

## Methoden voor de bepaling van anionen

## INHOUD

|          |                         |           |
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Voor de conservering en behandeling van watermonsters wordt verwezen naar WAC/I/A/010.

## 1 DRINKWATER

Voor de matrix drinkwater kunnen de verschillende analysemethoden, mits toepassing van de geschikte conservering, rechtstreeks op het monster worden uitgevoerd. Er dient geen voorafgaandelijk destructie/voorbehandeling te worden uitgevoerd.

De volgende analysemethoden kunnen gebruikt worden voor het bepalen van anionen in drinkwater:

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| Bromaat      | <ul style="list-style-type: none"> <li>• NBN EN ISO 15061:2001 Water quality – Determination of dissolved bromate – Method by liquid chromatography of ions (ISO 15061:2001)</li> <li>• NBN EN ISO 11206:2013 Water quality - Determination of dissolved bromate -Method using ion chromatography (IC) and post column reaction (PCR) (ISO 11206:2011)</li> <li>• EPA Method 321.8: Determination of bromate in drinking waters by Ion Chromatography Inductively Coupled Plasma - Mass Spectrometry</li> <li>• EPA Method 557: Determination of haloacetic acids, bromate, and dalapon in drinking water by ion chromatography electrospray ionization tandem mass spectrometry (IC-ESI-MS/MS)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                     |
| Chloride (a) | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 10304-4:1999 Water quality - Determination of dissolved anions using liquid chromatography of ions. Part 4: Determination of chlorate, chloride and chlorite in water with low contamination (ISO 10304-4:1997)</li> <li>• ISO 9297:1989 Water quality – Determination of chloride – Silver nitrate titration with chromate indicator (Mohr's method)</li> <li>• NBN EN ISO 15682:2001 Water quality – Determination of chloride by flow analysis (CFA and FIA) and photometric or potentiometric detection (EN ISO 15682:2000)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul> |
| Chloraat     | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-4:1999 Water quality - Determination of dissolved anions using liquid chromatography of ions. Part 4: Determination of chlorate, chloride and chlorite in water with low contamination (ISO 10304-4:1997)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Chloriet     | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-4:1999 Water quality - Determination of dissolved anions using liquid chromatography of ions. Part 4: Determination of chlorate, chloride and chlorite in water with low contamination (ISO 10304-4:1997)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Nitraat      | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 13395:1996 Water quality – Determination of nitrite nitrogen</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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|                        | <p>and nitrate nitrogen and the sum of both by flow analyses (CFA en FIA) and spectrometric detection (ISO 13395:1996) (WAC/III/D/031)</p> <ul style="list-style-type: none"> <li>• ISO 7890-3: 1988 Water quality – Determination of nitrate – Part 3: Spectrometric method using sulfosalicylic acid</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul>                                                                                                                                                                                                                                                                                                                                          |
| Nitriet                | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 13395:1996 Water quality – Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analyses (CFA en FIA) and spectrometric detection (ISO 13395:1996) (WAC/III/D/031)</li> <li>• NBN EN 26777:1993 Water quality – Determination of nitrite – Molecular absorption spectrometric method (ISO 6777:1984)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul> |
| Fluoride<br>(opgelost) | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• ISO 10359-1:1992 Water quality – Determination of fluoride – Part 1: Electrochemical probe method for potable and light polluted water (WAC/III/C/020)(b)</li> <li>• DIN38405-D4:1985 Bestimmung von Fluorid</li> <li>• WAC/III/C/022 Bepaling van opgelost en totaal anorganisch gebonden fluoride met doorstroomanalyse</li> <li>• NEN 6589:2005 Water - Potentiometrische bepaling van het gehalte aan totaal anorganisch fluoride met doorstroomsystemen (FIA en CFA)</li> <li>• NEN 6578:2011 Water - Potentiometrische bepaling van het totale gehalte aan totaal fluoride</li> </ul>     |
| Sulfaat                | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• ISO 22743:2006 Water quality - Determination of sulfates - Method by continuous flow analysis (CFA)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul>                                                                                                                                                                                                                                           |

- (a) Voor de bepaling van chloride wordt bij toepassing van de titrimetrische methode, de doorstroomanalysemethode en de discrete analyser steeds een totaal halogeen gehalte (chloride, bromide, jodide) bepaald. Ionenchromatografie daarentegen is in staat om selectief chloride te meten.

