

Analysemethoden voor afvalstoffen op stortplaatsen

1 DOEL EN TOEPASSINGSGBIED

Deze procedure vervangt de procedure CMA/2/II/A.13 van oktober 2007.

In deze CMA methode wordt een overzicht gegeven van de te analyseren parameters in het kader van aanvaardbaarheidscriteria voor afvalstoffen op stortplaatsen met referentie naar de bijhorende CMA procedure of Internationale/Europese normering.

2 MONSTERVERORBEHANDELING

Voorafgaandelijk aan de bepaling van de verschillende parameters is het noodzakelijk dat de te analyseren monsters dienen gehomogeniseerd te worden en verfijnd te worden om alzo juiste en reproduceerbare resultaten te bekomen. De monsterveroorbehandelingsprocedures zijn beschreven in CMA deel 5 Monsterveroorbehandeling.

3 ANALYSEMETHODEN

In Tabel 1 is een overzicht gegeven van de parameters en de bijhorende referentiemeetmethoden voor de analyse van de eluaten. De analyses worden steeds uitgevoerd op een representatief monster en na uitloging volgens CMA/2/II/A.12 of CMA/2/II/A.9.5. De normmethoden voor de analyse van de eluaten zijn opgenomen in de overkoepelende norm EN 16192.

Tabel 1: Analysemethoden eluaten

Parameter	CMA methode	Europese normering en Internationale normering
pH	CMA/2/I/A.1	ISO 10523
Geleidbaarheid	CMA/2/I/A.2	EN 27888 (ISO 7888)
As	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 11969 ISO 17294-1/ ISO 17294-2
Ba	CMA/2/I/B.1 CMA/2/I/B.5	EN ISO 11885 ISO 17294-1/ ISO 17294-2
Cd	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 15586 ISO 17294-1/ ISO 17294-2 ISO 8288
Cr totaal	CMA/2/I/B.1 CMA/2/I/B.5	EN ISO 11885 ISO 17294-1/ ISO 17294-2
Chroom VI	CMA/2/I/C.7	ISO 11083 EN ISO 10304-3 EN ISO 23913
Cu	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 15586 ISO 17294-1/ ISO 17294-2 ISO 8288
Hg	CMA/2/I/B.3	EN 1483

Parameter	CMA methode	Europese normering en Internationale normering
		EN ISO 17852
Mo	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 15586 ISO 17294-1/ ISO 17294-2
Ni	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 15586 ISO 17294-1/ ISO 17294-2 ISO 8288
Pb	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 15586 ISO 17294-1/ ISO 17294-2 ISO 8288
Sb	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 15586 ISO 17294-1/ ISO 17294-2 ASTM D 3697-02
Se	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 15586 ISO 17294-1/ ISO 17294-2 ISO 9965
Zn	CMA/2/I/B.1 CMA/2/I/B.2 CMA/2/I/B.5	EN ISO 11885 EN ISO 15586 ISO 17294-1/ ISO 17294-2 ISO 8288
Fenolen (fenolindex)	CMA/2/I/D.8	EN ISO 14402 ISO 6439
Ammonium	CMA/2/I/E.1 CMA/2/I/E.2 CMA/2/I/E.4 CMA/2/I/C.8	ISO 7150-1 EN ISO 11732 EN ISO 14911 ISO/DIS 15923-1
Cyanide (totaal)	CMA/2/I/C.2.1 CMA/3/I/C.2.2	EN ISO 14403
Chloride	CMA/2/I/C.3 CMA/2/I/C.8	ISO 10304-1 ISO 9297 EN ISO 15682 ISO/DIS 15923-1
Fluoride	CMA/2/I/C.1.1 CMA/2/I/C.1.2 CMA/2/I/C.3	EN ISO 10359-1 ISO 10304-1
Nitriet	CMA/2/I/C.3 CMA/2/I/C.6 CMA/2/I/C.8	EN ISO 10304-1 EN ISO 13395 ISO/DIS 15923-1 EN 26777
Sulfaat	CMA/2/I/C.3 CMA/2/I/C.8	ISO 10304-1 ISO 22743 ISO/DIS 15923-1
DOC (opgeloste organische koolstof)	CMA/2/I/D.7	EN 1484
TDS (droogrest)	CMA/2/I/A.3	EN 15216

<i>Parameter</i>	<i>CMA methode</i>	<i>Europese normering en Internationale normering</i>
Zuurbindend vermogen	-	CEN/TS 15364:2006

In Tabel 2 is een overzicht gegeven van de parameters en de bijhorende referentiemeetmethoden voor de analyse van vaste afvalstoffen. De analyses worden steeds uitgevoerd op een representatief monster.

