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k_0-MEASUREMENTS AND RELATED NUCLEAR DATA COMPILATION FOR (n, γ) REACTOR NEUTRON ACTIVATION ANALYSIS

IIIb: TABULATION

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k_0-Factors and related nuclear data are tabulated for 112 radionuclides of interest in (n, γ) reactor neutron activation analysis. Whenever relevant, critical comments are made with respect to the accuracy of literature data for e. g. isotopic abundances, half-lives, absolute gamma-intensities and 2200 m · s^{-1} (n, γ) cross-sections. As to the latter, a comparison is made with the values calculated from the experimentally determined k_0-factors, by introduction of selected literature data for the input parameters.

Introduction

In a separate paper (Part IIIa),[1] details are given on the experimental determination of accurate k_0-factors, totalling now – together with the data published earlier[2-3] – results for 112 analytically interesting radionuclides. In the present paper (Part IIIb) a user-oriented tabulation is given of data for all essential input parameters, including, in addition to the k_0-factors, half-lives, Q_0-and $\bar{E}_r$-values, and some other nuclear constants in case of complex activation and/or decay[1] (for the explanation of symbols, see Part IIIa).[1]

In the same way as in the former papers of this series,[2-3], it was felt interesting to make a comparison with k_0-factors calculated systematically from nuclear data quoted in some compilations frequently referred to. Indeed, this reveals the situtation with respect to accuracy and traceability[4] when performing "absolute" NAA without nuclear data control.

Contrary to previous tabulations[2-3] it is not tried now to select from literature the nuclear data (Θ, γ, σ_0) which are giving the smallest discrepancy between the

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calculated and the measured k_0-factors, since this might sometimes lead to a choice of rather "exotic" values. Instead, the "activation method" for σ_0-determination is applied in exactly the same way as previously reported in detail for $^{50}Cr(n,\gamma)^{51}Cr$, $^{64}Zn(n,\gamma)^{65}Zn$, $^{154}Sm(n,\gamma)^{155}Sm$, etc.[5-7] This necessitated a careful selection from literature of the input nuclear data (Θ,γ), which are tabulated together with the fully correlated σ_0-results. Finally, this literature study threw light upon the state of affairs with respect to the reliability and consistency of published nuclear data.

Contents of the tabulation

Columns 1 to 13 of Table 1 contain the following information (see Refs to Table 1):

1. line 1: symbol of the element; line 2: atomic mass M, for calculation of k_0 (column 12) and σ_0 (this work; column 4, line 2); line 3: thermal cross-section (σ_{abs}) and resonance integral (I_{abs}) for neutron absorption, taken from the Chart of the Nuclides, GEC, 13th ed., 1984;
2. target isotope;
3. isotopic abundance Θ,%; line 1: as quoted by MUGHABGHAB et al., NNDC/BNL, 1981 (for Z=1–60)/1984 (Z=61–100), for k_0-calculation (column 12); line 2: from the most recent IUPAC/SAIC-evalutation (DE BIEVRE et al., 1985), with uncertainty (%, full or dashed underlining if better or worse than 10%), as input for σ_0-calculation in this work (column 4, line 2);
4. 2200 $m \cdot s^{-1}$ (n,γ) cross-section σ_0, barn, with uncertainty (%); line 1: same as column 3, line 1; line 2: obtained in this work, with Au as the ultimate standard, from M (column 1, line 2), Θ (column 3, line 2), γ (column 11, line 2), and – in some cases of complex activation/decay[1] – from fractional decay factors F (column 8) [uncertainty quotation and underlining of σ_0's is done only when arising from "recommended" k_0's, involving then a weighted mean calculation (with only uncorrelated uncertainties as weighing factors) of σ_0's for each gamma (column 13, line 2) and adopting the larger of the internal or external error; in short, final uncertainties are obtained from quadratic combination of random (experimental) ones with uncertainties originating from the input data; underlining is full or dashed if the uncertainty is better or worse than 10%; in addition to Au, also Mn and Co are considered as cross-section standards];
5. (n,γ) resonance integral I_0, barn (E_{Cd} = 0.55 eV), with uncertainty (%); line 1: as quoted by MUGHABGHAB et al., 1981/1984; line 2: as obtained in this work from multiplication of σ_0 (column 4, line 2) by Q_0 (column 6, line 2) [the uncertainty, if specified, is obtained from quadratic combination of the uncertainties

on σ_0 and Q_0; underlining conforms to the worst situation for either Q_0 or σ_0];

6. Q_0 (= I_0/σ_0); line 1: as calculated from I_0 and σ_0, quoted by MUGHABGHAB et al., 1981/1984 [without uncertainty assignment, since the correlation between the uncertainties on I_0 and σ_0 (certainly existing) is not known]; line 2: values adopted in the present work (see DECORTE87), either based on our own experimental determinations (with uncertainty, %) or on critical evaluation of literature data, and considered to have a high accuracy (full underlining), reasonable accuracy (dashed underlining) or unknown accuracy (no underlining; mostly for low Q_0's) [for α-and f-monitors, the I_0/σ_0-values of MUGHABGHAB et. al. are adopted; in view of the above mentioned correlations the quoted uncertainties – obtained from quadratic combination – should be considered as upper limits];
7. effective resonance energy $\bar{E}_r$, with uncertainty (%) [see JOVANOVIC et al., 1987], a nuclear constant needed for the $Q_0 \rightarrow Q_0(\alpha)$ conversion (α being a measure for the $1/E^{1+\alpha}$ epithermal neutron flux distribution);
8. line 1: isotope formed; line 2: activation decay type[1] [whenever relevant, the mother-daughter decay mode is indicated, with the quotation of fractional decay factors F (selected from recent literature)];
9. half-life T, with uncertainty (%) [selected from recent literature]; data are quoted for each formed isotope mentioned in column 8;
10. main gamma-energies Eγ, keV, which are analytically interesting; the composition of effective energies (E_{eff}) is mentioned in the COMMENTS;
11. absolute gamma-intensities γ,%; line 1: as quoted by ERDTMANN et al., 1979, for k_0-calculation (column 12); line 2: selected from recent literature (with uncertainty, %), as input for σ_0-calculation in this work (colum 4, line 1) [full underlining denotes that γ could be combined with a recommended k_0-factor to yield a reliable σ_0-value; dashed underlining indicates that the σ_0-value thus obtained is of questionable accuracy, either because γ exhibits an uncertainty larger than 10% or is for other reasons, of doubtful quality (e.g. when leading to a σ_0 which is inconsistent with results from other gamma's)];
12. k_0-factors (versus Au) calculated from M (column 1, line 2), Θ (column 3, line 1), σ_0 (column 4, line 1), γ (column 11, line 1) and – in some cases of complex activation/decay[1] – from F-factors (column 8);
13. line 1: measured k_0-factor versus Au (for each gamma-line), either recommended (underlined; with uncertainty, %) or tentative[1] [in a few cases (e.g. for the 398.6 and 415.8 keV lines of ^{233}Pa), a dashed underlining indicates that a k_0-factor, although in principle recommendable, might have an accuracy somewhat worse than 2% (as it leads to slightly inconsistent σ_0-values)]; line 2: σ_0-value, calculated from M (column 1, line 2), Θ (column 3, line 2), γ (column 11, line

2), k_0 (column 13, line 1), and in some cases of complex activation/decay[1] from fractional decay factors F (column 8) [with uncertainty, % (in case of a recommended k_0-factor), obtained from quadratic combination of the uncertainties of k_0 and γ].

Finally, some short "COMMENTS" are added to the tabulations. They contain mainly the following information:

- data for σ_0 taken from other recent compilation works: the IAEA Handbook on Nuclear Activation Data (1987), the NNDC COMPUTOPE Chart (1985), the Chart of the Nuclides (1984) and the Karlsruher Nuklidkarte (1981);
- in case of relevance: other experimental results for σ_0, whereby completeness is pursued only in case of serious and puzzling discrepancies between our values (column 4, line 2) and those of MUGHABGHAB et al., 1981/84 (column 4, line 1);
- extra nuclear data needed in the k_0-method in some cases of complex activation/decay[1] (e.g. for the 140.5 keV line of ^{99m}Tc);
- mention is made of possible sources of error, e.g. $g_{WESTCOTT} \neq 1$, $F_{Cd} \neq 1$ (supposed to be = 1, except where indicated), (n,n') primary interferences, burn-up, natural variability of abundances, etc.;
- whenever felt interesting, short notes are given with respect to the accuracy of nuclear data (Θ, T, γ, etc.), and occasionally accurate redetermination is recommended.

Conclusions

Measured k_0-factors and related nuclear data (Q_0, $\bar{E}_r$, T, etc.) are now available for the relevant gamma-lines of 112 isotopes of interest in (n, γ) activation analysis.

A detailed literature study reveals that the quality of published absolute nuclear data (σ_0, γ, Θ) often leaves much to be desired, thus jeopardizing the quality of "absolutely" standardized NAA.

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In particular, the authors want to express their gratitude to prof. J. HOSTE for his continuous interest in this work.

Table 1
Compilation of $k_{0,Au}$-factors and related nuclear data (Ref. = Nuclear Data Sheets, 19XY)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Na 22.99 0.530 ; 0.32	^{23}Na	100 100(0.) (DEBIEVRE85)	0.530(0.9)* 0.513(0.8)* (THIS WORK)	0.311(3.2)* 0.303(-)* ($Q_0 \times \sigma_0$)	0.587(-)* 0.59(-)* (DECORTE87)	3380(11.)	^{24}Na (IV/b)	14.959h(0.02) (YOSHIZAWA85)	1368.6 2754.0*	100 99.994(0.003)** 99.85 99.881(0.008)**	$4.82.10^{-2}$ $4.81.10^{-2}$	$\underline{4.68.10^{-2}}$(0.6) (← σ_0=0.515b(0.6)) $\underline{4.62.10^{-2}}$(0.9) (← σ_0=0.509b(0.9))
		COMMENTS σ_0 - other compil.: 0.530b(1.3)(IAEA87) 0.530b(0.9)(NNDC COMPUT.CH.85) 0.53b(CH.NUCL.84; NUKLIDK.81) * - for g+m (20.2ms) γ - ** from YOSHIZAWA85										
Mg 24.30^5 0.063 ; 0.038	^{26}Mg	11.01 11.01(0.2) (DEBIEVRE85)	0.0382(2.1) 0.0372(0.9) (THIS WORK)	0.026(7.7) 0.024(-) ($Q_0 \times \sigma_0$)	0.68(-) 0.64(-) (DECORTE87)	257000(13.)	^{27}Mg (I)	9.458min(0.1) (KOCHER81)	170.7 843.8 1014.4	0.70 0.84(3.6)* 71.4 71.8(0.6)* 28.6 28.0(1.4)*	$2.53.10^{-6}$ $2.58.10^{-4}$ $1.03.10^{-4}$	$\underline{3.02.10^{-6}}$(1.0) (← σ_0=0.0380b(3.7)) $\underline{2.53.10^{-4}}$(0.5) (← σ_0=0.0372b(0.8)) $\underline{9.80.10^{-5}}$(0.2) (← σ_0=0.0370b(1.4))
		COMMENTS σ_0 - other compil.: 0.035b(5.7)(IAEA87) 0.0382b(2.1)(NNDC COMPUT.CH.85) 0.036b(CH.NUCL.84) 0.0382b(NUKLIDK.81) T - cf. BODE75 : 9.350min(0.14) THIS WORK : 9.495min(0.3) γ - * from KOCHER81 - Note large discrepancy with ERDTMANN79 for γ_{171}! cf. REUS83 : 0.84%										

