

● NICKEL

EZ Series: Continuous Monitoring of Nickel

Key Applications: Production and treatment of drinking water, surface water and industrial wastewater treatment

Nickel is an abundant component of Earth's outer and inner cores. Most of the global Nickel production is used in the manufacture of stainless steel, with the remainder employed in applications such as alloys, batteries and electroplating. Industrial waste and mining therefore present the major sources of Nickel pollution. From a health perspective, Nickel is not regarded as a highly toxic contaminant, but reproductive and developmental toxicity have been reported, and high Nickel concentrations can impart a metallic taste to drinking water.

Features of the EZ Series Nickel Analyser

- **Continuously monitor Total Nickel and Dissolved Nickel to detect trends, peaks, and excursions**
- **Accurate at low levels starting at 5 µg/L**
- **Multiple stream analysis (1 - 8 streams)**
- **Analogue and digital communication options**

**Explore the full range of parameters and technologies.
Call your Hach representative today, or visit
hach.com/ez-series**



[Watch the Video](#)

[Get Product Info](#)

[More Resources](#)

The Why, Where and How of Nickel Monitoring

About

Whilst Chromium is the key alloying element for corrosion resistance in stainless steel, the addition of Nickel makes stainless steel easier to form and weld; remaining ductile at very low temperatures but suitable for use in high-temperature applications.

Nickel occurs naturally in water sources where certain geological conditions exist. In addition, metal works, mines and mineral deposits increase the likelihood of raised Nickel concentrations. Landfill sites containing industrial waste, batteries and metal products can become point sources of Nickel pollution.

A common source of Nickel contamination in drinking water is leaching from plumbing fittings. However, if Nickel levels are uniformly high across all properties in a location, raised levels are likely to have come from a contaminated source.

Nickel in Drinking Water

In food and drinking water, Nickel generally occurs in the divalent form Ni(II), which is the most stable oxidation state. The draft WHO Guidelines for Drinking Water Quality (2019) recommend a Guideline Value for Nickel in drinking water of 40 µg/L.

In Europe, Directive (EU) 2020/2184 on the quality of water intended for human consumption sets a parametric value for Nickel at 20 µg/L.

The 2018 Edition of the US EPA's Drinking Water Standards does not give a Maximum Contaminant Level for Nickel, however it does provide a Reference Dose of 0.02 mg/kg of body weight per day.

Nickel in Ground and Surface Waters

Nickel and its compounds are classified as priority substances under the Water Framework Directive. However, in the absence of a comprehensive technical basis to set an Environmental Quality Standard for Nickel, an interim value of 20 µg/L was established.

Where groundwater from Nickel contaminated locations is used as a source for drinking water, Nickel removal may be necessary during water treatment.

Nickel in Industrial Wastewater

In Europe, the Best Available Technology - Associated Emission Level (BAT-AEL) of Nickel to water from wastewater treatment has been set at 5 - 50 µg/L.

In the USA, Nickel and its compounds are listed as toxic pollutants, and the US EPA publishes criteria which provide guidance for States and Tribes to establish water quality standards and provide a basis for controlling discharges of pollutants. The US Clean Water Act prohibits anybody from discharging pollutants unless they have a NPDES (National Pollutant Discharge Elimination System) permit, which contains discharge limits as well as monitoring and reporting requirements. Each permit is written to reflect the site-specific conditions of the discharger and may include limits for Nickel and its compounds.

Nickel Monitoring Solutions

EZ Series Nickel Analysers are available in two models:

EZ1027	Nickel Ni(II), dissolved
EZ2004	Nickel, total
EZ2304	Nickel, total & Ni(II), dissolved

Options

- Selection of measuring ranges to match your application
- Monitoring of up to 8 sample streams per analyser, reducing cost per sampling point
- Analogue and/or digital outputs for communication
- Self-cleaning sample preconditioning panel