

## Analysemethoden voor afvalstoffen op stortplaatsen

## 1 DOEL EN TOEPASSINGSGBIED

Deze procedure vervangt de procedure CMA/2/II/A.13 van juli 2005.

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 monsterveroorbehandelingsprocedure is beschreven in CMA/5/A.1 t.e.m.A.9.

## 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 oa. opgenomen in de overkoepelende normen EN 13370 en EN 12506.

**Tabel 1: Analysemethoden eluaten**

<b>Parameter</b>	<b>CMA methode</b>	<b>Europese normering en Internationale normering</b>
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	EN ISO 11885 EN ISO 11969 ISO 17294-1/ ISO 17294-2
Ba	CMA/2/I/B.1	EN ISO 11885 ISO 17294-1/ ISO 17294-2
Cd	CMA/2/I/B.1 CMA/2/I/B.2	EN ISO 11885 ISO 8288 ISO 17294-1/ ISO 17294-2
Cr totaal	CMA/2/I/B.1	EN ISO 11885 ISO 17294-1/ ISO 17294-2
Chroom VI	CMA/2/I/C.7	ISO 11083
Cu	CMA/2/I/B.1	EN ISO 11885 ISO 8288 ISO 17294-1/ ISO 17294-2
Hg	CMA/2/I/B.3	EN 1483
Mo	CMA/2/I/B.1	EN ISO 11885 ISO 17294-1/ ISO 17294-2
Ni	CMA/2/I/B.1	EN ISO 11885 ISO 8288

<b>Parameter</b>	<b>CMA methode</b>	<b>Europese normering en Internationale normering</b>
		ISO 17294-1/ ISO 17294-2
Pb	CMA/2/I/B.1	EN ISO 11885 ISO 8288 ISO 17294-1/ ISO 17294-2
Sb	CMA/2/I/B.1 CMA/2/I/B.2	EN ISO 11885 ISO 17294-1/ ISO 17294-2 ASTM D 3697-02
Se	CMA/2/I/B.1 CMA/2/I/B.2	EN ISO 11885 ISO 17294-1/ ISO 17294-2 ISO 9965
Zn	CMA/2/I/B.1	EN ISO 11885 ISO 8288 ISO 17294-1/ ISO 17294-2
Fenolen (fenolindex)	CMA/2/I/D.8	EN ISO 14402 ISO 6439
Cyanide (totaal)	CMA/2/I/C.2.1 CMA/3/I/C.2.2	EN ISO 14403
Chloride	CMA/2/I/C.3	ISO 10304-1/ 10304-2 ISO 9297 EN ISO 15682
Fluoride	CMA/2/I/C.1.1 CMA/2/I/C.1.2	EN ISO 10359-1 ISO 10304-1
Sulfaat	CMA/2/I/C.3	ISO 10304-1/ 10304-2
DOC (opgeloste organische koolstof)	CMA/2/I/D.7	EN 1484
TDS (droogrest)	CMA/2/I/A.3	
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**

<b>Parameter</b>	<b>CMA methode</b>
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 12506:2003 Characterization of waste – Analysis of eluates – Determination of pH, As, Ba, Cd, Cl<sup>-</sup>, Co, Cr, Cr VI, Cu, Mo, Ni, NO<sub>2</sub><sup>-</sup>, Pb, total S, SO<sub>4</sub><sup>2-</sup>, V and Zn.
- EN 13370:2003 Characterization of waste – Analysis of eluates – Determination of Ammonium, AOX, conductivity, Hg, phenol index, TOC, easily liberatable CN<sup>-</sup>, F<sup>-</sup>.
- ISO 10523:1994 Water Quality – Determination of pH.
- EN 27888:1993 Water quality – Determination of electrical conductivity (ISO 7888:1985).
- EN ISO 11885:1996 Water quality – Determination of 33 elements by inductively coupled plasma atomic emission spectroscopy.
- ISO 11969:1996 Water quality – Determination of arsenic - Atomic absorption spectrometric method (hydride technique).
- ISO 17294-1:2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 1: General guidelines.
- ISO 17294-2:2004 Water quality – Application of inductively coupled plasma mass spectrometry (ICP-MS) – Part 2: Determination of 62 elements.
- ISO 8288:1986 Water quality – Determination of cobalt, nickel, copper, zinc, cadmium and lead – Flame atomic absorption spectrometric methods.
- ASTM D 3697-02 Standard Test Method for Antimony in Water
- ISO 9965:1993 Water quality – Determination of selenium – Atomic absorption spectrometric method (hydride technique).
- ISO 11083:1994 Water quality – Determination of chromium(VI) – Spectrometric method using 1,5-diphenylcarbazine.
- EN 1483:1997 Water quality – Determination of mercury.
- ISO 14402:1999 Water quality – Determination of phenol index by flow analysis (FIA and CFA).
- ISO 6439:1990 Water quality – Determination of phenol index – 4-Aminoantipyrine spectrometric methods after distillation.
- EN ISO 14403:2002 Water quality – Determination of total cyanide and free cyanide by continuous flow analysis.
- EN ISO 11732:1997 Water quality – Determination of ammonium nitrogen by flow analysis (CFA and FIA) and spectrometric detection.
- ISO 7150-1:1984 Water quality – Determination of ammonium. Part 1: Manual spectrometric method.
- ISO 10304-1:1992 Water quality – Determination of dissolved fluoride, chloride, nitrite, orthophosphate, bromide, nitrate and sulfate ions, using liquid chromatography of ions. Part 1: Method for water with low contamination.
- ISO 10304-2:1995 Water quality – Determination of dissolved anions by liquid chromatography. Part 2: Determination of bromide, chloride, nitrate, nitrite, orthophosphate and sulfate in waste water.
- ISO 9297:1989 Water quality – Determination of chloride – Silver nitrate titration with chromate indicator.
- EN ISO 15862:2001 Water quality – Determination of chloride by flow analysis (CFA and FIA) and photometric or potentiometric detection.
- 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.
- EN 26777:1993 Water quality – Determination of nitrite – Molecular absorption spectrometric method.
- ISO 10359-1:1992 Water quality – Determination of fluoride. Part 1: Electrochemical probe method for potable and lightly polluted water.

- EN 1484: 1997 Water analysis – Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC).
- CEN/TS 15364:2006 Characterization of waste - Leaching behaviour tests - Acid and base neutralization capacity test.