|  |  |  |
| --- | --- | --- |
| Uranium | | |
| Taken µg ml-1 | Found µg ml-1 | Recovery\*\* % |
| 20  40  60  80  100 | 20.09  39.36  59.67  79.12  100.2 | 100.45  98.40  99.45  98.90  100.2 |
| Mean recovery\* 99.48±0.860  N 5  Variance 0.740  S.E 0.384  Molar absorpitivity [9.57×10](http://en.wikipedia.org/wiki/Charge-transfer_complex" \l "_note-0)[3](http://en.wikipedia.org/wiki/Charge-transfer_complex" \l "_note-0)[(1mol](http://en.wikipedia.org/wiki/Charge-transfer_complex" \l "_note-0)[-1](http://en.wikipedia.org/wiki/Charge-transfer_complex" \l "_note-0) [cm](http://en.wikipedia.org/wiki/Charge-transfer_complex" \l "_note-0)[-1](http://en.wikipedia.org/wiki/Charge-transfer_complex" \l "_note-0)[)](http://en.wikipedia.org/wiki/Charge-transfer_complex" \l "_note-0)  Sandell’s sensitivity 2.4×10ˉ2(µg cmˉ²)  t-test 0.3  F-test 1.09 | | |

**Table 1.** Determination of pure uranium using roxarsone at λmax 395 nm.

(\*)Mean ± S.D. (\*\*)Average of three experiments.

**Table 2.** Determination of uranium in 100 ppm uranium ore by complexation with roxarsone using standard addition technique.

|  |  |  |
| --- | --- | --- |
| uranium ore 100 ppm | | |
| Recovery\*\* % | addedµg ml-1 | Takenµg ml-1 |
| 101  102  99.6  98.1  98.2 | 15  35  55  75  95 | 5  5  5  5  5 |
| Mean recovery\* 99.78±1.72  N 5  Variance 2.94  S.E 0.768  t-test 0.51  F-test 4.32 | | |

(\*)Mean ± S.D. (\*\*)Average of three experiments.

**Table 3.**  Effect of some common ingredients on the determination of uranium using roxarsone

|  |  |  |
| --- | --- | --- |
| Uranium | | Other Ingredients  10 µg. added |
| Recovery\*  % | µg ml-1  taken |
| 99.6  99  98.7  100.3  99.8 | 60  60  60  60  60 | ــــــ  clay  slit  sand  carbonate |

(\*) Average of three experiments

**Table 4 .** Effect of some common interfering ions on the determination of uranium using roxarsone

|  |  |  |
| --- | --- | --- |
| Uranium | | Other Ingredients  added |
| Recovery\*  % | µg ml-1  taken |
| 99.6  99  98.7  100.3  99.4  99.8  99  98.8  99.1  98.7  98.6 | 60  60  60  60  60  60  60  60  60  60  60 | ــــــ  Mn (II) 150  Ca (II) 150  Fe (III) 150  Ni (II) 150  Co (II) 150  Cu (II) 150  Al (III) 150  Zr (IV) 150  Mo (VI) 120  Pb (II) 120 |

(\*) Average of three experiments.

**Table 5.** Evaluation of the accuracy and precision of the proposed methods

|  |  |  |  |
| --- | --- | --- | --- |
| Compared method  Statistical parameter | Uranyl acetate | | |
| Taken µg ml-1 | 20 | 60 | 100 |
| Found ± SDª | 19.8±0.01 | 60.3±0.02 | 99.7±0.02 |
| RSD(%) | 0.071 | 0.035 | 0.047 |
| SAE b | 0.063 | 0.009 | 0.010 |
| Confidence limit c | 0.012 | 0.018 | 0.020 |

ª Mean ± standard deviation for five determinations.

b Standard analytical error .

c Confidence limits at P = 0.95 and 4 degree of freedom .