Table 1 (cont'd)

Element. At.Weight σ_{abs},b; I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Al 26.98 0.233 ; 0.17	^{27}Al	100 100(0.) (DEBIEVRE85)	0.231(1.3) 0.226(1.) (THIS WORK)	0.17(41.) 0.16(–) ($Q_0 \times \sigma_0$)	0.74(–) 0.71(–) (DECORTE87)	11800(5.9)	^{28}Al (I)	2.240min(0.045) (KOCHER81)	1778.9	100. 100(0.) (KOCHER81)	$1.79.10^{-2}$	$\underline{1.75.10^{-2}}$(0.8) (↔σ_0=0.226b(0.8))
		COMMENTS σ_0 – other compil.: 0.232b(1.3)(IAEA87) 0.231b(1.3)(NNDC COMPUT.CH.85) 0.233b(CH.NUCL.84) 0.230b(NUKLIDK.81)										
S 32.07 0.52 ; 0.25	^{36}S	0.02(50.)* 0.02(50.) (DEBIEVRE85)	0.15(20.) 0.16(50.) (THIS WORK)	0.17(24.) 0.18(–) ($Q_0 \times \sigma_0$)	1.1(–) 1.12(–) (DECORTE87)		^{37}S (I)	5.05min(0.4) (ENDT78)	3103.8	90.0 94.1(0.6) (ENDT78)	$1.76.10^{-6}$	$\underline{1.96.10^{-6}}$(1.8) (↔σ_0=0.16b(1.9))
		COMMENTS (see also DEBIEVRE83) θ – note large uncertainty on θ; natural variations in normal terrestrial material (DEBIEVRE85), range ± 29% (FLEMING83); more accurate value desired – * from NNDC COMPUT.CH.85 σ_0 – other compil.: 0.15b(20.)(IAEA87), with θ=0.015% 0.15b(20.)(NNDC COMPUT.CH.85) 0.23b(CH.NUCL.84) 0.15b(NUKLIDK.81) (all give θ = 0.02%) – experim.: HUGHES46; 0.137b JURNEY81; 0.152b(7.), from thermal neutron capture studies RAMAN84; 0.230b(9.0), activ.meth. with Y_{3104} = 94.0% and 81.1% ^{36}S enrichm. Y – note discrepancy with ERDTMANN79 for Y_{3104} ; cf. LEDERER78 : 94.2%(0.6), REUS83 : 94.1%										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Cl 35.45 33.5 ; 12	^{37}Cl	24.23 24.23(0.2) (DEBIEVRE85)	0.433(1.4)* 0.423(1.5)* (THIS WORK)	0.30(13.)* 0.29(-)* ($Q_0 \times \sigma_0$)	0.69(-)* 0.69(-)* (DECORTE87)	13700(14.)	^{38}Cl (IV/b)	37.21min(0.1) (KOCHER81)	1642.4 2167.5	32.8 32.5(1.8)** 44.0 44.0(1.1)**	$2.03.10^{-3}$ $2.72.10^{-3}$	$1.97.10^{-3}$(1.4) (← σ_0=0.424b(2.3)) $2.66.10^{-3}$(1.3) (← σ_0=0.423b(1.7))
		COMMENTS * - for g+m (0.7 s) σ_0 - other compil.: 0.423b(1.7)(IAEA87) 0.433b(1.4)(NNDC COMPUT.CH.85) 0.43b(CH.NUCL.84) 0.428b(NUKLIDK.81) Y - ** from KOCHER81										
K 39.10 2.1 ; 1.0	^{41}K	6.730 6.7302(0.04) (DEBIEVRE85)	1.46(2.1) 1.45(2.5) (THIS WORK)	1.42(4.2) 1.41(-) ($Q_0 \times \sigma_0$)	0.97(-) 0.97(-) (DECORTE87)	2960(7.1)	^{42}K (I)	12.36h(0.08) (KOCHER81)	312.7 1524.7	0.3 0.319(5.3)* 17.9 17.9(2.8)*	$1.58.10^{-5}$ $9.40.10^{-4}$	$1.59.10^{-5}$(1.1) (← σ_0=1.39b(5.4)) $9.46.10^{-4}$(0.6) (← σ_0=1.47b(2.9))
		COMMENTS σ_0 - other compil.: 1.46b(2.1)(IAEA87) 1.46b(2.1)(NNDC COMPUT.CH.85) 1.46b(CH.NUCL.84; NUKLIDK.81) Y - * from KOCHER81 - cf. LMRI80 : Y_{313} = 0.32%(6.3); Y_{1525} = 17.9%(2.8); cf. REUS83 : Y_{313} = 0.35%, Y_{1525} = 18.3%										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (⇔σ_0 from this line)
Ca 40.08 0.43 ; 2.4	^{46}Ca	0.0035 0.004(75.)* (DEBIEVRE85)	0.74(9.5) 0.61(76.)** (THIS WORK)	0.96(10.4) 0.81(–) ($Q_0 \times \sigma_0$)	1.30(–) 1.3(–) (DECORTE87)	–	^{47}Ca (I) ↓ β⁻, E_γ=1 ^{47}Sc (II/a)	4.536d(0.04) (NDS86) 3.345d(0.09) (NDS86)	489.2 807.9 — 1297.1 159.4	6.7 6.51(13.4)*** 6.9 6.51(13.4)*** 75.0 74.0(12.2)*** 68.0 67.9(2.2)***	$9.05.10^{-8}$ $9.32.10^{-8}$ $1.01.10^{-6}$ $9.18.10^{-7}$	$9.14.10^{-8}$(1.8) (⇔σ_0=0.67b(13.5)) $9.20.10^{-8}$(0.2) (⇔σ_0=0.66b(13.4)) $9.54.10^{-7}$(1.7) (⇔σ_0=0.62b(12.3)) $8.57.10^{-7}$(1.6) (⇔σ_0=0.61b(2.7))
	^{48}Ca	0.187 0.187(1.6) (DEBIEVRE85)	1.09(13.) 1.12(2.2) (THIS WORK)	0.89(20.) 0.50(–) ($Q_0 \times \sigma_0$)	0.82(–) 0.45(–) (DECORTE87)	1330000(–)	^{49}Ca (I)	8.715min(0.3) (NDS86)	3084.4	91.7 92.1(1.1) (NDS86)	$9.74.10^{-5}$	$1.01.10^{-4}$(0.9) (⇔σ_0=1.12b(1.4))

COMMENTS

θ – * note large uncertainty on θ; natural variations in normal terrestrial material (DEBIEVRE85), range unknown; more accurate value desired

σ_0 – ** with θ = 0.0035%, σ_0 = 0.70b (THIS WORK) is obtained
– other compil.: 0.74b(9.5)(IAEA87), θ = 0.003%
0.74b(9.5)(NNDC COMPUT.CH.85),θ=0.004%
0.7b(CH.NUCL.84; NUKLIDK.81), θ=0.004%
– experim.: COOK53; 0.25b(40.)(no θ given)
CRANSTON71; 0.70b(16.), from thermal neutron capture studies
HEFT79; 0.72b(4.)(with θ=0.0033%); normal. 0.59b

T – note inconsistency with previously reported value of 3.422d(0.1) for ^{47}Sc (KOCHER81); cf. REUS83 : T = 3.34d

γ – *** from NDS86
– note large uncertainty on γ_{489}, γ_{808} and γ_{1297}; accurate redetermination desirable

COMMENTS

θ – natural variations in normal terrestrial material possible (see DEBIEVRE85), range small

