

# Certificerede Reference Materialer

## Fremstillet og certificeret under DANAK akkreditering nr. 535 i henhold til ISO Guide 34

Certificerede referencematerialer medfører mere pålidelig og sporbar dokumentation

VKI Certificerede Reference Materialer består af et bredt udvalg af certificerede referencematerialer, som anvendes til at forbedre og sikre kvaliteten af miljølaboratoriers analyser.



### Spildevand

- Generelle vandkvalitetsparametre
- Næringsstoffer
- Sporelementer/metaller



### Overfladevand, ferskvand og havvand

- Næringsstoffer
- Sporelementer/metaller
- Næringsstoffer i naturligt havvand



### Drikkevand og grundvand

- Hovedkomponenter
- TOC (NVOC) i naturligt drikkevand
- Sporelementer/metaller



### Slam og jord

- Sporelementer/metaller
- Organiske forureninger
- Mineraloliekomponenter

## Generelle vandkvalitetsparametre og næringsstoffer (1l færdigt referencemateriale pr. ampul)

| VKI<br>Reference-materiale | Enhed                  | NO <sub>3</sub> -N | NH <sub>4</sub> -N | PO <sub>4</sub> -P | TN  | TP  | COD <sub>Cr</sub> | BOD | TOC<br>(NVOC) | SS  |
|----------------------------|------------------------|--------------------|--------------------|--------------------|-----|-----|-------------------|-----|---------------|-----|
|                            | KONCENTRATIONSNIVEAUER |                    |                    |                    |     |     |                   |     |               |     |
| QC WW1B                    | mg/L                   | 5                  | 1                  | 0,5                |     |     |                   |     |               |     |
| QC WW2.1                   | mg/L                   |                    | 10                 | 5                  |     |     |                   |     |               |     |
| QC WW2.2                   | mg/L                   | 1                  |                    |                    |     |     |                   |     |               |     |
| QC WW3                     | mg/L                   |                    |                    |                    | 7,5 | 1,5 |                   |     |               |     |
| QC WW4                     | mg/L                   |                    |                    |                    |     |     | 500               |     | 200           |     |
| QC WW4A                    | mg/L                   |                    |                    |                    |     |     | 50                |     | 20            |     |
| QC WW5                     | mg/L                   |                    |                    |                    |     |     |                   | 200 |               |     |
| QC WW6 *                   | mg/L                   |                    |                    |                    |     |     |                   |     |               | 240 |

\*: 83 mL færdigt referencemateriale pr. glas

## Sporelementer/metaller

| VKI<br>Ref. matr. | Enhed | Ag                     | Al  | As | Ba  | Cd | Co  | Cr | Cu | Fe  | Hg  | Mn | Mo | Ni | Pb | Sb | Se  | Sn | Sr | V  | Zn  | Færdigt<br>reference-<br>materiale<br>per ampul |
|-------------------|-------|------------------------|-----|----|-----|----|-----|----|----|-----|-----|----|----|----|----|----|-----|----|----|----|-----|-------------------------------------------------|
|                   |       | KONCENTRATIONSNIVEAUER |     |    |     |    |     |    |    |     |     |    |    |    |    |    |     |    |    |    |     |                                                 |
| QC LL1            | µg/L  |                        | 200 | 30 |     |    |     | 20 | 20 |     |     |    | 20 | 20 |    |    |     | 20 |    | 20 | 50  | 1L                                              |
| QC LL2            | µg/L  | 5                      |     |    | 100 | 2  | 50  |    |    | 200 |     | 50 |    |    | 20 | 50 | 100 |    | 50 |    |     | 1L                                              |
| QC LL3            | µg/L  |                        |     |    |     |    |     |    |    |     | 5   |    |    |    |    |    |     |    |    |    |     | 1L                                              |
| QC LL3A           | µg/L  |                        |     |    |     |    |     |    |    |     | 0,5 |    |    |    |    |    |     |    |    |    |     | 1L                                              |
| QC HL1            | mg/L  |                        | 2   |    |     |    |     |    |    | 3   |     | 2  | 10 |    | 10 |    |     | 10 |    |    | 0,5 | 0,25L                                           |
| QC HL2            | mg/L  | 2                      |     |    | 2   | 1  | 0,5 | 4  | 4  |     |     |    |    | 2  |    |    |     |    | 5  |    |     | 0,25L                                           |

