

Hiron[®]

A high performance zinc iron alloy



General Metal Finishing

Corrosion resistant coatings

atotech.com



Ni-free

K_2MnO_4 -free

CN-free

A new era for sustainable corrosion protection

An environmentally sound zinc iron electrolyte that outperforms zinc nickel

The formal classification of nickel as a toxic substance has compelled many industries to seek out safe and effective substitutes for nickel-based coatings.

Hiron[®] is a cyanide-free zinc iron electrolyte that does not contain nickel. When combined with tried and tested MKS' Atotech post-treatments, this zinc iron coating provides outstanding corrosion protection, performing excellently in the most stringent corrosion tests, such as PV1209 cyclic corrosion, neutral salt spray, and Ehra-Lessin corrosion tests.

Hiron[®]'s alloy range can be adjusted between 12 and 15% iron content to fit customized performance specifications. It is heat resistant and creates a silver appearance on par with zinc-nickel.

With an iron content of 15%, Hiron[®] exhibits a hardness of 500 HV. Hiron[®] is suitable for silver and black coatings and offers an even thickness distribution.

Hiron[®] is also an excellent adhesion promoter for organic top coats or e-coatings. It passes the crosshatch test with flying colors and delivers a creepage superior to zinc nickel or other electrolytic zinc solutions.

Hiron[®] already meets the requirements laid out by many industries requiring high corrosion resistance, including the automotive, heavy machinery, window frame, and connector industries. When applied as a nickel substitute, it significantly improves product sustainability.

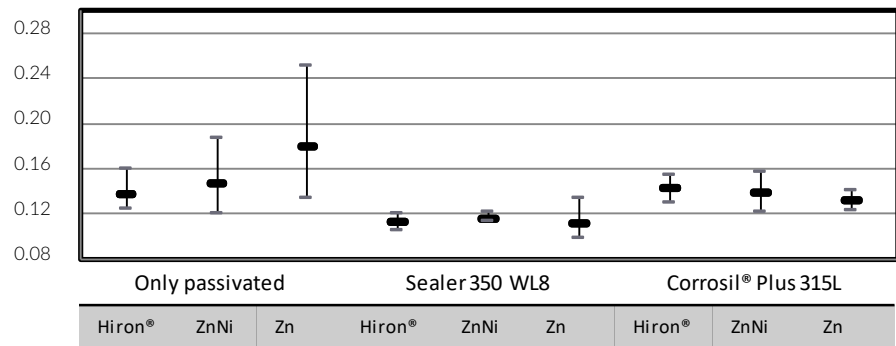
A zinc iron electrolyte that fulfills OEM requirements for CoF and black appearance



Figure 1: Fasteners: Hiron® + black passivation + post-dip + Sealer 350 WL8
Figure 2: Hydraulic part: Hiron® + EcoTri® NC + Corrosil® WF
Figure 3: L-shaped part: Hiron® + EcoTri® NC + Corrosil® WF

Comparing the CoF behavior of zinc iron, zinc nickel and zinc

Hiron® and zinc nickel deposits have comparable friction windows due to their similar hardness range. When applied in combination with MKS' Atotech sealers, also used for zinc nickel applications, Hiron® electrolytes achieve friction results identical to those of zinc nickel.



Measured according to DIN EN ISO 16047 on M10 parts

A deep black appearance with minimal white haze formation

The newly-developed black passivate and post-dip for the Hiron® electrolyte create a deep black aesthetic finish. Thanks to their excellent resistance against corrosion and acidic environments, the black Hiron® process sequence minimizes the occurrence of white haze in corrosion tests, e.g. up to 240 h in NSST ISO 9227.

Features and benefits

- White haze resistance up to 600 h in NSST
- Comparable corrosion performance like zinc nickel in NSST and cyclic corrosion tests
- Best-in-class adhesion performance for sealers, top coats, and e-coats
- Excellent conductivity performance
- Sustainable ferrous electrolyte without nickel content
- No cyanide formation
- Adjustable alloy range from 12 - 15%
- Suitable for silver and black coatings
- High heat resistance
- Even thickness distribution
- Hardness comparable to zinc nickel layers
- Installable in standard plating lines for rack and barrel applications

