



Methoden voor de bepaling van elementen



De volgende analysemethoden kunnen gebruikt worden voor het bepalen van elementen in water.

Richtlijn voor de conservering en behandeling van watermonsters wordt gegeven in WAC/I/A/010.

Voor drink- en grondwater dient geen ontsluiting te worden uitgevoerd.

Voor afval- en oppervlaktewater dient een ontsluiting te worden uitgevoerd conform WAC/III/B/001 of WAC/III/B/002.

arsen	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 11969: 1996 Water quality – Determination of arsenic – Atomic absorption spectrometric method (hydride technique) (WAC/III/B/012) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • NEN 6432:1993 Water – Bepaling van het gehalte aan arsen met behulp van atomaire absorptiespectrometrie (hydridegeneratietechniek). Ontsluiting met salpeterzuur en zoutzuur. • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
chrom	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • EN 1233: 1996 Water quality – Determination of chromium – Atomic absorption spectrometric methods • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
koper	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 8288: 1986 Water quality – Determination of cobalt, nickel, copper, zinc, cadmium and lead – Flame atomic absorption spectrometric methods • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
lood	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010)

	<ul style="list-style-type: none"> • ISO 8288: 1986 Water quality – Determination of cobalt, nickel, copper, zinc, cadmium and lead – Flame atomic absorption spectrometric methods • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
nikkel	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 8288: 1986 Water quality – Determination of cobalt, nickel, copper, zinc, cadmium and lead – Flame atomic absorption spectrometric methods • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
zilver	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
zink	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 8288: 1986 Water quality – Determination of cobalt, nickel, copper, zinc, cadmium and lead – Flame atomic absorption spectrometric methods • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
cadmium	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 8288: 1986 Water quality – Determination of cobalt, nickel, copper, zinc, cadmium and lead – Flame atomic absorption spectrometric methods • ISO 5961: 1994 Water quality: Determination of cadmium by atomic absorption spectrometry • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines

	<ul style="list-style-type: none"> • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
ijzer	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
mangaan	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
seleen	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • NEN 6434:1993 Water – Bepaling van het gehalte aan seleen met behulp van atomaire absorptiespectrometrie (hydridegeneratietechniek). Ontsluiting met salpeterzuur en zoutzuur (WAC/III/B/012) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
barium	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011)
antimoon	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled

	<p>plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011)</p> <ul style="list-style-type: none"> • NEN 6433:1993 Water – Bepaling van het gehalte aan antimoon met behulp van atomaire absorptiespectrometrie (hydridegeneratietechniek). Ontsluiting met salpeterzuur en zoutzuur (WAC/III/B/012) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
tin	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011)
aluminium	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • ISO 12020: 1997 Water quality – Determination of aluminium – Atomic absorption spectrometric methods • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
kobalt	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 8288: 1986 Water quality – Determination of cobalt, nickel, copper, zinc, cadmium and lead – Flame atomic absorption spectrometric methods • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
molybdeen	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010) • ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines • ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011) • EN ISO 15586:2003 Water quality – Determination of trace elements using atomic absorption spectrometry with graphite furnace
titaan	<ul style="list-style-type: none"> • ISO 11885:2007 Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (WAC/III/B/010)

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- ISO 17294-1: 2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines
 - ISO 17294-2: 2003 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements (WAC/III/B/011)
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fosfor

- Zie WAC/III/D in functie van het matrixtype
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Voor de bepaling van kwik is het toepassen van een ontsluiting afhankelijk van de conserverings- en bepalingstechniek.

Richtlijn voor de conservering en behandeling van watermonsters wordt gegeven in WAC/I/A/010.

Bij de bepaling van kwik met CV-AAS en CV-AFS (WAC/III/B/014) en BrCl als conservering reagens dient voor drink- en grondwater geen ontsluiting te worden uitgevoerd. Voor afval- en oppervlaktewater dient een ontsluiting te worden uitgevoerd zoals beschreven in WAC/III/B/014, tenzij de nodige gegevens beschikbaar zijn die aantonen dat het type afvalwater dat door het laboratorium wordt geanalyseerd gelijkwaardige resultaten geeft zonder ontsluiting bij verhoogde temperatuur.

Bij de bepaling van kwik met CV-AAS en CV-AFS (WAC/III/B/014) en kaliumdichromaat als conservering reagens dient zowel drink-, grond-, afval- en oppervlaktewater ontsloten te worden zoals beschreven in WAC/III/B/014.

Bij de bepaling van Hg met ICP-MS dient onafhankelijk van de conservering voor drink- en grondwater geen ontsluiting te worden uitgevoerd. Voor afval- en oppervlaktewater dient een ontsluiting te worden uitgevoerd conform WAC/III/B/001 of WAC/III/B/002.

De volgende analysemethoden kunnen gebruikt worden voor de bepaling van kwik in water.

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| Kwik | <ul style="list-style-type: none">• ISO 17852:2006 Water quality : Determination of mercury - Method using atomic fluorescence spectrometry• EN 12338: 1998 Water quality: Determination of mercury – enrichment methods by amalgamation• EPA 200.8 Determination of trace elements in waters and wastes by inductively coupled plasma- mass spectrometry.• WAC/III/B/011 Bepaling van elementen met inductief gekoppeld plasma massa spectrometrie (ICP-MS)• ISO 5666: 1999 Water quality: Determination of mercury• EN 1483: 1997 Water quality – Determination of mercury |
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