

Nitriding Tips for New Users



What materials can be used for nitride?*

Alloy steels, carbon steels, cast irons, tool steels, stainless steels, inconel and titanium

What type of results can be expected?*

The metallurgical results will vary based on the material selected.

What size parts can be nitride treated?

Parts of all sizes can be nitrided, however the specific size may determine which type can be utilized. For instance, Advanced Heat Treat Corp. can nitride parts up to 32' tall, 13' wide and 60,000 lbs.

What information is needed when considering a nitride process?

If no specific process is called out on the print (Ion/Plasma Nitride, Gas Nitride, FNC, etc.), your heat treater can assist with selecting the process/requirements for the specific part and/or application. Also note that there are many tradenames in the industry for the same nitride processes and although the specific name may not be offered, an equivalent might — just ask!

In addition to the process, these items are very helpful:

- Material
- Core hardness
- Stress relief temperature (if applicable)
- Print (if applicable)
- Requirements
- Total case depth (total diffusion depth)
- Effective case depth (a specific hardness at a specified depth)
- Compound zone/white layer thickness
- Surface hardness
- Masking requirements (if applicable)
- Formal specifications to be followed (if applicable)



What color will my parts be after processing?

Nitrided parts will typically be matte gray in color. AHT's trademarked process for added corrosion resistance, UltraOx[®], will result in a sleek black finish as shown to the right. Titanium parts have a beautiful gold finish after processing.

Will my parts distort during the process?

Typically there is minimal to no movement during the process as nitride is considered a low temperature thermal process.

Will I need to machine/grind my parts after processing?

Although typically this is not required, as a majority of the parts sent for nitride are finished machined, post process machining is an option. It is recommended that this information be provided at the time of quoting/processing. This will help ensure proper requirements for a part that will have the nitride layers compromised after processing.

How long does the nitride process take?

The nitride process varies based on multiple factors including the material, requirements, size/weight of the part, to name a few. Processing time can range from several hours to several days.

Can you nitride a part more than once? Yes.

What temperatures are used with the nitride processes? 800-1100°F

***Download our handy chart: *Typical Materials and Their Corresponding Surface Hardness and Case Depths When Using UltraGlow[®] Ion Nitriding* at www.ahtcorp.com or contact your AHT representative to learn more.**