- (b) Voor de bepaling van fluoride met ion-selectieve elektrode volgens ISO 10359-1 wordt het gebruik van de buffer zoals beschreven in DIN 38405-D4 aanbevolen. De validatiegegevens opgenomen in ISO 10359-1 zijn eveneens bepaald op basis van deze buffer.

## 2 AFVALWATER

De volgende analysemethoden kunnen gebruikt worden voor het bepalen van anionen in afvalwater:

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| Chloride (a)        | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• ISO 9297:1989 Water quality – Determination of chloride – Silver nitrate titration with chromate indicator (Mohr's method)</li> <li>• NBN EN ISO 15682:2001 Water quality – Determination of chloride by flow analysis (CFA and FIA) and photometric or potentiometric detection (EN ISO 15682:2000)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul>                                          |
| Nitraat             | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 13395:1996 Water quality – Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analyses (CFA en FIA) and spectrometric detection (ISO 13395:1996) (WAC/III/D/031)</li> <li>• ISO 7890-3: 1988 Water quality – Determination of nitrate – Part 3: Spectrometric method using sulfosalicylic acid</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul>     |
| Nitriet             | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 13395:1996 Water quality – Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analyses (CFA en FIA) and spectrometric detection (ISO 13395:1996) (WAC/III/D/031)</li> <li>• NBN EN 26777:1993 Water quality – Determination of nitrite – Molecular absorption spectrometric method (ISO 6777:1984)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul> |
| Fluoride (opgelost) | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

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|                                                          | (ISO 10304-1:2007) (WAC/III/C/001)<br>• ISO 10359-1:1992 Water quality – Determination of fluoride – Part 1: Electrochemical probe method for potable and light polluted water (WAC/III/C/020)(b)<br>• DIN38405-D4:1985 Bestimmung von Fluorid<br>• WAC/III/C/022 Bepaling van opgelost en totaal anorganisch gebonden fluoride met doorstroomanalyse<br>• NEN 6589:2005 Water - Potentiometrische bepaling van het gehalte aan totaal anorganisch fluoride met doorstroomsystemen (FIA en CFA)<br>• NEN 6578:2011 Water - Potentiometrische bepaling van het totale gehalte aan totaal fluoride                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Fluoride<br>(Tot. anorg.<br>gebonden)                    | • WAC/III/C/020 Bepaling van opgelost en totaal anorganisch gebonden fluoride met ion selectieve electrode (b)<br>• WAC/III/C/022 Bepaling van opgelost en totaal anorganisch gebonden fluoride met doorstroomanalyse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Totaal<br>orthofosfaat (c)                               | • NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)<br>• NBN EN ISO 15681-1: 2005 Water quality – Determination of orthophosphate and total phosphorus contents by flow analysis (FIA and CFA) – Part 1: Method by flow injection analysis (FIA) (ISO 15681-1: 2003)<br>• NBN EN ISO 15681-2: 2005 Water quality – Determination of orthophosphate and total phosphorus contents by flow analysis (FIA and CFA) – Part 2: Method by continuous flow analysis (CFA) (ISO 15681-2: 2003) (WAC/III/C/010)<br>• NBN EN ISO 6878: 2004 Water quality – Determination of phosphorus – Ammonium molybdate spectrometric method (ISO 6878: 2004)<br>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002) |
| Sulfaat                                                  | • NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)<br>• ISO 22743:2006 Water quality - Determination of sulfates - Method by continuous flow analysis (CFA)<br>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Sulfide<br>(Opgeloste en in<br>zuur milieu<br>oplosbare) | • WAC/III/C/040 Potentiometrische bepaling van sulfide<br>• WAC/III/C/041 Spectrofotometrische bepaling van sulfide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Chroom(VI)                                               | • ISO 11083:1994 Water quality – Determination of chromium(VI) – Spectrometric method using 1,5 diphenylcarbazine<br>• NBN EN ISO 10304-3:1997 Water quality - Determination of dissolved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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|                        | <p>anions using liquid chromatography of ions. Part 3: Determination of chromate, iodide, sulfite, thiocyanate and thiosulfate (ISO 10304-3:1997)</p> <ul style="list-style-type: none"><li>• EPA 7199:1996 Determination of hexavalent chromium in drinking water, groundwater and industrial waste water effluents by ion chromatography (WAC/III/C/050)</li></ul>                                                                                                                                                    |
| Vrije en totaal chloor | <ul style="list-style-type: none"><li>• NBN EN ISO 7393-2:2018 Water quality -- Determination of free chlorine and total chlorine -- Part 2: Colorimetric method using N,N-diethyl-1,4-phenylenediamine, for routine control purposes</li><li>• NBN EN ISO 7393-1:2000 Water quality - Determination of free chlorine and total chlorine - Deel 1 : Titrimetric method using N,N-diethyl-1,4-phenylenediamine (ISO 7393-1:1985)</li><li>• EPA method 330.5 Chlorine, Total Residual (Spectrophotometric, DPD)</li></ul> |
| Vrije cyanide          | <ul style="list-style-type: none"><li>• NBN EN ISO 14403-2: 2012 Water quality - Determination of total cyanide and free cyanide using flow analysis (FIA and CFA) – Part 2: Method using continuous flow analysis (CFA) (ISO 14403-2: 2012) (WAC/III/C/030)</li></ul>                                                                                                                                                                                                                                                  |

