

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.

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.



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.

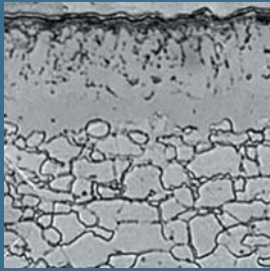

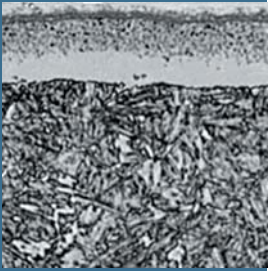


ONC[®] PROCESS TECHNOLOGY

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

For information regarding Nitrex technologies and systems, please contact:

Hardchrome Engineering Pty Ltd
ABN 97 005 291 083

Melbourne
175 Wellington Road
North Clayton 3168
Victoria, Australia

Telephone
+61 (0) 3 9561 9555

Facsimile
+61 (0) 3 9561 9155

Adelaide
8 Watervale Drive
Green Fields 5107
South Australia, Australia

Telephone
+61 (0) 8 8281 8733

Facsimile
+61 (0) 8 8281 8087

Email
office@hardchrome.com.au

www.hardchrome.com.au

EXAMPLES OF TYPICAL APPLICATIONS



Left: Treated by competitive process
Right: Treated by ONC[®] and Corr-Check[®]



Left: Treated by competitive process
Right: Treated by ONC[®] and Corr-Check[®]