σ_0 – other compil.: 1.09b(13.)(IAEA87)
1.09b(13.)(NNDC COMPUT.CH.85)
1.1b(CH.NUCL.84; NUKLIDK.81)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sc 44.96 27.2 ; 12	^{45}Sc	100 100(0.) (DEBIEVRE85)	27.2(0.7)* 26.3(0.7)* (THIS WORK)	12.0(4.2)* 11.3(-)* ($Q_0 \times \sigma_0$)	0.44(-)* 0.43(-)* (DECORTE87)	5130(17.)	^{46}Sc (IV/b)	83.810d(0.01) (NDS86)	889.3 1120.5	99.98 99.984(0.001)** 99.99 99.9871(0.001)**	1.26 1.26	1.22(0.4) (⇐ σ_0=26.3b(0.4)) 1.22(1.1) (⇐ σ_0=26.3b(1.1))
		COMMENTS σ_0 - other compil.: 27.2b(0.7)(IAEA87) 27.2b(0.7)(NNDC COMPUT.CH.85) 27b(CH.NUCL.84) 26.5b(NUKLIDK.81) * - for g+m (18.7 s) γ - ** from NDS86										
Ti 47.88 6.1 ; 2.9	^{50}Ti	5.2 5.4(1.9) (DEBIEVRE85)	0.179(1.7) 0.170(2.2) (THIS WORK)	0.118(9.3) 0.115(-) ($Q_0 \times \sigma_0$)	0.66(-) 0.67(-) (DECORTE87)	63200(4.)	^{51}Ti (I)	5.76 min(0.2) (NDS86)	320.1 928.6	95.0 93.1(0.4)* 5.0 6.9(5.4)*	$3.86.10^{-4}$ $2.03.10^{-5}$	$3.74.10^{-4}$(1.0) (⇐ σ_0=0.170b(1.)) $2.65.10^{-5}$(1.3) (⇐ σ_0=0.163b(6.))
		COMMENTS σ_0 - other compil.: 0.179b(1.7)(IAEA87), with θ = 5.3% 0.179b(1.7)(NNDC COMPUT.CH.85), with θ = 5.4% 0.177b(CH.NUCL.84), with θ = 5.4% 0.179b(NUKLIDK.81), with θ = 5.2% γ - * from NDS86 - note large discrepancy with ERDTMANN79 for γ_{929} ; cf. REUS83 : 6.88%, KOCHER81 : 6.9%										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} ($\hookleftarrow \sigma_0$ from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
V 50.94 ∿ 5.06 ; 2.8	^{51}V	99.75 99.750(0.002) (DEBIEVRE85)	4.9(2.0) 4.79(1.7) (THIS WORK)	2.7(3.7) 2.63(-) ($Q_0 \times \sigma_0$)	0.55(-) 0.55(-) (DECORTE87)	7230(4.)	^{52}V (I)	3.75min(0.3) (KOCHER81)	1434.0	100 100.0(1.0) (KOCHER81)	$2.00.10^{-1}$	$1.96.10^{-1}$(1.2) ($\hookleftarrow \sigma_0$=4.79b(1.6))
		COMMENTS σ_0 - other compil.: 4.93b(1.2)(IAEA87) 4.9b(2.0)(NNDC COMPUT.CH.85) 4.91b(CH.NUCL.84) 4.88b(NUKLIDK.81)										
Cr 52.00 3.1 ; 1.6	^{50}Cr	4.35 4.345(0.2) (DEBIEVRE85)	15.9(1.3) 14.9(2.4) (THIS WORK)	7.8(5.1) 8.1(-) ($Q_0 \times \sigma_0$)	0.49(-) 0.53(-) (DECORTE87)	7530(11.)	^{51}Cr (I)	27.702d(0.01) (NDS86)	320.1	9.83 10.03(2.3) (NDS86)	$2.73.10^{-3}$	$2.62.10^{-3}$(0.5) ($\hookleftarrow \sigma_0$=14.9b(2.4))
		COMMENTS σ_0 - other compil.: 15.9b(1.3)(IAEA87) 15.9b(1.3)(NNDC COMPUT.CH.85) 15.8b(CH.NUCL.84) 15.9b(NUKLIDK.81) - see SIMONITS84										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative) (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Mn 54.94 13.3 ; 14.0	^{55}Mn	100 100(0.) (DEBIEVRE85)	13.3(1.5) 13.2(1.) (THIS WORK)	14.0(2.1) 13.9(3.) ($Q_0 \times \sigma_0$)	1.05[3](-) 1.053(2.6) (DECORTE87)	468(11.)	^{56}Mn (I)	2.5785h(0.01) (NDS87)	846.8 1810.7 2113.1	99.0 98.87(0.3)* 27.2 27.2(2.9)* 14.3 14.3(2.8)*	$5.01.10^{-1}$ $1.38.10^{-1}$ $7.23.10^{-2}$	$4.96.10^{-1}$(0.6) (← σ_0=13.2b(0.7)) $1.35.10^{-1}$(0.4) (← σ_0=13.1b(2.9)) $7.17.10^{-2}$(0.2) (← σ_0=13.2b(2.8))
		COMMENTS σ_0, I_0 - $^{55}Mn(n,\gamma)^{56}Mn$ is a CROSS-SECTION STANDARD : σ_0 = 13.3 ± 0.2b (± 1.5%) I_0 = 14.0 ± 0.3b (± 2.1%) see : HOLDEN81; MUGHABGHAB81 γ - * from NDS87 NOTE - adopted as α-monitor										
Fe 55.85 2.56 ; 1.4	^{58}Fe	0.28 0.28(3.6) (DEBIEVRE85)	1.28(3.9) 1.31(4.) (THIS WORK)	1.7(5.9) 1.28(4.) ($Q_0 \times \sigma_0$)	1.33(-) 0.97[5](1.) (DECORTE87)	637(24.)	^{59}Fe (I)	44.496d(0.02) (NDS83)	142.6 192.3 334.8 1099.2 1291.6	1.03 0.98(4.1)* 3.11 2.95(2.7)* 0.26 0.27(3.7)* 56.5 56.1(1.8)* 43.2 43.6(1.8)*	$1.38.10^{-6}$ $4.17.10^{-6}$ $3.49.10^{-7}$ $7.58.10^{-5}$ $5.79.10^{-5}$	$1.33.10^{-6}$(1.6) (← σ_0=1.30b(4.4)) $3.78.10^{-6}$(0.6) (← σ_0=1.22b(2.8)) ($3.82.10^{-7}$) (← σ_0=1.35b) $7.77.10^{-5}$(0.5) (← σ_0=1.32b(1.9)) $5.93.10^{-5}$(0.4) (← σ_0=1.30b(1.8))
		COMMENTS σ_0 - other compil.: 1.28b(3.9)(IAEA87)(θ = 0.31%) 1.28b(3.9)(NNDC COMPUT.CH.85)(θ = 0.28%) 1.28b(CH.NUCL.84)(θ = 0.28%) 1.15b(NUKLIDK.81)(θ = 0.3%) - σ_0 from 192 keV line not consistent; not included in average - see SIMONITS84, DECORTE88 γ - cf. NDS83 : γ_{143} = 1.02%(3.9)(not consistent); γ_{192} = 3.08%(3.2)(not consistent); γ_{345} = 0.27%(3.7); γ_{1099} = 56.5%(2.7); γ_{1292} = 43.2%(2.5) - * from LMRI80										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} ↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Co 58.93 37.2 ; 74	^{59}Co	100 100(0.) (DEBIEVRE85)	37.13(0.2)** 37.2^{5}(0.7)** (THIS WORK)	74(2.7)** 72.6(3.)** ($Q_0 \times \sigma_0$)	1.993(-)** 1.993(2.7)** (DECORTE87)	136(5.1)	^{60}Co (IV/b)	5.2714y(0.01) (NDS86)	1173.2 1332.5	99.86 99.90(0.02)* 99.98 99.982(0.0001)*	1.31 1.32	1.32(0.4) ↔σ_0=37.3b(0.7)) 1.32(0.5) ↔σ_0=37.2b(0.7))

COMMENTS

σ_0, I_0 - ^{59}Co(n,γ)^{60}Co is a CROSS-SECTION STANDARD :
σ_0 = 37.13 ± 0.06b (± 0.2%)
I_0 = 74 ± 2b (± 2.7%)
see : HOLDEN81; MUGHABGHAB81, HOLDEN85

** - for g + 0.9976m (10.48min)

γ - * from NDS86

NOTE - adopted as α-monitor

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_{res}$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ni 58.69 4.5 ; 2.2	^{64}Ni	0.91 0.91(1.1) (DEBIEVRE85)	1.80(2.2) 1.67(2.2) (THIS WORK)	1.16(15.5) 1.13(-) ($Q_0 * \sigma_0$)	0.64(-) 0.67(-) (DECORTE87)	14200(12.)	^{65}Ni (I)	2.520h(0.04) (NDS86)	366.3	4.606 4.61(4.4)*	$2.27.10^{-5}$	$2.51.10^{-5}$(1.0) (↔σ_0=1.68b(4.5))
									1115.5	14.83 14.8(3.6)*	$7.31.10^{-5}$	$8.14.10^{-5}$(0.5) (↔σ_0=1.70b(3.6))
									1481.8	23.5 23.5(1.7)*	$1.16.10^{-4}$	$1.27.10^{-4}$(0.6) (↔σ_0=1.67b(1.8))

COMMENTS

σ_0 - other compil.: 1.58b(2.5)(IAEA87)(θ = 0.95%)
1.52b(2.)(NNDC COMPUT.CH.85)(θ = 0.91%)
1.55b(CH.NUCL.84)(θ = 0.91%)
1.49b(NUKLIDK.81)(θ = 0.91%)
- experim.: EMERY68; 1.35b(7.4)(with γ_{1482} = 25%, no θ given); normal.1.44b
ETVES70; 1.49b(2.0)(8-γ meas., with θ = 1.08%); normal.1.77b
GLEASON75; 1.49b (no inform.given)
GRYNTAKIS76/78; 1.58b(2.5)(with γ_{1482} = 24.6%, θ = 1.16%); normal.2.11b
ISHAQ77; 1.63b(from thermal neutron capture study)
HEFT79; 1.49b(1.3)(with γ_{1482} = 25.7%, θ = 1.16%); normal.2.08b
- see DECORTE88

γ - * from NDS86
- see DECORTE83B; see ICRM85
- cf. JUDGE87: γ_{366}= 4.805%(1.2), γ_{1115}= 15.43%(0.8), γ_{1482}= 23.59%(0.6)

T - cf. JUDGE87 : 2.51219h(0.01)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} ($\hookleftarrow \sigma_0$ from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Cu 63.55 3.78 ; 4.1	^{63}Cu	69.17 69.17(0.03) (DEBIEVRE85)	4.50(0.44) 4.28(4.3)* (THIS WORK)	4.97(1.6) 4.88(-) ($Q_0 \times \sigma_0$)	1.10(-) 1.14(-) (DECORTE87)	1040(4.8)	^{64}Cu (I)	12.701h(0.02) (KOCHER81)	511.0 (annih.) 1345.9	38.6 35.74(1.1)** 0.49 0.49(8.2)**	$3.95.10^{-2}$ $5.01.10^{-4}$	$3.44.10^{-2}$(0.4) ($\hookleftarrow \sigma_0$=4.23b(1.2)) $4.91.10^{-4}$(0.9) ($\hookleftarrow \sigma_0$=4.41b(8.2))

COMMENTS

θ - natural variations in normal terrestrial material possible (DEBIEVRE85), range ± 0.38% (FLEMING83)

σ_0 - * weighted mean after assigning 5% extra uncertainty to k_0 (511)(possibly incomplete β^+-annihilation)
- other compil.: 4.50b(0.44)(IAEA87)
  4.50b(0.44)(NNDC COMPUT.CH.85)
  4.47b(CH.NUCL.84)
  4.5b(NUKLIDK.81)

γ - ** from KOCHER81
- note large discrepancy with ERDTMANN79 for γ_{511}; cf. LMRI80 : 36.2%(1.7), REUS83 : 35.8%

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Cu 63.55 3.78 ; 4.!	^{65}Cu	30.83 30.83(0.06) (DEBIEVRE85)	2.17(1.4) 2.48(24.) (THIS WORK)	2.19(3.2) 2.63(-) ($Q_0 \times \sigma_0$)	1.01(-) 1.06(-) (DECORTE87)	766(17.)	^{66}Cu (I)	5.10min(0.4) (NDS83)	1039.2	8.0 7.4(24.) (NDS83)	$1.76.10^{-3}$	$1.86.10^{-3}$(0.5) (→ σ_0=2.48b(24.))

