

2035 Hardness Process Analyzer

From Metrohm Process Analytics

Recently, the use of membranes has become extremely common and has displaced old technologies of different industrial electrolysis processes, such as in chlorine production and water desalination. Therefore, brine purification has become an unavoidable step to preserve and extend the electrolysis. The level of impurities such as calcium and magnesium (known as hardness) is reduced in two treatment steps. After the secondary treatment with an ion exchange resin, impurity concentrations in brine can be reduced by a factor of 1000.

Hardness determination in this **ultrapure brine** is necessary to prevent damage downstream in the electrolysis process. Ca^{2+} and Mg^{2+} create pin holes in the membranes, causing a loss in current efficiency which leads to higher energy costs. The **2035 Hardness Process Analyzer** from Metrohm Process Analytics is the ideal solution to measure hardness content in ultrapure brine.

About the hardness application

Ca^{2+} and Mg^{2+} form a colored complex with an indicator in alkaline environment. The colour intensity indicates the hardness level in the sample and can be measured at a wavelength of 620 nm, with a detection limit of $\mu\text{g/L}$.

Benefits for online analysis

- Protect expensive company assets by monitoring your processes
- Process data available at your fingertips 24/7 means no waiting for slow, manual laboratory methods
- More reproducible results - No operator interference necessary
- Faster results to improve process optimization
- Less labor and chemical consumption reduces overhead costs and increases profits

$\text{Ca}^{2+}/\text{Mg}^{2+}$ analysis performed safely online

- Safe, rugged enclosure designed to IP66 specifications is ideal for process environments
- Upstream control of brine quality helps overcome costly membrane remediation procedures before fouling occurs
- Remote access and control via Ethernet and Modbus TCP/IP, with USB for data export
- Integrate additional measuring techniques (pH, conductivity)
- Customizable, user-friendly interface with several security levels



Applications for $\text{Ca}^{2+}/\text{Mg}^{2+}$

- ... in the outlet resin treatment in chlor-alkali production / (chemical)
- ... in polished brine prior electrolysis process / (chemical)



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