- (a) Voor de bepaling van chloride wordt bij toepassing van de titrimetrische methode, de doorstroomanalysemethode en de discrete analyser steeds een totaal halogeen gehalte (chloride, bromide, jodide) bepaald. Ionenchromatografie daarentegen is in staat om selectief chloride te meten.
- (b) Voor de bepaling van fluoride met ion-selectieve elektrode volgens ISO 10359-1 wordt het gebruik van de buffer zoals beschreven in DIN 38405-D4 aanbevolen. De validatiegegevens opgenomen in ISO 10359-1 zijn eveneens bepaald op basis van deze buffer.
- (c) Het al dan niet te velde filtreren van het monster resulteert in het onderscheid tussen opgelost en totaal orthofosfaat. Er wordt aanbevolen om in het kader van de erkenningen de parameter totaal orthofosfaat te bepalen.



### 3 GRONDWATER

De volgende analysemethoden kunnen gebruikt worden voor het bepalen van anionen in grondwater:

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| Chloride<br>(a)        | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 10304-4:1999 Water quality - Determination of dissolved anions using liquid chromatography of ions. Part 4: Determination of chlorate, chloride and chlorite in water with low contamination (ISO 10304-4:1997)</li> <li>• ISO 9297:1989 Water quality – Determination of chloride – Silver nitrate titration with chromate indicator (Mohr's method)</li> <li>• NBN EN ISO 15682:2001 Water quality – Determination of chloride by flow analysis (CFA and FIA) and photometric or potentiometric detection (EN ISO 15682:2000)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul> |
| Nitraat                | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 13395:1996 Water quality – Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analyses (CFA en FIA) and spectrometric detection (ISO 13395:1996) (WAC/III/D/031)</li> <li>• ISO 7890-3: 1988 Water quality – Determination of nitrate – Part 3: Spectrometric method using sulfosalicylic acid</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul>                                                                                                                                                                                                  |
| Nitriet                | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 13395:1996 Water quality – Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analyses (CFA en FIA) and spectrometric detection (ISO 13395:1996) (WAC/III/D/031)</li> <li>• NBN EN 26777:1993 Water quality – Determination of nitrite – Molecular absorption spectrometric method (ISO 6777:1984)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul>                                                                                                                                                                                              |
| Fluoride<br>(opgelost) | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• ISO 10359-1:1992 Water quality – Determination of fluoride – Part 1:</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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|         | <p>Electrochemical probe method for potable and light polluted water (WAC/III/C/020)(b)</p> <ul style="list-style-type: none"><li>• DIN38405-D4:1985 Bestimmung von Fluorid</li><li>• WAC/III/C/022 Bepaling van opgelost en totaal anorganisch gebonden fluoride met doorstroomanalyse</li><li>• NEN 6589:2005 Water - Potentiometrische bepaling van het gehalte aan totaal anorganisch fluoride met doorstroomsystemen (FIA en CFA)</li><li>• NEN 6578:2011 Water - Potentiometrische bepaling van het totale gehalte aan totaal fluoride</li></ul>                                                                                              |
| Sulfaat | <ul style="list-style-type: none"><li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li><li>• ISO 22743:2006 Water quality - Determination of sulfates - Method by continuous flow analysis (CFA)</li><li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li></ul> |

- (a) Voor de bepaling van chloride wordt bij toepassing van de titrimetrische methode, de doorstroomanalysemethode en de discrete analyser steeds een totaal halogeen gehalte (chloride, bromide, jodide) bepaald. Ionenchromatografie daarentegen is in staat om selectief chloride te meten.
- (b) Voor de bepaling van fluoride met ion-selectieve elektrode volgens ISO 10359-1 wordt het gebruik van de buffer zoals beschreven in DIN 38405-D4 aanbevolen. De validatiegegevens opgenomen in ISO 10359-1 zijn eveneens bepaald op basis van deze buffer.

