ONC® PROCESS TECHNOLOGY

FOR EXCEPTIONAL CORROSION RESISTANCE

WHAT IS ONC® ?

ONC® is successfully applied to enhance corrosion and wear resistance of various grades of steel. It is a modern combination of the proven NITREG® potential-controlled nitriding process or the Nitreg®-C potential-controlled nitrocarburizing process with an integrated post-nitriding oxidation.

ONC® = NITREG® or NITREG®-C + Post-nitriding oxidation

ADVANTAGES OF ONC®

Practically all steels can be treated by ONC®. The most popular applications being those exposed to high corrosion hazards, while retaining enhanced wear resistance. The ONC® treatment produces an attractive black surface. The appearance is still more enhanced after the application of Corr-Check®. This is a liquid-based corrosion inhibitor impregnated into the surface, which forms a dry, glossy finish, and provides additional corrosion protection.

Appearance of ONC®-treated automobile wiper axles manufactured from 1144 free-machining steel

ONC® can treat various grades of steel used in

- automotive
- hydraulic and
- tooling applications.

It is ideal for applications made of

- unalloyed and
- low alloy steel

that are exposed to a corrosive environment.

HOW ONC® WORKS

The process comprises three distinct phases:

1. Nitreg® or Nitreg®-C, in which automatic potential control ensures the obtaining of a white layer designed for optimum wear and corrosion resistance.

2. Post-nitriding oxidation, carried out after the nitriding stage, as an integral part of the treatment cycle, i.e. in the same retort, by the introduction of an oxidizing medium. A thin, 1–2 µm (0.00004-0.00008”) complex oxide surface layer is formed, further improving corrosion resistance. The surface assumes an attractive black appearance, desirable in many applications.

3. Corr-Check®. This optional stage represents immersion at ambient temperature in an inhibitor-containing bath, for a time not exceeding 1 minute. The medium containing the corrosion inhibitor is retained in micropores in the external zone of the white layer, offering additional corrosion protection during service.

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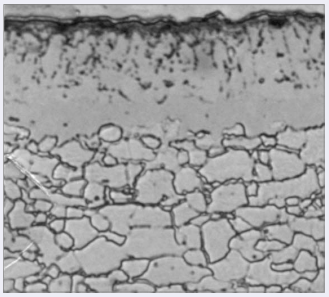
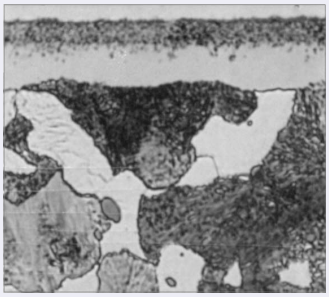
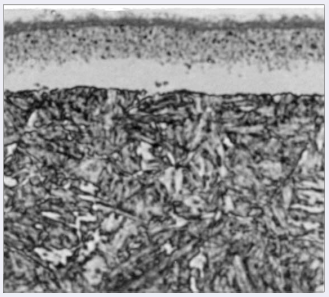
COMBINED WITH SUPERIOR WEAR PROPERTIES

PUTTING ONC® TO THE TEST

Depending on the type of steel, parts treated in the ONC® process can easily pass well over 200 hours of salt-spray test per ASTM B117 before the first corrosion spot appears.

A comparison of corrosion test results obtained on three different applications, manufactured from different materials treated by the ONC® process, is shown below.

APPLICATION	Automotive Seat Rails	Throttle Valves	Automotive Shafts
Steel Grade	1006	1144	4140
Microstructure			
Time in Salt-Spray to First Corrosion Spot (in Hours)	**339**	**483**	**239**

EXAMPLES OF TYPICAL APPLICATIONS

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