



# 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 geometry, material and/or requirements may determine which type of nitriding should be used. Advanced Heat Treat Corp. can nitride parts up to 160" diameter, 360" length 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) -OR- Effective case depth (a specific hardness at a specified depth)
- Compound zone/white layer thickness
- Surface hardness
- Masking requirements (if applicable)
  - Note areas that must be soft for post operation welding/machining.
- 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<sup>®</sup>, will result in a 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 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 a dozen hours to several days.

## Can you nitride a part more than once? Yes.

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