

# Quality control and optimization of coating processes in chrome plating

Efficient analysis of main components and catalysts using ion chromatography (IC)

Herisau, December 2021.

Chrome plating is an electroplating technique to apply a thin layer of chromium onto a metal surface. This layer can have different functions, from increasing surface hardness, over providing corrosion or wear resistance to decorative purposes. For an efficient plating process, chrome plating baths contain catalysts, such as sulfuric acid, MSA, or MDSA. Excessive catalyst concentrations can cause defects on the plating surface, while insufficient concentrations can impair the process and/or cause dull spots or burned deposits. Monitoring their concentration level is therefore a prerequisite. Ion chromatography (IC) is the ideal solution for monitoring catalyst concentrations, besides chromate and inorganic anions, such as fluoride or chloride.

Chrome plating baths have a high ionic strength, are acidic, and extremely toxic. This makes the analysis challenging for analysts and equipment. By combining IC with automated (intelligent) Inline Dilution, plating bath samples can be analyzed without prior manual sample preparation. The system automatically dilutes the samples based on a pre-defined or a calculated optimum dilution factor, reducing the risk of exposure to these toxic solutions for analysts to a minimum and increasing operational safety. Metrohm's flexible systems facilitate upgrades and/or automation for a continuous 24/7 monitoring offline, at-line, or as in-process analytics. With IC, medium and low concentrations of metals can be determined with a high accuracy next to each other. Additional solution components can be determined at the same time, even if they span a broad concentration range.



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AN-S-051 Chloride, sulfate, chromate, and sulfonic acids in a chromium plating bath

AN-S-209 Fluoride, methyldisulfonic, ethyldisulfonic and methyldisulfonic acid in chromium plating baths

AN-S-315 Methanedisulfonic acid in a chromium plating bath applying nested Inline Dilution, Dosino Regeneration, and STREAM

AN-S-328 Sulfate besides chromate in bright chrome plating baths

**Weblink:** [news.metrohm.com](https://news.metrohm.com)

**Keywords:** Ion chromatography, MISIP, Metrohm Inline Sample Preparation, Inline Dilution, automation, intelligent IC, anions, sulfate, chromate, sulfonic acid, MSA, MDSA, metals, chromium, chrome plating, surface finishing, surface coating, catalysts,

## PRESS RELEASE FOR IMMEDIATE PUBLICATION

**Branches:** Metal products, plating & finishing

**Image:** Motorcycle with chrome parts

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Metrohm is one of the world's most trusted manufacturers of high-precision instruments for laboratory and process analysis. The company was founded in 1943 by engineer Bertold Suhner in Herisau, Switzerland, where it is headquartered to this day. Metrohm offers a comprehensive portfolio of analytical technologies ranging from titration and ion chromatography to near-infrared and Raman spectroscopy, as well as several other techniques. Metrohm sells its products and provides services through its own local subsidiaries and exclusive distributors in more than 120 countries worldwide. Our mission in a nutshell is helping customers from virtually every industry analyze and maintain the quality of their products at every stage in the manufacturing process and beyond. Since 1982, Metrohm has been owned 100% by the non-profit Metrohm Foundation. This foundation keeps to its purpose to support charitable, philanthropic, and cultural projects in eastern Switzerland and, above all, ensure the independence of the company.

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### Contact

#### Roman Moser

Marketing Communication

Metrohm AG Herisau

+41 71 353 86 68

[roman.moser@metrohm.com](mailto:roman.moser@metrohm.com)

