● IRON

EZ Series: Continuous Monitoring of Iron

Key Applications: Monitoring of drinking water and surface water, boiler and steam, wastewater

Iron is an essential trace element in living organisms, existing in many foods and in natural waters at levels ranging from 0.5 to 50 mg/L. Iron may also be present in drinking water as a result of the use of Iron coagulants or the corrosion of steel and cast Iron pipes during distribution. Excessive concentrations can harm the appearance and taste of drinking water. In industrial applications, Iron reacts readily with oxygen and water to produce Iron oxides (rust), but in contrast with some other metal oxides which form passivating layers, rust can easily flake off, exposing new pipe surfaces to corrosion. Furthermore, corrosion products can form harmful deposits in water and steam distribution systems.

Watch the Video

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More Resources

Features EZ Series Analyzers

- **Continuously monitor Dissolved and Total Iron to detect trends, peaks, and excursions**

- **Accurate at low levels starting at 2 µg/L**

- **Multiple stream analysis (1-8 streams)**

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

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Be Right™

The Why, Where and How of Iron Monitoring

About

Iron has been widely used since the Iron Age when the superior properties of Iron and steel gradually replaced the Copper alloys of the Bronze Age. During the Industrial Revolution of the late 18th Century, the development of processes to manufacture large volumes of bar Iron facilitated the move from manual methods to machine production.

Iron exists mostly as ferrous compounds, Fe(II) or ferric compounds Fe(III), both of which readily combine with oxygen-and sulphur-containing compounds to form oxides, hydroxides, carbonates, and sulphides. In the body, Iron performs vital roles in the movement of blood oxygen and in hormone formation. In drinking water production, Iron concentrations are closely monitored because discoloration, bad taste and staining are the most common causes of customer complaints.

Iron in Drinking Water

Due to Iron's aesthetic effects, the World Health Organization has established a secondary water guideline value of 0.3 mg/L. The US EPA has established Secondary Drinking Water Regulations (NSDWRs) for contaminants that affect the aesthetics of drinking water but do not pose a risk to human health. The maximum contaminant level for Iron is also 0.3 mg/L.

Iron in Ground and Surface Waters

The harmful effects of excess Iron on aquatic organisms are influenced by the chemical form of Iron present, pH and dissolved Oxygen concentration, all of which can affect the speciation, bioavailability and physical form of Iron. Iron levels in sediment, surface and groundwater therefore vary significantly as a result of both natural and anthropogenic effects.

Iron in Industrial Water

Iron dissolution from carbon steel in water and steam systems causes wall thinning and corrosion, which represent a serious threat to plant assets in power generation and cooling applications. Iron monitoring therefore plays a vital role in chemical treatment and corrosion control.

Iron in Wastewater

In many countries, to protect aquatic life and groundwater quality, permit limits are imposed when a discharge is liable to cause pollution or result in the deterioration of receiving water quality. Wastewater discharge consents often include limits for Iron, especially in cases of sensitive receiving waters and where Iron salts are employed as coagulants in Phosphorus removal.

Iron Monitoring Solutions

EZ Series online analyzers are available in multiple models:

EZ1023	Iron Fe(II), dissolved
EZ1024	Iron Fe(II+III), total dissolved
EZ1302	Iron Fe(II), dissolved & Fe(II+III), total dissolved
EZ1303	Iron Fe(II), dissolved & Fe(III), dissolved & Fe(II+III), total dissolved
EZ2005	Iron, total
EZ2305	Iron, total & Fe(II), dissolved
EZ2306	Iron, total & Fe(II+III), total dissolved
EZ2307	Iron, total & Fe(II+III), total dissolved & Fe(II), dissolved
EZ2308	Iron, total & Fe(II+III), total dissolved & Fe(II), dissolved & Fe(III), dissolved

Options

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

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