COMMENTS

θ – natural variations in normal terrestrial material possible (DEBIEVRE85), range ± 0.84% (FLEMING83)

σ_0 – other compil.: 2.17b(1.4)(IAEA87)
2.17b(1.4)(NNDC COMPUT.CH.85)
2.17b(CH.NUCL.84; NUKLIDK.81)
– cf. experim.: RYVES70; 2.17b(1.4), with β-γ coinc. HEFT79; 2.18b(3.2), with γ_{1039}= 9.0%; normal.: 2.65b

F_{Cd} – 1.034 (see ELNIMR81)

γ – note large discrepancy with ERDTMANN79 for γ_{1039}; cf. LEDERER78 : γ_{1039}= 8.0%(13.), from level scheme; cf. REUS83 : 8.0%
– accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} ↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Zn 65.39 1.1 ; 2.8	^{64}Zn	48.6 48.6(0.6) (DEBIEVRE85)	0.76(2.6) 0.726(1.)* (THIS WORK)	1.45(4.1) 1.42(5.) ($Q_0 \times \sigma_0$)	1.908(-) 1.908(4.9) (DECORTE87)	2560(10.)	^{65}Zn (I)	243.9d(0.04) (NDS86)	1115.5	50.75 50.70(0.26)* (NDS86)	$5.99.10^{-3}$	$5.72.10^{-3}$(0.4) ↔σ_0=0.726b(0.5))
		COMMENTS σ_0 - other compil.: 0.76b(2.6)(IAEA87) 0.76b(2.6)(NNDC COMPUT.CH.85) 0.76b(CH.NUCL.84) 0.78b(NUKLIDK.81) - * see DECORTE85 γ - * see DECORTE85 NOTE - adopted as α-monitor										
	^{68}Zn	18.8 18.8(2.1) (DEBIEVRE85)	0.072(5.6) 0.0699(2.3) (THIS WORK)	- 0.223(2.7) ($Q_0 \times \sigma_0$)	- 3.19(1.4) (DECORTE87)	590(10.)	^{69m}Zn (I)	13.76h(0.15) (NDS82)	438.6	94.8 94.8(0.3) (NDS82)	$4.10.10^{-4}$	$3.98.10^{-4}$(0.6) ↔σ_0=0.0699b(0.7))
		COMMENTS σ_0 - other compil.: 0.072b(5.6)(IAEA87) 0.072b(5.6)(NNDC COMPUT.CH.85) 0.072b(CH.NUCL.84, NUKLIDK.81) I_0 - other compil.: 0.24b(CH.NUCL.84)										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	E_r, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ga 69.72 2.9 ; 21	^{71}Ga	39.9 39.9(0.5) (DEBIEVRE85)	4.71(4.9)* 4.61(1.)* (THIS WORK)	31.2(6.1)* 30.6(5.3)* ($Q_0 \times \sigma_0$)	6.62(-)* 6.63(5.2)* (DECORTE87)	154(12.)	^{72}Ga (IV/b)	14.1h(1.4) (KOCHER81)	629.9	24.37 24.4(2.9)**	$1.37.10^{-2}$	(1.49.10^{-2}) (→ σ_0=5.11b)
									834.0	95.55 95.65(0.1)**	$5.38.10^{-2}$	5.24.10^{-2}(0.6) (→ σ_0=4.58b(0.6))
									894.2	9.842 9.85(2.1)**	$5.54.10^{-3}$	5.47.10^{-3}(0.9) (→ σ_0=4.64b(2.3))
									1050.8	6.921 6.93(2.2)**	$3.90.10^{-3}$	3.84.10^{-3}(0.8) (→ σ_0=4.63b(2.3))
									2201.7	26.06 26.1(2.3)**	$1.47.10^{-2}$	1.48.10^{-2}(1.0) (→ σ_0=4.74b(2.5))
									2491.0	7.472 7.48(2.4)**	$4.21.10^{-3}$	4.20.10^{-3}(1.7) (→ σ_0=4.70b(2.9))
									2501.8 (E_{eff})	20.52 20.5(1.7)**	$1.16.10^{-2}$	1.15.10^{-2}(1.4) (→ σ_0=4.69b(2.2))
									2507.9 (E_{eff})	13.05 13.0^5(2.3)**	$7.35.10^{-3}$	7.31.10^{-3}(1.3) (→ σ_0=4.68b(2.6))

COMMENTS

* - for g+m (39.7 ms)

σ_0 - other compil.: 4.71b(4.9)(IAEA87)
4.71b(4.9)(NNDC COMPUT.CH.85)
4.7b(CH.NUCL.84)
4.71b(NUKLIDK.81)

Y - ** from KOCHER81
- 2501.8 = E_{eff} of 2491.0, 2507.8 & 2515.4;
2507.9 = E_{eff} of 2507.8 & 2515.4

T - accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (⇐ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
As 74.92 4.5 ; 65	^{75}As	100 100(0.) (DEBIEVRE85)	4.5(2.2) 3.86(4.5) (THIS WORK)	61(6.6) 52.5(−) ($Q_0 \times \sigma_0$)	13.6(-) 13.6(−) (DECORTE87)	106(34.0)	^{76}As (I)	26.32h(0.3) (NDS84)	559.1 559.2 (E_{eff}) 563.2 ... 657.1 1212.9 1215.1 (E_{eff}) 1216.1	44.6 45.0(4.4)* 46.2 46.2(4.3)* 1.6 1.20(6.9)* 6.4 6.17(6.8)* 1.8 1.44(7.7)* 5.5 4.86(5.4)* 3.7 3.42(6.9)*	$5.60.10^{-2}$ $5.80.10^{-2}$ $2.01.10^{-3}$ ... $8.03.10^{-3}$ $2.26.10^{-3}$ $6.90.10^{-3}$ $4.64.10^{-3}$	$4.83.10^{-2}$(1.6) (⇐ σ_0=3.85b(1.6)) $4.97.10^{-2}$(0.6) (⇐ σ_0=3.86b(0.6)) ($1.40.10^{-3}$) (⇐ σ_0=4.18b) $6.61.10^{-3}$(1.3) (⇐ σ_0=3.84b(5.3)) ($1.49.10^{-3}$) (⇐ σ_0=3.71b) $5.25.10^{-3}$(0.8) (⇐ σ_0=3.87b(4.2)) ($3.78.10^{-3}$) (⇐ σ_0=3.96b)

COMMENTS

σ_0 - other compil.: 4.48b(2.5)(IAEA87)
4.5b(2.2)(NNDC COMPUT.CH.85)
4.5b(CH.NUCL.84)
4.3b(NUKLIDK.81)
- experim.: POMERANCE51; 4.14b(5.6)
KAPPE65; 4.22b(3.1)
RYVES71; 4.48b(2.5)
HEFT79; 4.0b(2.5)(with γ_{559}= 44.6%); normal.: 3.96b
KOESTER84; 4.12b(2.4)
- see DECORTE88

γ - * from NDS84
- note large discrepancies with ERDTMANN79 for γ_{563}, γ_{1213} and γ_{1216}; cf. KOCHER81 : γ_{563} = 1.17%(5.), γ_{1213}= 1.63%(7.), γ_{1216}= 3.84%(6.)
- 559.2 keV = E_{eff} of 559.1 and 563.2;
1215.1 keV = E_{eff} of 1212.9 and 1216.1

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Se 78.96 11.7 ; 14	^{74}Se	0.9 0.9(11.) (DEBIEVRE85)	51.8(2.3) 51.2(11.) (THIS WORK)	520(17.) 512(-) ($Q_0 \times \sigma_0$)	10.0(-) 10.0(-)+ (DECORTE87)	29.4(4.1)	^{75}Se (I)	119.770d(0.01) (YOSHIZAWA85)	121.1 136.0 264.7 279.5 400.7	16.41 17.17(1.2)* 56.02 58.5(1.0)* 58.6 58.6(1.0)* 24.73 24.94(1.2)* 11.13 11.44(1.0^5)*	2.02.10^{-3} 6.91.10^{-3} 7.23.10^{-3} 3.05.10^{-3} 1.37.10^{-3}	1.98.10^{-3}(1.0) (→ σ_0=48.4b(1.6)) 6.89.10^{-3}(1.3) (→ σ_0=49.5b(1.6)) 7.25.10^{-3}(0.5) (→ σ_0=51.9b(1.1)) 3.06.10^{-3}(0.9) (→ σ_0=51.5b(1.5)) 1.45.10^{-3}(0.6) (→ σ_0=53.2b(1.2))

COMMENTS

θ - natural variations in normal terrestrial material possible (DEBIEVRE85), range ± 1.3% (FLEMING83); more accurate value desired

σ_0 - other compil.:51.8b(2.3)(IAEA87)
51.8b(2.3)(NNDC, COMPUT.CH.85)
52b(CH.NUCL.84)
51.8b(NUKLIDK.81)
all with θ = 0.9%

γ - * from YOSHIZAWA85

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (↔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Br 79.90 6.8 ; ∿ 90	^{79}Br	50.69 50.69(0.1) (DEBIEVRE85)	2.4(25.) 2.04(-) (THIS WORK)	32.0(28.) 26.9(-) (Q_0 & σ_0)	13.3(-) 13.2(-) (DECORTE87)	69.3(9.)	^{80m}Br I.T. F_2=1 ^{80}Br (IV/a)	4.42h(0.2) (NDS82) 17.68min(0.1) (NDS82)	 616.3	 7.2 6.7(9.)*	 $8.21.10^{-3}$	 ($6.67.10^{-3}$) (↔ σ_0^g=7.51b)
			8.6(4.7) 7.81(-) (THIS WORK)	95(11.6) 89(-) (Q_0 & σ_0)	11.0(-) 11.(-) (DECORTE87)				665.8	1.1 1.08(12.)*	$1.25.10^{-3}$	($1.16.10^{-3}$) (↔ σ_0^g=8.10b)

COMMENTS

THIS WORK (exper.) : $\frac{F_2\sigma_0^m}{\sigma_0^g}$ = 0.26 (-), from double measurement of 616 and 666 keV-lines (SIMONITS80); cf. KEISCH63 : 0.31(6.5), cf. BACSO65 : 0.30(3.3)

σ_0^m - other compil.: 2.4b(25.)(IAEA87)
2.4b(25.)(NNDC COMPUT.CH.85)
2.5b(CH.NUCL.84)
2.6b(NUKLIDK.81)

σ_0^g - other compil.: 8.6b(4.7)(IAEA87)
8.6b(4.7)(NNDC COMPUT.CH.85)
8.2b(CH.NUCL.84)
8.5b(NUKLIDK.81)

γ - * from NDS82
- note large uncertainties; accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative) (←σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Br 79.90 6.8 ; ~90	^{81}Br	49.31 49.31(0.1) (DEBIEVRE85)				152(9.2)	^{82m}Br I.T. F_2=0.976 (NDS87) ^{82}Br (IV/b)	6.13min(0.8) (NDS87) 35.30h(0.06) (NDS87)				
			2.63(15.)* 2.59(1.2)* (THIS WORK)	50(10.)*+ 49.8(3.3)* ($Q_0 \times \sigma_0$)	19.0(-)* 19.3(3.1)* (DECORTE87)				554.3	70.6 70.8(1.3)**	$2.39.10^{-2}$	$2.38.10^{-2}$(1.1) (←σ_0=2.61b(1.7))
									619.1	43.1 43.4(1.3)**	$1.46.10^{-2}$	$1.45.10^{-2}$(0.8) (←σ_0=2.59b(1.5))
									698.4	27.9 28.5(1.3)**	$9.46.10^{-3}$	$9.38.10^{-3}$(0.9) (←σ_0=2.55b(1.6))
									776.5	83.4 83.5(1.4)**	$2.83.10^{-2}$	$2.76.10^{-2}$(0.8) (←σ_0=2.56b(1.6))
									827.8	24.2 24.0(1.4)**	$8.21.10^{-3}$	$7.99.10^{-3}$(0.9) (←σ_0=2.58b(1.7))
									1044.0	28.0 27.2(1.3)**	$9.50.10^{-3}$	$9.14.10^{-3}$(0.7) (←σ_0=2.61b(1.5))
									1317.5	27.0 26.5(1.3)**	$9.16.10^{-3}$	$8.91.10^{-3}$(0.4) (←σ_0=2.61b(1.4))
									1474.9	16.6 16.3(1.4)**	$5.63.10^{-3}$	$5.42.10^{-3}$(0.5) (←σ_0=2.58b(1.5))

COMMENTS

* - for F_2 m+g (+ : probably for m+g)