### Næringsstoffer (1l færdigt referencemateriale pr. ampul)

| VKI Reference-materiale | Enhed                  | NO <sub>3</sub> -N | NH <sub>4</sub> -N | PO <sub>4</sub> -P | TN  | TP  |
|-------------------------|------------------------|--------------------|--------------------|--------------------|-----|-----|
|                         | KONCENTRATIONSNIVEAUER |                    |                    |                    |     |     |
| QC RW1                  | µg/L                   | 100                | 100                | 100                |     |     |
| QC RW2                  | µg/L                   |                    |                    |                    | 250 | 200 |

## Sporelementer/metaller

[illegible]

## Næringsstoffer i naturligt havvand (100 ml)

| VKI<br>Reference-<br>materiale | Enhed                  | Salinitet<br>(ikke cert.) | NH <sub>4</sub> | NO <sub>2</sub> | NO <sub>2+3</sub> | TN | PO <sub>4</sub> | TP | SiO <sub>4</sub> |
|--------------------------------|------------------------|---------------------------|-----------------|-----------------|-------------------|----|-----------------|----|------------------|
|                                | KONCENTRATIONSNIVEAUER |                           |                 |                 |                   |    |                 |    |                  |
| QC SW3.1B                      | µM                     | 11                        | 2               | 1               | 12                | 15 |                 |    |                  |
| QC SW3.2B                      | µM                     | 11                        |                 |                 |                   |    | 2               | 2  | 17               |
| QC SW4.1B                      | µM                     | 35                        | 2               | 0,1             | 14                | 20 |                 |    |                  |
| QC SW4.2B                      | µM                     | 35                        |                 |                 |                   |    | 1               | 1  | 20               |

# Drikkevand og grundvand



## Hovedkomponenter (1l færdigt referencemateriale)

|                                |                        |      |      |      |      |      |                 |                  |                 |    |      |
|--------------------------------|------------------------|------|------|------|------|------|-----------------|------------------|-----------------|----|------|
| VKI<br>Reference-<br>materiale | Na                     | K    | Ca   | Mg   | Cl   | F    | SO <sub>4</sub> | HCO <sub>3</sub> | K <sub>25</sub> | pH | TS   |
|                                | KONCENTRATIONSNIVEAUER |      |      |      |      |      |                 |                  |                 |    |      |
| Enhed                          | mg/L                   | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L            | mg/L             | mS/m            | -  | mg/L |
| QC DWB                         | 50                     | 5    | 25   | 5    | 60   | 1    | 60              | 60               | 45              | 8  | 250  |

## TOC i naturligt drikkevand (10 ml)

|                           |               |
|---------------------------|---------------|
| VKI<br>Referencemateriale | TOC           |
|                           | <b>NIVEAU</b> |
| Enhed                     | mg/L          |
| QC DW4                    | 2,5           |

## Sporelementer/metaller

[illegible]

# Slam og jord

## Sporelementer/metaller



| VKI Referencematerialer QC LOAM SOIL B |                        |     |    |    |     |    |     |    |         |          |
|----------------------------------------|------------------------|-----|----|----|-----|----|-----|----|---------|----------|
| Parameter                              | As                     | Cd  | Cr | Cu | Hg  | Ni | Pb  | Zn | K       | Glødetab |
| VKI Referencemateriale                 | KONCENTRATIONSNIVEAUER |     |    |    |     |    |     |    |         |          |
| Enhed                                  | mg/kg TS               |     |    |    |     |    |     |    | g/kg TS |          |
| QC LOAM SOIL B                         | 3                      | 0,3 | 50 | 20 | 0,1 | 10 | 100 | 50 | 1       | 30       |

