



# InnoGUARD

Harber Coatings Inc.'s **InnoGUARD™ Flakeless ENC** (Electroless Nickel Coating) is a unique, proprietary formula and integrated technology coating process, of high phosphorous-nickel alloy deposited on a metal substrate. Our superior coated surface does not flake or peel when mechanically impacted, exposed to sour service, or placed in extremely corrosive environments such as high chlorides, H<sub>2</sub>S, CO<sub>2</sub>, oxygen, steam and brine water. InnoGUARD™ ENC is an economical way to guarantee equipment optimization by reducing maintenance and replacement costs of valuable metal assets.

## WHY Choose InnoGUARD™ Coating?

- **Increased working life** of metal tools/parts by 20X or more
- **Reliable corrosion resistance** in extreme environments
- **Cost efficient** way to coat ID, OD and threads via dip process
- **Equivalent thermal co-efficiency as the substrate** ensures no micro-cracking to compromise the substrate material
- **Consistent coating uniformity** regardless of part geometry including deep recesses, seams, threads, blind holes, etc.
- **Smooth surface reduces friction by 2/3** and maintains an identical surface profile as the substrate material coated
- **Clean material does not need to be sandblasted**, therefore reducing cost and avoiding potential part damage
- **No machining after coating** and no grinding of weld seams
- **Can withstand high torqueing** and compressive stress
- **Comparable in cost to other coatings** such as hard chrome, epoxy or polymer with superior performance
- **Eco-friendly process** preventing air toxicity and pollution
- **LIFETIME NO PEELING, NO FLAKING WARRANTY!**



Our proven coating prevents corrosion on carbon steel, stainless steel, aluminum, brass, copper, Inconel, etc.



**Application:** Spool coated with InnoGUARD™  
**Environment:** Produced water (70% chlorides)  
**In service:** 3+ years when photo taken

### Typical Oil & Gas Applications:

**Downhole Tools** – multi-stage frac tools, packers, pup joints, tubing, casing, completion tools, fishing tools, wireline tools, slotted pipes, couplings, etc.

**Wellhead and Other Equipment** – BOP's, valves, polished rods, sucker rods, pistons, cylinders, stuffing boxes, hydraulic parts, etc.

**ANSI & API Valves and Pipe Spools** – pressure vessels, strainers, bolts/nuts, flanges, etc.

**Pump Equipment** – plungers and liners, pump housings/impellers/shafts, tubing products, pipes and fittings, fracing valve elements, sand screens, reciprocating pump barrels, progressive cavity pump stators, rotors, gear boxes, bearings, flow tees, etc.

### Other Industry Applications:

Food processing, petrochemical, agriculture, potassium mining, pulp & paper, waste water treatment, defence, marine, automotive, power, swimming pools/ice facilities



### InnoGUARD™ Specifications

InnoGUARD™	High Phosphorus (300)
Thickness Range	0.5 – 4.0 mils; typical 1.0 – 1.5 mils
Phosphorus Content	11 – 15%
Melting Point	880°C
Density	7.9 g/cm <sup>3</sup>
Hardness	As plated: 380-520m VHN 100 Heat-treated: 820-1000 VHN 100
Ductility	1.3% elongation
Wear Resistance	As plated: 8 - 10 TWI With heat treatment: 2 - 4 TWI
Corrosion Resistance	Excellent for acids; very good to alkali
Frictional Property	Co-efficient of friction (versus steel): 0.35 (dry) and 0.11 (lubricated)
Magnetic Property	Non-Magnetic



**\*Large scale facility with coating capacity of parts up to 44 feet long**

### InnoGUARD™ 300 Series Products

#### InnoGUARD™ 300

An economical high-phosphorus formula designed for high acid corrosion resistance. The amorphous characteristics of this coating provides superb corrosion resistance, achieving hardness ~50 Rc.

#### InnoGUARD™ 300H

A heat-treated and hardened formula designed to achieve a crystalline structure. This coating is optimal for applications with significant abrasion, achieving Vickers Hardness ~ 900 HV (greater than 68 Rc).

#### InnoGUARD™ 300M

Developed for marine/off-shore applications, the 300M formula is excellent for highly corrosive environments with extreme temperature changes and severe abrasion factors. This specialty formula can achieve Vickers Hardness ~ 900 HV (greater than 68 Rc).

**For more information on our products, please contact us:**

**HARBER COATINGS INC.**

6313 - 35 Street SE

Calgary, AB, Canada T2C 1N1

**Phone:** 403-236-7722

**Fax:** 403-236-7792

**Email:** calgaryoffice@harbercoatings.com

**Web:** www.harbercoatings.com

