NITREX

SMART ONC®

Smart ONC® technology enhances the wear and corrosion properties of brake rotors, while reducing airborne particle emissions from vehicle brakes.

Eco-friendly technology

WHAT IS SMART ONC®?

Smart ONC® is a dual heat treatment technology that combines the proven ferritic nitrocarburizing NITREG®-C process with ONC®, an in-process post-oxidation, to increase the corrosion and wear properties of brake rotors in an efficient, cost-effective manner. As a result, treated brake rotors minimize brake dust and particulate matter, resulting in much lower particle emissions.

HOW DOES SMART ONC® WORK?

The process comprises 2 distinct phases:

1. **NITREG®-C** diffuses carbon and nitrogen into the steel surface, which creates a hardened superficial layer (aka compound layer), enhancing wear and corrosion resistance, as well as improving the fatigue resistance of treated steel or cast-iron parts, without distortion of shape or dimensional changes.
2. **ONC®** produces a magnetite iron oxide layer (aka oxidation layer) that is hard, resists high-temperature, and further enhances corrosion resistance.

This optimized oxidation layer is toxic-free and does not contain chromium, nickel, cadmium, lead, barium, or mercury. It can withstand up to 560°C (1,040°F) and provides excellent corrosion resistance without crystallization or any decomposition during heat cycles.

The result is an attractive black finish with long-term corrosion protection.

SMART ONC® ADVANTAGE

- Control of the thickness of the compound and oxide layers and their properties
- Elimination of closed nitride networks within the diffusion zone
- Control of case depth
- Control of surface hardness
- No distortion, minimal & predictable growth
- Corrosion resistance improved
- Inherent wear resistance enhanced
- Attractive black surface finish
- Low operating costs
- Minimal supervision
- No cleaning or post-finishing requirements after processing
- Green technology, no waste pollution

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PUTTING SMART ONC® TO THE TEST

ASTM B117 is the industry standard for steel corrosion testing. Below are specimens showing the results of untreated, nitrocarburized, nitrocarburized and oxidized, and Smart ONC® samples in a salt spray chamber, from left to right. Smart ONC® has the highest corrosion resistance of any of the samples tested. Observation of the first corrosion spot occurred after 120 hours.

SAMPLES A & B—untreated and nitrocarburized—show heavy corrosion after 20 hours.

SAMPLES C & D—oxidized and Smart ONC®—after 100 hours of salt spray.

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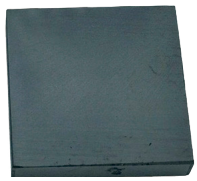
A

B

C

D



UNRIVALED CORROSION RESISTANCE

TREATMENT	HOURS OF CORROSION RESISTANCE OF THE ROTORS							
	24	48	120	168	240	300	400	460
Untreated	•							
Rust inhibitor paint	•							
Ferritic nitrocarburizing	•							
Oxidation		•						
Titanium grey finish			•					
Electrophoretic coating with resin						•		
Zinc-flake coating							•	
SMART ONC®			No spot	1st spot	20% corrosion present			25-40% corrosion present

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NXL CONTINUOUS SERIES

- DEPENDABLE
- EFFICIENT
- PROCESS FLEXIBILITY
- HIGH THROUGHPUT

Eco-friendly technology

NITROCARBURIZING FURNACE LINE

FOR HIGH-VOLUME BRAKE ROTOR PRODUCTION

The NXL Series features scalable process modules (i.e., sealed chambers) to meet a wide range of productivity needs. For high-volume continuous production of brake rotors, the NXL design concept enables various levels of manufacturing automation, from semi-automated to completely automated, including lights-out operations.

AMS 2759/10 2759/12 COMPLIANT

NXL FURNACE TURNKEY SYSTEM

SCAN QR CODE TO LEARN MORE about the NXL Series, including technical details such as system characteristics, process capabilities, and auxiliary equipment. Product brochures are also available for download

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