#### 4 OPPERVLAKTEWATER

De volgende analysemethoden kunnen gebruikt worden voor het bepalen van anionen in oppervlaktewater:

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| Chloride (a) | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 10304-4:1999 Water quality - Determination of dissolved anions using liquid chromatography of ions. Part 4: Determination of chlorate, chloride and chlorite in water with low contamination (ISO 10304-4:1997)</li> <li>• ISO 9297:1989 Water quality – Determination of chloride – Silver nitrate titration with chromate indicator (Mohr's method)</li> <li>• NBN EN ISO 15682:2001 Water quality – Determination of chloride by flow analysis (CFA and FIA) and photometric or potentiometric detection (EN ISO 15682:2000)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul> |
| Nitraat      | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 13395:1996 Water quality – Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analyses (CFA en FIA) and spectrometric detection (ISO 13395:1996) (WAC/III/D/031)</li> <li>• ISO 7890-3: 1988 Water quality – Determination of nitrate – Part 3: Spectrometric method using sulfosalicylic acid</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul>                                                                                                                                                                                                  |
| Nitriet      | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 13395:1996 Water quality – Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analyses (CFA en FIA) and spectrometric detection (ISO 13395:1996) (WAC/III/D/031)</li> <li>• NBN EN 26777:1993 Water quality – Determination of nitrite – Molecular absorption spectrometric method (ISO 6777:1984)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and</li> </ul>                                                                                                                                                                                                                      |

|                            | sulfaat (WAC/III/C/002)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fluoride<br>(opgelost)     | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• ISO 10359-1:1992 Water quality – Determination of fluoride – Part 1: Electrochemical probe method for potable and light polluted water (WAC/III/C/020)(b)</li> <li>• DIN38405-D4:1985 Bestimmung von Fluorid</li> <li>• WAC/III/C/022 Bepaling van opgelost en totaal anorganisch gebonden fluoride met doorstroomanalyse</li> <li>• NEN 6589:2005 Water - Potentiometrische bepaling van het gehalte aan totaal anorganisch fluoride met doorstroomsystemen (FIA en CFA)</li> <li>• NEN 6578:2011 Water - Potentiometrische bepaling van het totale gehalte aan totaal fluoride</li> </ul>                                                                                                                                                                                                                                                   |
| Totaal orthofosfaat<br>(c) | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• NBN EN ISO 15681-1: 2005 Water quality – Determination of orthophosphate and total phosphorus contents by flow analysis (FIA and CFA) – Part 1: Method by flow injection analysis (FIA) (ISO 15681-1: 2003)</li> <li>• NBN EN ISO 15681-2: 2005 Water quality – Determination of orthophosphate and total phosphorus contents by flow analysis (FIA and CFA) – Part 2: Method by continuous flow analysis (CFA) (ISO 15681-2: 2003) (WAC/III/C/010)</li> <li>• NBN EN ISO 6878: 2004 Water quality – Determination of phosphorus – Ammonium molybdate spectrometric method (ISO 6878: 2004)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul> |
| Sulfaat                    | <ul style="list-style-type: none"> <li>• NBN EN ISO 10304-1:2009 Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1:2007) (WAC/III/C/001)</li> <li>• ISO 22743:2006 Water quality - Determination of sulfates - Method by continuous flow analysis (CFA)</li> <li>• ISO 15923-1:2013 Water quality – Determinations of ions by a discrete analysis system and spectrophotometric detection – Part 1: Ammonium, chloride, nitrate, nitrite, orthophosphate, silicate and sulfaat (WAC/III/C/002)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

- (a) Voor de bepaling van chloride wordt bij toepassing van de titrimetrische methode, de doorstroomanalysemethode en de discrete analyser steeds een totaal halogeen gehalte (chloride, bromide, jodide) bepaald. Ionenchromatografie daarentegen is in staat om selectief chloride te meten.

- (b) Voor de bepaling van fluoride met ion-selectieve elektrode volgens ISO 10359-1 wordt het gebruik van de buffer zoals beschreven in DIN 38405-D4 aanbevolen. De validatiegegevens opgenomen in ISO 10359-1 zijn eveneens bepaald op basis van deze buffer.
- (c) Het al dan niet te velde filtreren van het monster resulteert in het onderscheid tussen opgelost en totaal orthofosfaat. Er wordt aanbevolen om in het kader van de erkenningen de parameter totaal orthofosfaat te bepalen.