Tabel 2: Analyse van vaste stoffen

<i>Parameter</i>	<i>CMA methode</i>
Gloeiverlies	CMA/2/II/A.2
Steekvastheid	CMA/2/II/A.4
TOC	CMA/2/II/A.7
Minerale olie	CMA/3/R1
Oplosmiddelen (aspecifiek)	CMA/3/Q
EOX	CMA/3/N
PCB (7 congenere)	CMA/3/I
BTEX	CMA/3/E
PAK	CMA/3/B

4 REFERENTIES

- **EN 16192:2011** Characterization of waste - Analysis of eluates.
- EN 1483:2007, Water quality — Determination of mercury — Method using atomic absorption spectrometry.
- EN 1484:1997, Water analysis — Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC).
- **EN 15216:2007**, Characterization of waste — Determination of total dissolved solids (TDS) in water and eluates.
- EN 26777:1993, Water quality — Determination of nitrite — Molecular absorption spectrometric method (ISO 6777:1984).
- EN 27888:1993, Water quality — Determination of electrical conductivity (ISO 7888:1985).
- EN ISO 5667-3:2003, Water quality — Sampling — Part 3: Guidance on the preservation and handling of samples (ISO 5667-3:2003).
- **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).
- EN ISO 10304-3:1997, Water quality — Determination of dissolved anions by liquid chromatography of ions — Part 3: Determination of chromate, iodide, sulfite, thiocyanate and thiosulfate (ISO 10304-3:1997).
- EN ISO 11732:2005, Water quality — Determination of ammonium nitrogen — Method by flow analysis (CFA and FIA) and spectrometric detection (ISO 11732:2005).
- EN ISO 11885:2009, Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (ISO 11885:2007)
- EN ISO 11969:1996, Water quality — Determination of arsenic — Atomic absorption spectrometric method (hydride technique) (ISO 11969:1996).
- EN ISO 13395:1996, Water quality — Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analysis (CFA and FIA) and spectrometric detection (ISO 13395:1996).
- EN ISO 14402:1999, Water quality — Determination of the phenol index by flow analysis (FIA and CFA) (ISO 14402:1999).

- EN ISO 14403-2:2012, Water quality — Determination of total cyanide and free cyanide by continuous flow analysis (ISO 14403:2002).
- EN ISO 14911:1999, Water quality — Determination of dissolved Li^+ , Na^+ , NH_4^+ , K^+ , Mn^{2+} , Ca^{2+} , Mg^{2+} , Sr^{2+} and Ba^{2+} using ion chromatography — Method for water and waste water (ISO 14911:1998).
- EN ISO 15586:2003, Water quality — Determination of trace elements using atomic absorption spectrometry with graphite furnace (ISO 15586:2003).
- EN ISO 15682:2001, Water quality — Determination of chloride by flow analysis (CFA and FIA) and photometric and potentiometric detection (ISO 15682:2000).
- EN ISO 17294-1:2006, Water quality — Application of inductively coupled plasma mass spectrometry (ICP-MS) — Part 1: General guidelines (ISO 17294-1:2004).
- EN ISO 17294-2:2004, Water quality — Application of inductively coupled plasma mass spectrometry (ICP-MS) — Part 2: Determination of 62 elements (ISO 17294-2:2003).
- EN ISO 17852:2008, Water quality — Determination of mercury — Method using atomic fluorescence spectrometry (ISO 17852:2006).
- EN ISO 23913:2009, Water quality — Determination of chromium(VI) — Method using flow analysis (FIA and CFA) and spectrometric detection (ISO 23913:2006).
- ISO 6439:1990, Water quality — Determination of phenol index — 4-Aminoantipyrine spectrometric methods after distillation.
- ISO 7150-1:1984, Water quality — Determination of ammonium — Part 1: Manual spectrometric method.
- ISO 8288:1986, Water quality — Determination of cobalt, nickel, copper, zinc, cadmium and lead — Flame atomic absorption spectrometric methods.
- ISO 9297:1989, Water quality — Determination of chloride — Silver nitrate titration with chromate indicator.
- ISO 9965:1993, Water quality — Determination of selenium — Atomic absorption spectrometric method (hydride technique)
- ISO 10359-1:1992, Water quality — Determination of fluoride — Part 1: Electrochemical probe method for potable and lightly polluted water
- ISO 10523:2008, Water quality — Determination of pH
- ISO 11083:1994, Water quality — Determination of chromium (VI) — Spectrometric method using 1,5-diphenylcarbazide
- ISO 22743:2006, Water quality — Determination of sulfates — Method by continuous flow analysis (CFA).
- ASTM D 3697-02 Standard Test Method for Antimony in Water
- CEN/TS 15364:2006 Characterization of waste - Leaching behaviour tests - Acid and base neutralization capacity test.