σ_0 - other compil.: 2.63b(15.)(IAEA87)
2.63b(15.)(NNDC COMPUT.CH.85)
2.60b(CH.NUCL.84)
2.63b(NUKLIDK.81)
assuming F_2 = 0.976

γ - ** from NDS87

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (←σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Rb 85.47 0.38 ; 6.0	^{85}Rb	72.17 72.16^5(0.02) (DEBIEVRE85)				839(6.0)	^{86m}Rb ↓ I.T. F_2=1	1.02min(-) (LEDERER78)				
			0.48(2.1) * 0.494(1.5) * (THIS WORK)	7.5(6.7) * 7.31(3.) * ($Q_0 \times \sigma_0$)	15.6(-) * 14.8(2.5)* (DECORTE87)		^{86}Rb (IV/b)	18.66d(0.1) (KOCHER81)	1076.6	8.76 8.78(0.9) (KOCHER81)	$7.42.10^{-4}$	$7.65.10^{-4}$(1.0) (←σ_0=0.494b(1.4))

COMMENTS

σ_0 - other compil.: 0.48b(2.1)(IAEA87)
0.48b(2.1)(NNDC COMPUT.CH.85)
0.48b(CH.NUCL.84)
0.46b(NUKLIDK.81)

* - for g+m (1.02 min)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Rb 85.47 0.38 ; 6.0	^{87}Rb	27.83 27.83[5](0.05) (DEBIEVRE85)	0.120(25.) 0.102(4.) (THIS WORK)	1.9(10.5) 2.38(5.) ($Q_0 \times \sigma_0$)	15.8(-) 23.3(2.9) (DECORTE87)	364(3.0)	^{88}Rb (I)	17.8min(0.6) (LMRI80)	898.0 1836.0 2677.9	14.5 14.7(4.1)* 22.1 22.4(3.6)* 2.022 2.05(4.9)*	1.18.10^{-4} 1.80.10^{-4} 1.65.10^{-5}	1.01.10^{-4}(1.5) (→ σ_0=0.101b(4.4)) 1.57.10^{-4}(1.1) (→ σ_0=0.103b(3.8)) (1.47.10^{-5}) (→ σ_0=0.105b)

COMMENTS

σ_0
- other compil.: 0.120b(25.)(IAEA87)
  0.120b(25.)(NNDC COMPUT.CH.85)
  0.12b(CH.NUCL.84; NUKLIDK.81)
- experim.: SEREN47; 0.122b(20.)
  HEFT79; 0.096b(12.), with γ_{1836}= 24.7%;
  normal. : 0.106b
- see DECORTE88

γ
- * from LMRI80
- systematic discrepancy of 5% with γ's from KOCHER81 : γ_{898}= 14.0%(6.), γ_{1836}= 21.4%(6.), γ_{2678}= 1.96%(6.)
- cf. REUS83 : γ_{898}= 14.5%; γ_{1836}= 22.1%; γ_{2678}= 2.02%
- accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (TECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) ($\leftrightarrow \sigma_0$ from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sr 87.62 1.2 ; 10	^{84}Sr	0.56 0.56(1.8) (DEBIEVRE85)	0.6(10.) 0.61(-) (THIS WORK)	0.67(19.)* 8.8(-) ($Q_0 \times \sigma_0$)	1.12(-) 14.5(2.3) (DECORTE87)	469(7.0)	^{85m}Sr (I) I.T. F_γ=0.873 (KOCHER81)	67.66min(0.1) (KOCHER81)	231.7	85.0 84.72(0.15) (KOCHER81)	$6.81.10^{-5}$	$(6.92.10^{-5})$ ($\leftrightarrow \sigma_0$=0.61b)
(cont'd)												

COMMENTS

θ - natural variations in normal terrestrial material possible (DEBIEVRE85), range small

σ_0 - other compil.: 0.60b(10.)(IAEA87)
0.6b(10.)(NNDC COMPUT.CH.85)
0.53b(CH.NUCL.84)
0.55b(NUKLIDK.81)
- cf. experim.: HANS60; 0.6b(33.)
KRAMER65; 0.65b(11.)
MANNHART68; 0.506b(5.)
HEFT79; 0.623b(3.2)

I_0 - * from MUGHABGHAB84 (Errata and addenda); originally quoted : 4.59b(3.3), leading to Q_0 = 7.65 (probably too low)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (↔ σ_0 from this line)
		Z = 1-60 : MUGHABCHAB81 Z = 61-100 : MUGHABGHAB84										
Sr (cont'd)			0.87(8.0)* 0.690(2.1)* (THIS WORK)	10.7(12.)*+ 9.14(–)* ($Q_0 \times \sigma_0$)	12.3(–)* 13.2^5(–)* (DECORTE87)		^{85}Sr (IV/b)	64.84d(0.05) (KOCHER81)	514.0	99.28 99.270(0.02) (KOCHER81)	$1.15.10^{-4}$	$9.15.10^{-5}$(0.9) (↔ σ_0=0.690b(0.9))

COMMENTS

θ – natural variations in normal terrestrial material possible (DEBIEVRE85), range small

* – for F_2m+g

σ_0 – other compil.: 0.87b(8.)(IAEA87)
0.87b(10.)(NNDC COMPUT.CH.85)
0.73b(CH.NUCL.84)
0.74b(NUKLIDK.81)
(all with θ = 0.56% and F_2 assumed to be 0.873)
– cf. HEFT79 : 0.735b(3.8), with θ = 0.56% and F_2 = 0.86

I_0 – + : I_0^m=0.67b(19.)(as mentioned in MUGHABGHAB84/errata and addenda), leading to I_0^{F2m+g}= 7.30b (18.) and Q_0^{F2m+g}= 8.4, is probably incorrect

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (⇔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sr 87.62 1.2 ; 10	^{86}Sr	9.86 9.86(0.1) (DEBIEVRE85)	0.84(7.) 0.770(0.9) (THIS WORK)	4.79(5.0) 3.17(1.9) ($Q_0 \times \sigma_0$)	5.70(-) 4.11(1.7) (DECORTE87)	795(2.0)	^{87m}Sr (I)	2.805h(0.1) (KOCHER81)	388.4	83.0 82.3(0.5) (KOCHER81)	$1.64.10^{-3}$	$1.49.10^{-3}$(0.5) (⇔ σ_0=0.770b(0.7))
Y 88.91 1.28 ; 1.0	^{89}Y	100 100(0.) (DEBIEVRE85)	0.001(20.)+ 0.00104(1.) (THIS WORK)	- 0.00617(2.5) ($Q_0 \times \sigma_0$)	- 5.93(2.3) (DECORTE87)	4300(8.)	^{90m}Y (I)	3.19h(0.3) (KOCHER81)	202.5 479.5	97.0 96.6(0.4)* 90.6 90.99(0.3)*	$2.28.10^{-5}$ $2.13.10^{-5}$	$2.36.10^{-5}$(2.0) (⇔ σ_0=0.00104b(2.0)) $2.23.10^{-5}$(0.9) (⇔ σ_0=0.00104b(0.95))

COMMENTS

θ - natural variations in normal terrestrial material (DEBIEVRE85), range small

σ_0 - other compil.: 0.84b(7.)(IAEA87)
0.84b(7.)(NNDC COMPUT.CH.85)
0.84b(CH.NUCL.84; NUKLIDK.81)
- experim.: SEREN47; 1.29b(20.)
LYON60; 1.73b(10.)
HANS60; 0.8b(31.)
GULYAS64; 0.769b(6.)
KRAMER65; 1.0b(10.)
PARA67; 0.94b(5.)
MANNHART68; 0.81b(5.) with γ_{388} = 79.4%, normal.: 0.78b
HEFT79; 0.816b(3.) with γ_{388} = 82.5%, normal.: 0.813b
- interference $^{87}Sr(n,n')^{87m}Sr$ ($\bar{\sigma}$ = 112mb(15.); CALAM./IAEA74) corrected for in this work.

COMMENTS

σ_0 - other compil.: 0.001b(20.)(IAEA87)+
0.001b(20.)(NNDC COMPUT.CH.85)+
0.0010b(CH.NUCL.84)+
0.001b(NUKLIDK.81)+
- + value adopted from HEATH61

γ - * from KOCHER81

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) recommended or (tentative) (→σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Zr 91.22 0.184 ; 1.0	^{94}Zr	17.28 17.38(0.12) (DEBIEVRE85)	0.0499(4.8) 0.0530(1.) (THIS WORK)	0.230(4.3) 0.268(2.2) ($Q_0 \times \sigma_0$)	4.61(-) 5.05(2.0) (DECORTE87)	6260(4.)	^{95}Zr (I) β^- F_2=0.0111(11.) (NDS83) ^{95m}Nb β^- F_{24}=0.989(0.1)(NDS83) I.T. F_3=0.944(0.6) (NDS83) ^{95}Nb (III/a)	64.03d(0.01)** (NBS82) 86.6h(0.9) (NDS83) 34.97d(0.09) (NDS83)	724.2 756.7 724.2+756.7 (E_{eff}=742.2) 765.8	44.2 44.1^5(0.5)* 54.8 54.5(0.4)* 99.0 98.6^5(0.2)* 99.0 99.79(0.02)*	$8.73.10^{-5}$ $1.08.10^{-4}$ $1.95.10^{-4}$ $2.05.10^{-6}$	$9.321.10^{-5}$(0.6) (→σ_0=0.0530b(0.7)) $1.149.10^{-4}$(0.6) (→σ_0=0.0530b(0.6)) $2.094.10^{-4}$(0.6) (→σ_0=0.0533b) $2.27.10^{-6}$(0.9)+ (→σ_0=0.0545b)

COMMENTS

k_0 - + strictly associated with F_{24}/F_2F_3 = 94.38

σ_0 - other compil.: 0.0499b(4.8)(IAEA87)
0.0499b(4.8)(NNDC COMPUT.CH.85)
0.050b(CH.NUCL.84)
0.056b(NUKLIDK.81)
- experim.: RICABARRA70; 0.063b(13.)
FULMER71; 0.052b(6.)
SANTRY73; 0.0475b(5.)
RUNDBERG78; 0.052b(-)
GANAPATHY78; 0.0493b(1.2), versus $^{235}U(n,f)^{95}Zr$
HEFT79; 0.055b(4.)
WYRICK83; 0.0494b(3.4)

