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Water quality — Determination of chromium(VI) and chromium(III) in water — Method using liquid chromatography with inductively coupled plasma mass spectrometry (LC-ICP-MS) after chelating pretreatment

Qualité de l'eau — Dosage du chrome (VI) et du chrome (III) dans l'eau — Méthode par spectrométrie de masse avec plasma à couplage inductif (LC-ICP-MS) après un prétraitement par agents de chélation

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Foreword

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Introduction

Chromium (Cr) exists in natural resources and is also widely used in industries as plating agents, paints, dyes, catalysts, and dietary supplements. The Cr(VI) compounds are highly harmful and recognized to be a human carcinogen. The Cr(III) compounds are recently used as a substitute for Cr(VI) compounds in industries, e.g. plating. In wastewater, surface water, or drinking water, chromium mainly exists in two oxidation states: +3 [Cr(III)] and +6 [Cr(VI)]. However, the proportion between Cr(VI) and Cr(III) is quite variable. Therefore, the determination of the individual oxidation states of chromium is crucial to evaluate and control the risk of chromium to human and environmental health. This document will be beneficial to perform a robust, simple, and rapid determination of chromium of the individual oxidation states.