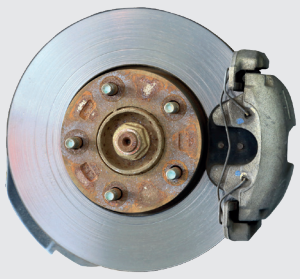
Nitriding / Ferritic Nitrocarburizing (FNC)

What is the difference?

They are surface treatment processes that involve the diffusion of **nitrogen** or **nitrogen + carbon** on the surface of the part and, therefore, improve wear, fatigue and corrosion resistance. Choosing one of them depends on the particular requirements of the application and the type of material.
Broadly speaking:

	Nitriding	Ferritic nitrocarburizing (FNC)
Elements to be diffused:	N Nitrogen	N Nitrogen + C Carbon
Objective:	Formation of a thin, **hard nitride compound on the Surface** plus a good, strong diffusion zone underneath, to improve: ✓ **Surface hardness.** ✓ **Load bearing capacity** ✓ **Wear resistance.** ✓ **Fatigue strength.**	Formation of hard nitrides and carbides on the surface, to increase the thickness of the white layer and improve: ✓ **Load bearing capacity** ✓ **Fatigue resistance.** ✓ **Adhesive wear resistance.** ✓ **Corrosion resistance.** ✓ **Lubricity.**
Process:	 Focused on the diffusion zone rather than the white layer. Hardness ++++++ Fatigue resistance +++++++	 Focused on to create a thicker white layer and, in addition, produce a diffusion zone. The introduction of carbon into the surface saturates the chemical composition of the steel, converting it into a compound and thus generating a thicker white layer. Hardness +++++++ Fatigue resistance ++++
Materials:	Medium to high carbon Steels | Cast iron | Stainless steel | Nickel alloys | Titanium.	Low carbon steels | Cast Iron.
Keep in mind:	When the best ratio between hardness and ductility is sought, in parts with high fatigue strength. 	It seeks to improve sliding and corrosion resistance properties. 
Applications:	Gears, camshafts, cutting tools, engine components, drills etc.	Parts that, in addition to the above, are exposed to corrosive environments, such as valves, shafts and equipment in the food industry.
Preferred mechanism:	**Rotational fatigue resistance, load bearing capabilities.**	**Sliding wear**
Normal Process temperature:	350°C - 600°C **up to 800°C for Titanium**	500°C - 650°C

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