T - ** weighted average of the reported results

γ - * from NDS83

NOTE : $^{94}Zr(n,\gamma)^{95}Zr$ is a f- and α-monitor; see SIMONITS87

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Zr 91.22 0.184 ; 1.0	^{96}Zr	2.76 2.80(0.4) (DEBIEVRE85)	0.0229(4.4) 0.0213(1.0) (THIS WORK)	5.3(5.7) 5.28 (2.) ($Q_0 \times \sigma_0$)	231(-) 248. (1.5) (DECORTE87)	338(2.1)	^{97}Zr (I)	16.74h(0.1) (SIMONITS87)	254.2	1.27 1.29(11.)*	$1.84.10^{-7}$	$(1.91.10^{-7})$ (→ σ_0=0.0231b)
									355.4	2.30 2.38(10.)*	$3.33.10^{-7}$	$(3.06.10^{-7})$ (→ σ_0=0.0200b)
									507.7	5.10 5.31(9.)*	$7.38.10^{-7}$	$(7.11.10^{-7})$ (→ σ_0=0.0209b)
									602.4	1.40 1.37(10.3)*	$2.03.10^{-7}$	$(1.99.10^{-7})$ (→ σ_0=0.0226b)
									703.7	0.95 1.04(18.2)*	$1.38.10^{-7}$	$(1.42.10^{-7})$ (→ σ_0=0.0213b)
									1148.0	2.70 2.65(11.)*	$3.91.10^{-7}$	$(3.57.10^{-7})$ (→ σ_0=0.0210b)
							β^- F_{24}=0.032(12.)					
							^{97m}Nb (II/a)	60s(13.) (NDS85)	743.3	98.0 97.9(0.3)*	$1.37.10^{-5}$	$1.296.10^{-5}$(0.9) (→ σ_0=0.0213b(1.0))
							β^- F_2=0.968(0.4) (NDS85) I.T. F_3=1					
							^{97}Nb (III/a)	72.1min(1.) (NDS85)	657.9	98.2 98.4(0.2)*	$1.38.10^{-5}$	$1.304.10^{-5}$(0.9) (→ σ_0=0.0213b(1.0))
		COMMENTS σ_0 - other compil.: 0.0229b(4.4)(IAEA87) 0.0229b(4.4)(NNDC COMPUT.CH.85) 0.022b(CH.NUCL.84) 0.017b(NUKLIDK.81) - experim.: RICABARRA70; 0.0057b(18.) FULMER71; 0.020b(15.) SANTRY73; 0.0229b(4.4) HEFT79; < 0.01b WYRICK83; 0.0203b(3.) γ - * from NDS85 NOTE : $^{96}Zr(n,\gamma)^{97}Zr$ is a f- and α-monitor; see SIMONITS87										
Nb 92.91 1.15 ; 8.5	^{93}Nb	100 100(0.) (DEBIEVRE85)	- 0.863(12.) (THIS WORK)	- 6.34(13.) ($Q_0 \times \sigma_0$)	- 7.35(2.7) (DECORTE87)	574(8.)	^{94m}Nb (I)	6.26min(0.16) (NDS85)	871.0	0.48 0.50(12.) (NDS85)	-	$9.70.10^{-5}$(1.6) (→ σ_0=0.863b(12.))
		COMMENTS σ_0 - other compil.: 0.15b(NUKLIDK.81) γ - accurate redeterm.desirable										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Mo 95.94 2.60 ; 24	^{98}Mo	24.13 24.13(0.2) (DEBIEVRE85)	0.130(4.6) 0.131(0.8) (THIS WORK)	6.9(4.3) 6.96(6.4) ($Q_0 \times \sigma_0$)	53.1(-) 53.1(6.3) (DECORTE87)	241(20.)	^{99}Mo (I) β⁻ F_2=0.880^5(0.35) (DICKENS80) ^{99m}Tc I.T. 140.5 keV level (II/d)	65.94h(0.02) (NDS86) 6.01h(0.2) (NDS86)	181.1 366.4 739.5 778.0 140.5	6.00 6.08(2.0)* 1.21 1.15(3.5)* 13.0 12.1 (1.5)* 4.37 4.34(2.9)* 89.3(F_2=0.880) 89.06(0.27)* (F_2=0.880)*	$4.10.10^{-5}$ $8.27.10^{-6}$ $8.88.10^{-5}$ $2.99.10^{-5}$ $5.37.10^{-4}$	$4.15.10^{-5}$(0.6) (← σ_0=0.130b(2.1)) $8.36.10^{-6}$(1.3) (← σ_0=0.138b(3.7)) $8.46.10^{-5}$(0.7) (← σ_0=0.133b(1.7)) $2.97.10^{-5}$(1.1) (← σ_0=0.130b(3.1)) $5.27.10^{-4}$(0.5) (← σ_0=0.128b(0.6))

COMMENTS

σ_0 - other compil.: 0.130b(4.6)(IAEA87)
0.130b(4.6)(NNDC COMPUT.CH.85)
0.132b(CH.NUCL.84)
0.130b(NUKLIDK.81)
- σ_0 (THIS WORK) from 366 keV line not consistent; not included in average; with γ = 1.21% (ERDTMANN 79; LMRI75) σ_0 = 0.131b is obtained

γ - * from NDS86
- SIMONITS81 : $\frac{\gamma_{140,Mo}}{F_2 \cdot \gamma_{140,Tc}}$ = 0.0664, revised : 0.0675;
cf. DICKENS80 = 0.0654, NDS86 = 0.0577

NOTE - adopted as α-monitor

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Mo 95.94 2.60 ; 24	^{100}Mo	9.63	0.199(1.5)	3.75(4.)	18.84(-)	672(14.)	^{101}Mo (I) β^- F_2=1	14.6min(0.7) (NDS85)	80.9	0.03435 3.83^5(4.5)**	$1.43.10^{-7}$	$(1.80.10^{-5})$ (→ σ_0=0.224b)
		9.63(0.2)	0.200(11.)*	3.77(12.)	18.84(4.3)				191.9	18.1 18.8(2.1)**	$7.55.10^{-5}$	$(7.71.10^{-5})$ (→ σ_0=0.196b)
		(DEBIEVRE85)	(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)				195.9	2.741 2.86(5.7)**	$1.14.10^{-5}$	$(1.02.10^{-5})$ (→ σ_0=0.170b)
									192.4 (E_{eff})	20.8 21.7(2.1)**	$8.68.10^{-5}$	$8.36.10^{-5}$(1.6) (→ σ_0=0.184b(1.6))
									408.7	1.393 1.60(5.2)**	$5.81.10^{-6}$	$(5.85.10^{-6})$ (→ σ_0=0.174b)
									499.7	1.334 1.47(8.0)**	$5.57.10^{-6}$	$(5.63.10^{-6})$ (→ σ_0=0.183b)
									505.9 (E_{eff})	11.35 13.1(7.5)**	$4.74.10^{-5}$	$4.71.10^{-5}$(1.9) (→ σ_0=0.171b(7.4))
									590.7 (E_{eff})	19.3 22.0(9.3)**	$8.05.10^{-5}$	$8.30.10^{-5}$(1.8) (→ σ_0=0.180b(9.3))
									695.6	6.601 7.20(8.1)**	$2.75.10^{-5}$	$2.79.10^{-5}$(1.6) (→ σ_0=0.185b(8.0))
									713.0	3.088 3.38(9.1)**	$1.29.10^{-5}$	$(1.37.10^{-5})$ (→ σ_0=0.193b)
									870.9 (E_{eff})	1.652 2.14(9.4)**	$6.89.10^{-6}$	$(8.61.10^{-6})$ (→ σ_0=0.192b)
									877.4	3.107 3.40(9.1)**	$1.30.10^{-5}$	$(1.53.10^{-5})$ (→ σ_0=0.215b)
									934.0 (E_{eff})	3.725 4.15(8.9)**	$1.55.10^{-5}$	$(1.75.10^{-5})$ (→ σ_0=0.201b)
(cont'd)												

COMMENTS

σ_0 - other compil.: 0.199b(1.5)(IAEA87)
0.199b(1.5)(NNDC COMPUT.CH.85)
0.195b(CH.NUCL.84)
0.199b(NUKLIDK.81)
- * only from ^{101}Tc-lines (cf. from ^{101}Mo-lines : 0.184b(3.))

γ - ** from NDS85
- note high uncertainties, especially for ^{101}Tc; accurate redetermination desirable
- 192.4 = E_{eff} of 191.9 & 195.9; 505.9 = E_{eff} of 505.1 & 505.9; 590.7 = E_{eff} of 590.1 & 590.9; 870.9 = E_{eff} of 869.7 & 871.1; 934.0 = E_{eff} of 933.3 & 934.2; 1012.3 = E_{eff} of 1011.1 & 1012.5; 1251.0 = E_{eff} of 1249.4 & 1251.1
- note large discrepancies with ERDTMANN79

NOTE : adopted as a α-monitor

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (⇐ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Mo (cont'd)									1012.3 (E_{eff})	14.3 15.0(5.6)**	$5.97.10^{-5}$	$\underline{6.18.10^{-5}}$(2.2) (⇐ σ_0=0.196b(5.6))
									1161.0	3.57 3.97(5.6)**	$1.49.10^{-5}$	($1.82.10^{-5}$) (⇐ σ_0=0.219b)
									1251.0 (E_{eff})	4.207 4.87(5.6)**	$1.76.10^{-5}$	($2.14.10^{-5}$) (⇐ σ_0=0.210b)
									1304.0	2.374 2.78(5.8)**	$9.91.10^{-6}$	($1.30.10^{-5}$) (⇐ σ_0=0.223b)
									1532.5	5.48 5.96(5.5)**	$2.29.10^{-5}$	($2.73.10^{-5}$) (⇐ σ_0=0.218b)
							^{101}Tc (II/a)	14.2min(0.7) (NDS85).	127.2	2.264 2.86(11.4)**	$9.45.10^{-6}$	($1.20.10^{-5}$) (⇐ σ_0=0.200b)
									184.1	1.308 1.69(11.5)**	$5.46.10^{-6}$	($5.50.10^{-6}$) (⇐ σ_0=0.155b)
									306.8	88.0 $\underline{88.0}$(11.4)**	$3.67.10^{-4}$	$\underline{3.73.10^{-4}}$(1.3) (⇐ σ_0=0.202b(5.2))
									531.4	0.8673 1.02(11.5)**	$3.62.10^{-6}$	($5.01.10^{-6}$) (⇐ σ_0=0.234b)
									545.1	5.013 $\underline{5.98}$(11.1)**	$2.09.10^{-5}$	$\underline{2.49.10^{-5}}$(1.0) (⇐ σ_0=0.199b(4.5))