| VKI referencemateriale QC Sludge B |                        |    |     |     |     |     |    |     |         |         |         |          |
|------------------------------------|------------------------|----|-----|-----|-----|-----|----|-----|---------|---------|---------|----------|
| Parameter                          | As                     | Cd | Cr  | Cu  | Hg  | Ni  | Pb | Zn  | K       | Total N | Total P | Glødetab |
|                                    | KONCENTRATIONSNIVEAUER |    |     |     |     |     |    |     |         |         |         |          |
| Enhed                              | mg/kg TS               |    |     |     |     |     |    |     | g/kg TS |         |         |          |
| Oplukning med kongevand            | 5                      | 1  | 40  | 150 | 0,5 | 20  | 30 | 500 | 5       | 50      | 25      | 600      |
| Oplukning med salpetersyre         |                        |    | 30  |     |     | 15  |    |     |         |         |         |          |
| Parameter                          | Ag                     | Co | Mn  | Mo  | Sb  | Tl  | U  | V   | Al      | Ca      | Fe      | Mg       |
|                                    | KONCENTRATIONSNIVEAUER |    |     |     |     |     |    |     |         |         |         |          |
| Enhed                              | mg/kg TS               |    |     |     |     |     |    |     | g/kg TS |         |         |          |
| Oplukning med kongevand            | 1                      | 3  | 300 | 5   | 2   | 0,2 | 1  | 15  | 5       | 100     | 20      | 5        |
| Oplukning med salpetersyre         |                        |    |     |     |     |     |    |     |         |         |         |          |

## Organiske forureninger

| VKI REFERENCEMATERIALE QC ORGANIC COMPONENTS IN MUNICIPAL SLUDGE   |               |           |                  |              |                   |                         |        |                      |             |         |                       |             |       |                                 |             |                          |                        |                      |                      |                      |                      |      |      |     |      |
|--------------------------------------------------------------------|---------------|-----------|------------------|--------------|-------------------|-------------------------|--------|----------------------|-------------|---------|-----------------------|-------------|-------|---------------------------------|-------------|--------------------------|------------------------|----------------------|----------------------|----------------------|----------------------|------|------|-----|------|
| Enkeltparametre                                                    |               |           |                  |              |                   |                         |        |                      |             |         |                       |             |       |                                 |             |                          |                        | Sum parametre        |                      |                      |                      |      |      |     |      |
| Acenaphthen                                                        | Acenaphthylen | Anthracen | Benz(a)anthracen | Benz(a)pyren | Benz(ghi)perylene | Benz(b+j+k)fluorantener | Chyren | Dibenz(a,h)anthracen | Flouranthen | Flouren | Indeno(1,2,3-cd)pyren | Phenanthren | Pyren | Di(2-ethylhexyl)phthalat (DEHP) | Nonylphenol | Nonylphenolmonoethoxylat | Nonylphenoldiethoxylat | C <sub>10</sub> -LAS | C <sub>11</sub> -LAS | C <sub>12</sub> -LAS | C <sub>13</sub> -LAS | LAS  | ΣPAH | NPE | DEHP |
| KONCENTRATIONSNIVEAUER (mg/kg)                                     |               |           |                  |              |                   |                         |        |                      |             |         |                       |             |       |                                 |             |                          |                        |                      |                      |                      |                      |      |      |     |      |
| 0,1                                                                | 0,05          | 0,5       | 0,5              | 0,5          | 0,2               | 1                       | 0,5    | <0,1                 | 1           | 0,2     | 0,5                   | 1           | 1     | 20                              | 100         | 5                        | 2                      | 50                   | 500                  | 1000                 | 500                  | 2000 | 5    | 100 | 20   |
| VKI REFERENCEMATERIALE QC ENDOCRINE DISRUPTORS IN MUNICIPAL SLUDGE |               |           |                  |              |                   |                         |        |                      |             |         |                       |             |       |                                 |             |                          |                        |                      |                      |                      |                      |      |      |     |      |
| KONCENTRATIONSNIVEAUER (mg/kg)                                     |               |           |                  |              |                   |                         |        |                      |             |         |                       |             |       |                                 |             |                          |                        |                      |                      |                      |                      |      |      |     |      |
|                                                                    |               |           |                  |              |                   |                         |        |                      |             |         |                       |             |       | 20                              | 100         | 5                        | 2                      |                      |                      |                      |                      |      |      | 100 | 20   |

## Mineraloliekomponenter

| VKI REFERENCEMATERIALE QC OIL IN SOIL |                        |
|---------------------------------------|------------------------|
| OLIEFRAKTIONER                        | KONCENTRATIONSNIVEAUER |
| Enhed                                 | mg/kg TS               |
| >nC <sub>10</sub> – nC <sub>25</sub>  | 100                    |
| >nC <sub>25</sub> – nC <sub>35</sub>  | 150                    |
| Sum af kulbrinter                     | 250                    |

