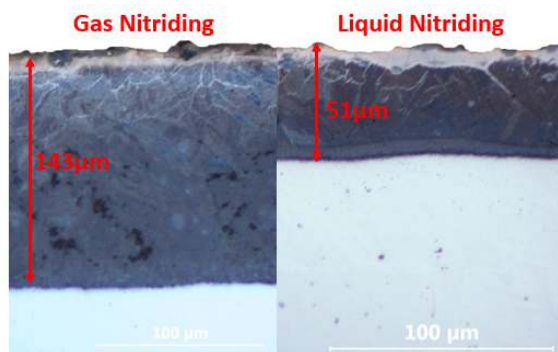
## PROCESS

Specialized Gas Nitriding procedure for stainless steels. Improvement over liquid nitriding for high Cr materials.

### CASE DEPTHS



**Capable of case depths up to 0.008” (0.2 mm).** Stainless alloys are rich in nitride forming elements (most notably Cr), which results in high hardness, but limited case depth.



Gas nitriding is not only capable replicating the results of conventional salt-bath (liquid) methods, but can also be tailored to achieve deeper case depths.

### TYPICAL MATERIALS

- 13-8
- 15-5
- 17-4

## SURFACE ACTIVATION

The greatest difficulty with nitriding stainless steels is removing the passivation layer which will otherwise inhibit the process. One of several physical or chemical methods can be used to “activate” the surface for nitriding. Some alloys are more difficult to activate than others, and may require more aggressive techniques. In most cases surface finish is unaffected.

### ADVANCED RECIPE DESIGN

Stainless steels are much more complex alloys to nitride, and require expert process control to achieve quality results.

Understanding process kinetics, and the development of metastable phases is important to ensure desirable results. If not properly controlled, stainless steels can be prone to forming brittle white layers, or inconsistent/non-existent cases. Certain grades can experience changes in their mechanical properties or can develop defects if treated at the wrong operating temperature including a reduction in corrosion resistance. **Consult our experts to find a procedure that suits your application.**

### POST-REACTION OXIDATION (PRO™)

For a sleek black finish, we recommend our PRO™ surface finish. Following nitriding a secondary process is used to produce a professional black surface finish. Those familiar with liquid nitriding will recognize this as an  $Fe_3O_4$  oxide coating, but unlike liquid nitriding, this oxide layer doesn't change the surface finish of the part (no polishing required).