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ_γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (⇔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ru 101.07 2.6 ; 41	^{96}Ru	5.52	0.29(7.)	7.34(4.1)	25.3(-)	776(16.0)	^{97}Ru (I)	2.9d(3.4) (NDS85)	215.7	86.24	$2.85.10^{-4}$	$2.25.10^{-4}$(0.5) (⇔ σ_0=0.229b(0.7))
		5.52(0.9) (DEBIEVRE85)	0.229(1.2) (THIS WORK)	6.12(3.7) ($Q_0 \times \sigma_0$)	26.5(3.5) (DECORTE87)					86.2(0.5) (NDS85)		
		COMMENTS σ_0 - other compil.: 0.29b(7.)(IAEA87) 0.29b(7.)(NNDC COMPUT.CH.85) 0.27b(CH.NUCL.84) 0.25b(NUKLIDK.81) - experim.: KATCOFF58; 0.210b(15.), KX proport.count. HALPERIN65; 0.27b(4.), 67.0% ^{96}Ru enrichm., 4π-proport.count. RAMBAK77; 0.29b(7.), no γ given HEFT79; 0.218b(2.) with γ_{216} = 87.6%, normal.: 0.222b T - accurate redetermination desirable											
	^{102}Ru	31.6	1.21(5.8)	4.2(2.4)	3.5(-)	181(3.9)	^{103}Ru (I)	39.26d(0.05) (NDS85)	497.1	86.4	$6.83.10^{-3}$	$6.89.10^{-3}$(0.4) (⇔ σ_0=1.16b(3.0))
		31.6(0.6) (DEBIEVRE85)	1.16(2.3) (THIS WORK)	4.21(-) ($Q_0 \times \sigma_0$)	3.63(-) (DECORTE87)					90.9(3.0)*		
									610.3	5.3	$4.19.10^{-4}$	$4.30.10^{-4}$(0.5) (⇔ σ_0=1.15b(3.2))
										5.73(3.2)*		
		COMMENTS σ_0 - other compil.: 1.21b(5.8)(IAEA87) 1.21b(5.8)(NNDC COMPUT.CH.85) 1.2b(CH.NUCL.84) 1.30b(NUKLIDK.81) γ - * from NDS85 - note discrepancy with ERDTMANN79 for γ_{497}; cf. LMRI75 : 89.35%(0.6); KOCHER81 : 89%(6.); MIYAHARA81 : 91.09%(0.8), experimental										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, % Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (⇔σ_0 from this line)
Ru 101.07 2.6 ; 41	^{104}Ru	18.7 18.7(1.1) (DEBIEVRE85)	0.32(6.) 0.491(2.) (THIS WORK)	4.3(2.3) 6.28(3.4) ($Q_0 * \sigma_0$)	13.4(-) 12.8(2.7) (DECORTE87)	495(10.1)	^{105}Ru (I)	4.44h(0.5) (NDS86)	262.8	7.3 6.57(2.4)*	$9.03.10^{-5}$	$1.31.10^{-4}$(1.8) (⇔σ_0=0.516b(2.8))
									469.4 (E_{eff})	17.5 17.7(3.1)*	$2.16.10^{-4}$	$3.47.10^{-4}$(1.3) (⇔σ_0=0.507b(3.2))
									676.4	16.7 15.6(3.2)*	$2.07.10^{-4}$	($2.95.10^{-4}$) (⇔σ_0=0.489b)
									724.3	49.0 47.3(1.1)*	$6.06.10^{-4}$	$8.87.10^{-4}$(1.7) (⇔σ_0=0.485b(1.7))
							^{105m}Rh (II/a)	45s(-) (NDS86)	129.7	20.5 20.0(2.4)*	$6.21.10^{-5}$	$9.20.10^{-5}$(1.3) (⇔σ_0=0.486b(5.3))
							^{105}Rh (III/c)	35.36h(0.2) (NDS86)	306.1	5.44 5.13(6.0)*	$6.73.10^{-5}$	$1.01.10^{-4}$(1.5) (⇔σ_0=0.509b(5.8))
									319.2	19.6 19.2(2.1)*	$2.43.10^{-4}$	$3.57.10^{-4}$(2.1) (⇔σ_0=0.481b(2.1))

β⁻ F_{24} = 0.755(1.5) β⁻ F_2 = 0.245(4.5) (KOCHER81)

I.T. F_3=1

COMMENTS

σ_0 - other compil.: 0.32b(6.)(IAEA87)
0.32b(6.)(NNDC COMPUT.CH.85)
0.35(CH.NUCL.84)
0.47b(NUKLIDK.81)
- experim.: LANTZ64; 0.47b(-)
RAHBAK77; 0.32b(6.3)
HEFT79; 0.466b(3.2)
- F_2 = 0.284 from NDS86 yields inconsistent result for σ_0 from ^{105m}Rh 129.7 keV-line (0.563b)

γ - * from NDS86
- note large discrepancies with ERDTMANN79 for γ_{263}, γ_{676} and γ_{306}; cf. KOCHER81 : γ_{263} = 7.2%(4.), γ_{676} = 16.7%(4.), γ_{306} = 5.13%(4.)
- 469.4 = E_{eff} of 469.4 & 470.1

BURN-UP ^{105}Rh(n,γ) : σ_0 = 1600b(20.), I_0 = 17000b(18.) to $^{106(m+g)}$Rh (MUGHABGHAB81); $\bar{E}_r$ unknown (10 eV assumed)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Rh 102.91 145 ; 1100	^{103}Rh	100	10.(10.)	75(7.)	7.5(-)	1.45(0.7)	^{104m}Rh	4.34min(1.2)				
		100(0.)	11.(-)	82(-)	7.5(-)		↓ I.T. P_2=0.9987(0.01) (NDS84)	(NDS84)				
		(DEBIEVRE85)	(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)							
			135(1.7)	1025(5.)	7.6(-)		^{104}Rh	42.3s(0.95)	555.8	1.99	5.45.10^{-2}	(6.11.10^{-2})
			134(-)	1275(-)	7.6(-)					2.0(25.)		(→ σ_0^g=150b)
			(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)		(IV/a)	(NDS84)		(NDS84)		

COMMENTS

$\underline{\sigma_0^m/\sigma_0^g}$ - THIS WORK (experim.): $\frac{\sigma_0^m}{\sigma_0^g}$ = 0.082(1.), from double measurement of 556 keV-line (SIMONITS80)

- experim.: CSIKAI63; 0.087 (at 0.032 eV)
KEISCH63; 0.075(2.7)
BISHOP64; 0.076(10.)
WALKER66; 0.081(9.)

$\underline{\sigma_0^m}$ - compil.: 10b(10.)(IAEA87)
10b(10.)(NNDC COMPUT.CH.85)
11b(CH.NUCL.84)
11b(NUKLIDK.81)

- THIS WORK; from σ_0^m/σ_0^g = 0.082 and σ_0^{m+g} = 145b (DILG74), σ_0^m = 11.b is obtained

$\underline{\sigma_0^g}$ - other compil.: 135b(1.5)(IAEA87)
135b(1.7)(NNDC COMPUT.CH.85)
134b(CH.NUCL.84)
135b(NUKLIDK.81)

- THIS WORK; σ_0^g calculated from k_0 rejected in view of very unreliable γ_{556}; from σ_0^m/σ_0^g = 0.082 and σ_0^{m+g} = 145b (DILG74), σ_0^g = 134b is obtained (corresponding to γ_{556} = 2.24%)

$\underline{g_{WESTCOTT}}$ (20°C) = 1.023; (100°C) = 1.041 (WESTCOTT62)

$\underline{F_{Cd}}$ - possibly < 1 (ELNIMR81)

$\underline{Y}$ - note large uncertainty on γ_{556}; accurate redetermination desirable

$\underline{T}$ - accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Pd 106.42 6.9 ; 90	^{108}Pd	26.46 26.46(0.3) (DEBIEVRE85)				39.7(5.)	^{109m}Pd I.T. $F_{\gamma}^{=1}$	4.69min(0.2) (NDS84)				
			8.48(5.9)* 8.77(-)*	244(1.6)* 253(-)*	28.8(-)* 28.8(-)*		^{109}Pd	13.7h(0.7)	311.1	0.0405	$1.78.10^{-5}$	$(1.59.10^{-5})$
			(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)		(IV/b)	(NDS84)	(E_{eff})	0.0368(9.3)**		(↔σ_0=8.32b)
									414.4	0.0289	$1.27.10^{-5}$	$(8.85.10^{-6})$
									(E_{eff})	0.0173(8.5)**		(↔σ_0=9.85b)
									602.5	0.0146	$6.43.10^{-6}$	$(3.43.10^{-6})$
										0.00798(6.5)**		(↔σ_0=8.27b)
							β^- $F_{\gamma}^{=1}$		636.3	0.0177	$7.80.10^{-6}$	$(4.62.10^{-6})$
										0.00998(5.5)**		(↔σ_0=8.91b)
									647.3	0.0431	$1.90.10^{-5}$	$(1.09.10^{-5})$
										0.0244(2.9)**		(↔σ_0=8.60b)
									781.4	0.0211	$9.30.10^{-6}$	$(4.61.10^{-6})$
										0.0112(11.2)**		(↔σ_0=7.92b)
							^{109m}Ag	39.6s(0.5)	88.0	3.79	$1.67.10^{-3}$	$(1.79.10^{-3})$
							(V/c)	(NDS84)		3.61(-)**		(↔σ_0=9.54b)

COMMENTS

θ - natural variations in normal terrestrial material (DEBIEVRE85), range small

* - for m+g

σ_0 - *other compil.*: 8.483b(5.9)(IAEA87)
8.483b(5.9)(NNDC COMPUT.CH.85)
8.19b(CH.NUCL.84)
12.20b(NUKLIDK.81)

γ - ** from NDS84
- note large discrepancy with ERDTMANN79 for the ^{109}Pd-lines
- 311.1 = E_{eff} of 309.1 & 311.4;
414.4 = E_{eff} of 413.0 & 415.2
- accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation - decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Pd 106.42 6.9 ; 90	^{110}Pd	11.72 11.72(0.8) (DEBIEVRE85)	0.037(16.2) 0.012(-) (THIS WORK)	0.7(29.) 0.24(-) ($Q_0 \times \sigma_0$)	19.(-) 20.(-) (DECORTE87)	950(9.)	^{111m}Pd (I)	5.5h(2.) (NDS79)	172.1	32.4 33.0(-) (NDS79)	$2.76 \cdot 10^{-5}$	$(9.04 \cdot 10^{-6})$ (↔σ_0=0.012b) ③

COMMENTS

θ - natural variation in normal terrestrial material (DEBIEVRE85), range small

σ_0 - other compil.: 0.037b(16.2)(IAEA87)
0.037b(16.2)(NNDC COMPUT.CH.85)
0.02b(CH.NUCL.84)
0.020b(NUKLIDK.81)
- experim.: SEMGAL59; < 0.05b
MANGAL63; 0.037b(15.)
HEFT79; 0.033b(9.), with γ_{172} = 32.4%;
normal.: ©.032b
- THIS WORK : when applying k_0-method (with experim. k_0-factors for ^{109}Pd/^{109m}Ag and ^{111m}Pd) to the determination of Pd in Ti and Ti-alloys, consistency is obtained (ROOS84)

Y - cf. REUS83 : 33.5%
- accurate redetermination desirable

T - accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	I_γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) [recommended or (tentative)] (⇒ σ_0 from this line)
Ag 107.87 63.6 ; 750	^{107}Ag	51.83 51.839(0.01) (DEBIEVRE85)	37.27(3.2) 33.1(5.) (THIS WORK)	98.8(5.) 96.0(-) ($Q_0 \approx \sigma_0$)	2.65(-) 2.90(-) (DECORTE87)	38.5(4.9)	^{108}Ag (I)*	2.37min(0.4) (NDS82)	433.9 618.9 633.0	0.47 0.50(6.)** 0.25 0.262(9.4)** 1.67 1.76(5.7)**	$1.76 \cdot 10^{-3}$ $9.36 \cdot 10^{-4}$ $6.25 \cdot 10^{-3}$	$1.59 \cdot 10^{-3}$ (1.8) (⇒ σ_0=31.7b(8.2)) ($9.38 \cdot 10^{-4}$) (⇒ σ_0=35.5b) $6.01 \cdot 10^{-3}$ (1.9) (⇒ σ_0=34.0(6.0))

