

Special information

14.02.2023, V1, MHa

# Determination of water soluble chromate(VI) in cement

Instruction					
Parameter	Chromate				
Product group	VISOCOLOR® and NANOCOLOR®				
Reagents and accessories	NANOCOLOR® Chromate 5 (REF 985024) or NANOCOLOR® Chromate (REF 91825) or VISOCOLOR® ECO Chromium (VI) (REF 931020) Folded filter MN 615 ¼ (e.g. REF 531018)				
Remark	Cement is a grey powder that hardens when mixed with water and simultaneous exposure to air. This process is also enabled under water after a certain period of time. In construction, it is used for putting stones or for plastering walls and facades. The main ingredients are calcium silicates, aluminates and ferrites, which are produced when burning the raw ingredients (clay, lime, stone, etc.) in a rotary furnace at 1400 °C. If the raw materials contain even low concentrations of chromium compounds (e. g. chromite), the burning process produces chromate (20-100 ppm). Regular contact with chromate containing cement may lead to skin irritations and eczema (chromate allergy). However, the adverse health effects can be reduced substantially when using cement with low chromate content (< 2 ppm Cr(VI)), which is produced by adding a reducing agent (e.g. iron(II)-sulphate).				
Analysis	<p>1. Mix <b>10 g</b> cement or cement containing produce with <b>40 mL</b> distilled water and stir/shake for <b>15 min</b> intensely.</p> <p>2. Filtrate the mixture with a folded filter (MN 615 ¼). Use the filtrate directly for the determination of chromium(VI).</p> <p><b>A. NANOCOLOR® Chromate 5</b> Measurement range: 0.48 – 32 mg Cr(VI)/kg cement (ppm) Add <b>1.0 mL</b> filtrate and <b>3.0 mL</b> distilled water to test tube (dilution 1+3); Further instructions can be found in the test instructions or on the respective page in the photometer manual.</p> <p><b>B. NANOCOLOR® Chromate</b> Measurement range: 0.16 – 48 mg Cr(VI)/kg cement (ppm) Mix <b>5.0 mL</b> filtrate and <b>~15 mL</b> distilled water in a volumetric flask (dilution 1+3); Further instructions can be found in the test instructions or on the respective page in the photometer manual.</p> <p><b>C. VISOCOLOR® ECO Chromium (VI)</b> Measurement range: 0.40 – 10.0 mg Cr(VI)/kg cement (ppm) Pour <b>1.0 mL</b> filtrate and <b>4.0 mL</b> distilled water into each measuring glasses (dilution 1+4); Further instructions can be found in the test instructions or on the respective page in the photometer manual.</p>				
Calculation	<p><b>Calculation of the Chromium(VI)-content</b></p> <p>In order to obtain a value expressed in mg Cr(VI)/kg the measured value has to be multiplied with a factor (x 16 NANOCOLOR® / x 20 VISOCOLOR® ECO).</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;"><b>NANOCOLOR®</b></td> <td><b>mg/L Cr(VI) × 16 = ppm Cr(VI)</b></td> </tr> <tr> <td><b>VISOCOLOR® ECO</b></td> <td><b>mg/L Cr(VI) × 20 = ppm Cr(VI)</b></td> </tr> </table>	<b>NANOCOLOR®</b>	<b>mg/L Cr(VI) × 16 = ppm Cr(VI)</b>	<b>VISOCOLOR® ECO</b>	<b>mg/L Cr(VI) × 20 = ppm Cr(VI)</b>
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Literature	Methods of testing cement – Part 10: Determination of the water soluble chromium (VI) content of cement, German version EN 196-10:2006				



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