## Quality control samples for inorganic soil analysis

Since 1996 BAM is operating a proficiency testing programme in the field of soil analysis. Preparation and characterisation of the samples to be analysed (mainly soils collected from polluted areas) fully comply with international guidelines for the production of reference materials.

Samples dedicated to the determination of inorganic constituents which were not used up in connection with the proficiency tests are offered for sale as control materials for internal quality assurance. The reference values were obtained using analytical results from several BAM working groups. They were confirmed by the results of interlaboratory comparisons with partly more than 100 participants.
Currently 6 soils and 2 sediment samples for the determination of aqua regia extractable elements (according to ISO 11466) are available.

Each quality control sample is delivered with a comprehensive information leaflet (in German) containing:

- reference values and their associated uncertainties
- details on material origin, preparation steps, matrix composition and secondary parameters
- information concerning sample homogeneity and stability
- results of the interlaboratory comparison the material initially was intended for (see above)
- instructions for the proper use of the material

Purchase orders should be directed to:

BAM Federal Institute for Materials Research and Testing
Division 1.6: Inorganic Reference Materials
Richard-Willstaetter-Str. 11
12489 Berlin (Germany)

Contact person: Sabine Sommer
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## Quality control samples

(mass fractions in mg/kg dry matter ± 95% - confidence interval)

| | **BRM#03** (loamy soil; grain sizes ≤ 100 µm) | **BRM#06a** (mixed loamy soil; grain sizes ≤ 63 µm) | **BRM#06b** (mixed loamy soil; grain sizes ≤ 63 µm) | **BRM#06c** (mixed loamy soil; grain sizes ≤ 63 µm) |
|---|---|---|---|---|
| *Element content after extraction with aqua regia according to ISO 11466:* | | | | |
| **As** | 11,5 ± 1,8 | 64,1 ± 2,9 | 47,0 ± 2,0 | 31,7 ± 4,8 |
| **Cd** | 36,5 ± 1,0 | 6,45 ± 0,89 | 5,38 ± 0,52 | 4,89 ± 0,50 |
| **Co** | n.d. | 30,7 ± 3,9 | 37,4 ± 3,5 | 44,9 ± 2,8 |
| **Cr** | 6010 ± 90 | 471 ± 20 | 661 ± 15 | 884 ± 21 |
| **Cu** | 592 ± 9 | 185 ± 10 | 191 ± 12 | 199 ± 16 |
| **Hg** | 6,06 ± 0,13 | 31,6 ± 1,9 | 41,1 ± 1,2 | 55,7 ± 1,9 |
| **Mn** | n.d. | 609 ± 19 | 655 ± 30 | 740 ± 40 |
| **Ni** | 211 ± 5 | 186 ± 13 | 245 ± 24 | 314 ± 17 |
| **Pb** | 353 ± 10 | 268 ± 16 | 274 ± 20 | 237 ± 16 |
| **Zn** | 2850 ± 50 | 1110 ± 40 | 966 ± 44 | 880 ± 40 |

| | **BRM#09b** (sandy soil; grain sizes ≤ 125 µm) | **BRM#10a** (river sediment; grain sizes ≤ 125 µm) | **BRM#10b** (river sediment; grain sizes ≤ 125 µm) | **BRM#13** (mixed sandy soil; grain sizes ≤ 125 µm) |
|---|---|---|---|---|
| *Element content after extraction with aqua regia according to ISO 11466:* | | | | |
| **As** | 77,1 ± 2,0 | 34,2 ± 2,3 | 29,4 ± 1,2 | 8,10 ± 0,44 |
| **Cd** | 23,1 ± 1,2 | 26,5 ± 1,5 | 21,6 ± 1,2 | 1,32 ± 0,14 |
| **Cr** | 16,4 ± 0,8 | 403 ± 18 | 315 ± 15 | 27,4 ± 2,4 |
| **Cu** | 44,9 ± 3,3 | 605 ± 29 | 799 ± 21 | 64,0 ± 2,2 |
| **Hg** | 1,02 ± 0,17 | 26,9 ± 0,8 | 42,9 ± 1,3 | 4,12 ± 0,28 |
| **Mn** | 263 ± 14 | n.d. | n.d. | n.d. |
| **Ni** | 6,53 ± 0,54 | 209 ± 14 | 169 ± 12 | 12,8 ± 0,7 |
| **Pb** | 85,0 ± 1 ,6 | 268 ± 12 | 238 ± 12 | 230 ± 7 |
| **V** | n.d. | n.d. | n.d. | 17,2 ± 1,1 |
| **Zn** | 144 ± 10 | 2540 ± 45 | 2150 ± 30 | 210 ± 6 |

n.d. not determined