COMMENTS

* - negligible interference from ^{108m}Ag decay (T = 127y; σ_0^m = 0.33b)

σ_0 - other compil.: 37.27b(3.2)(IAEA87)
37.27b(3.2)(NNDC COMPUT.CH.85)
38b(CH.NUCL.84)
37b(NUKLIDK.81)
- cf. experim.: HEFT79; 35.3b(0.3) with Y_{633} = 1.8%, normal. : 36.1b

I_γ - ** from NDS82; cf. KOCHER81 : Y_{434} = 0.51%(20.); Y_{619} = 0.27%(22.); Y_{633} = 1.74%(10.)
- accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV	Isotope formed Activation-decay type	T	Main γ-energies E_γ, keV	γ, %	$k_{0,Au}$	Measured $k_{0,Au}$ (rel.err.,%)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84				(JOVAN.87)	(DECORTE89)			(ERDTMANN79)	(calc.)	{recommended or (tentative)} (← σ_0 from this line)
Ag 107.87 63.3 ; 750	^{109}Ag	48.17 48.161(0.01) (DEBIEVRE85)	4.7(4.3) 3.90(0.8) (THIS WORK)	72.3(5.5) 69.0(-) ($Q_0 \times \sigma_0$)	15.4(-) 17.5(-)** (DECORTE87)	6.08(1.0)	^{110m}Ag (I)	249.76d(0.01) (YOSHIZAWA85)	446.8	3.657 3.72(1.1)*	$1.60.10^{-3}$	$1.34.10^{-3}$(1.7) (← σ_0=3.86b(2.0))
									620.4	2.776 2.802(0.7)*	$1.22.10^{-3}$	$1.00.10^{-3}$(0.7) (← σ_0=3.83b(1.0))
									657.8	94.74 94.51(0.1^5)*	$4.15.10^{-2}$	$3.44.10^{-2}$(0.6) (← σ_0=3.90b(0.6))
									677.6 (E_{eff})	10.8621 10.48(0.9)*	$4.76.10^{-3}$	$3.86.10^{-3}$(1.1) (← σ_0=3.95b(1.4))
									687.0	6.49 6.43(0.9)*	$2.85.10^{-3}$	$2.39.10^{-3}$(1.0) (← σ_0=3.98b(1.3))
									706.7 (E_{eff})	17.0242 16.66(0.6)*	$7.46.10^{-3}$	$6.01.10^{-3}$(0.7) (← σ_0=3.87b(0.9))
									744.3	4.661 4.73(0.6)*	$2.04.10^{-3}$	$1.66.10^{-3}$(1.1) (← σ_0=3.76b(1.3))
									763.9	22.36 22.29(0.5)*	$9.80.10^{-3}$	$8.13.10^{-3}$(0.7) (← σ_0=3.91b(1.3))
									818.0	7.323 7.33(0.7)*	$3.21.10^{-3}$	$2.64.10^{-3}$(1.2) (← σ_0=3.86b(1.4))
									884.7	72.86 72.7(0.6)*	$3.19.10^{-2}$	$2.65.10^{-2}$(0.8) (← σ_0=3.91b(1.0))
									937.5	34.31 34.37(0.5)*	$1.50.10^{-2}$	$1.25.10^{-2}$(0.7) (← σ_0=3.90b(0.9))
									1384.3	24.35 24.34(0.5)*	$1.07.10^{-2}$	$8.96.10^{-3}$(0.9) (← σ_0=3.95b(1.0))
									1475.8	3.989 3.990(0.6)*	$1.75.10^{-3}$	$1.47.10^{-3}$(0.5) (← σ_0=3.95b(0.8))

COMMENTS

σ_0 – other compil.: 4.7b(4.3)(IAEA87)
4.7b(4.3)(NNDC COMPUT.CH.85)
4.6b(CH.NUCL.84)
4.5b(NUKLIDK.81)
– see SIMONITS84, DECORTE88
– σ_0 from 1562 keV not consistent; rejected for average (note that γ_{1562}= 1.18% leads to σ_0= 3.89b)
– $g_{WESTCOTT}$ (20°C) = 1.0046(ENDF/B-V82)

γ – * from YOSHIZAWA85
– good consistency with KOCHER81 & NDS83
– note discrepancy with ERDTMANN79 for γ_{1562}, cf. KOCHER81 : 1.180%(1.1); NDS83 : 1.029%(0.6) (γ_{1562} = 1.18% seems to be correct; see above)
– 677.6 keV = E_{eff} of 676.6 & 677.6
706.7 keV = E_{eff} of 706.7 & 708.1

(cont'd)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ag (cont'd)									1505.0	13.11 13.05(0.5)*	$5.75.10^{-3}$	$4.74.10^{-3}$(0.8) (↔σ_0=3.89b(0.9))
									1562.3	1.184 1.027(0.8)*	$5.19.10^{-4}$	$4.28.10^{-4}$(1.0) (↔σ_0=4.47b(1.3))
Cd 112.41 2450 ; 70	^{114}Cd	28.72 28.73(0.7) (DEBIEVRE85)	0.30(6.7) 0.23(-) (THIS WORK)	13(15.4)+ 9.1(-) ($Q_0 \times \sigma_0$)	43.3(-) 39.6(1.3) (DECORTE87)	207(19.)	^{115}Cd (I)++ ↓β⁻ $T_{1/2}$=1 ^{115m}In (II/a)	53.46h(0.2) (NDS87) 4.486h(0.1) (NDS87)	527.9 336.2	32.9 27.45(2.1) (NDS87) 46.1 45.9(5.0) (NDS87)	$5.27.10^{-4}$ $7.38.10^{-4}$	$(3.42.10^{-4})$ (↔σ_0=0.23b) $(5.57.10^{-4})$ (↔σ_0=0.23b)

COMMENTS

++ : no I.T. from ^{115m}Cd

σ_0 - other compil.: 0.30b(6.7)(IAEA87)
0.30b(6.7)(NNDC COMPUT.CH.85)
0.30b(CH.NUCL.84)
0.300b(NUKLIDK.81)
- experim.: PEARLSTEIN66 : 0.30b(50.)
HEFT79 : 0.294b(5.4) with γ_{528}= 26.6% & γ_{336}= 42.6%; normal.: 0.28b

I_0 - + assignment not clear

F_{Cd} = 0.45(3.)(THIS WORK)

T - note large discrepancy with KOCHER81 : 4.36h(2.3); cf. NEMETH87 : 4.485h(0.1)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\tilde{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
In 114.82 194; 3200	^{113}In	4.3 4.3(4.7) (DEBIEVRE85)	8.1(9.9)*+ 8.2(-)* (THIS WORK)	220(6.8)* 224(-)* ($Q_0 \times \sigma_0$)	27.2(-)* 27.3(-)* (DECORTE87)	6.41(15.)	^{114m}In (IV/b)	49.51d(0.02) (NDS82)	190.3 558.4 *** 725.2	17.7 15.4(2.6)** 4.65 4.39(10.)** 4.55 4.33(10.)**	$1.12.10^{-3}$ $2.95.10^{-4}$ $2.88.10^{-4}$	$(1.01.10^{-3})$ (→ σ_0=8.4b) $(2.75.10^{-4})$ (→ σ_0=8.0b) $(2.73.10^{-4})$ (→ σ_0=8.1b)

COMMENTS

* - for $m+m_2$ (43.1 ms)

\+ assignment : σ_0^m = 8.1±0.8b, σ_0^{m2} = 3.1±0.7b; however, quoted σ_0^m originates from KEISCH63, who measured in fact σ_0^{m+m2}

σ_0 - other compil.:8.1b(9.9)(IAEA87)
8.1b(9.9)(NNDC COMPUT.CH.85)
8b(CH.NUCL.84)
7.5b(NUKLIDK.81)

E_γ - *** contribution from ^{114}In (71.9s) 558.4 keV-line negligible

γ - ** from NDS82
- note large discrepancy with ERDTMANN79 for γ_{190}; cf. KOCHER81 : 15.9%(2.5), REUS83 : 16.0%

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
In 114.82 194 ; 3200	^{115}In	95.7 95.7(0.2) (DEBIEVRE85)	162.3(0.43)* 157(3.)* (THIS WORK)	2650(3.8)* 2638(4.)* ($Q_0 \times \sigma_0$)	16.3(-)* 16.8(1.9)* (DECORTE87)	1.56(1.9)	^{116m}In (IV/b)	54.15min(0.1) (NDS81)	137.9	3.33 3.29(3.6)**	$9.41.10^{-2}$	$1.01.10^{-1}$(1.4) (← σ_0=176b(3.3))
									416.9	32.4 29.20(4.9)**	$9.16.10^{-1}$	$7.54.10^{-1}$(1.1) (← σ_0=148b(4.6))
									818.7	11.6 11.48(3.7)**	$3.28.10^{-1}$	$3.36.10^{-1}$(1.2) (← σ_0=168b(3.3))
									1097.2	55.7 56.21(2.0)**	1.57	1.60(1.3) (← σ_0=163b(1.3))
									1293.5	85.0 84.40(2.0)**	2.40	2.29(0.8) (← σ_0=155b(0.8))
									1507.5	10.2 9.96(3.4)**	$2.88.10^{-1}$	$2.69.10^{-1}$(1.4) (← σ_0=155b(3.1))
									2112.2	15.0 15.53(2.8)**	$4.24.10^{-1}$	$4.18.10^{-1}$(1.2) (← σ_0=155b(2.3))

COMMENTS

* - for $m+m_2$ (2.16 s)

σ_0 - other compil.: 162.3b(4.3)(IAEA87)
162b(7.)(NNDC COMPUT.CH.85)
162b(CH.NUCL.84)
157b(NUKLIDK.81)
- $g_{WESTCOTT}$ (20°C) = 1.0175; (100°C) = 1.0321 (GRYNTAKIS75)

F_{Cd} = 0.93 (ELNIMR81)

Y - ** from NDS81

T - note discrepancy with NEMETH86 : 55.77 min(0.2); cf. GOPYCH84 : 54.29min(0.2); MIYACHI88 : 54.12min(0.1)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (↔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sn 118.71 0.63 ; 6	^{112}Sn	1.0 0.97(1.) (DEBIEVRE85)				107(2.8)	^{113m}Sn I.T. F_2=0.911(2.5) (NDS81) ^{113}Sn E.C. F_3=1 ^{113m}In (V/c)	21.4min(1.9) (NDS81) 115.09d(0.03) (NDS81) 1.658h(0.06) (NDS81)	391.7	64.1 64.9(1.1) (KOCHER81)	$1.11.10^{-4}$	5.99.10^{-5}(0.8) (↔ σ_0=0.541b(1.4))
			0.98(11.)* 0.541(2.)* (THIS WORK)	- 26.2(2.)* ($Q_0 \times \sigma_0$)	- 48.4(1.2)* (DECORTE87)							

COMMENTS

* - for F_2m+g

σ_0 - other compil.: 0.98b(10.)(IAEA87), with θ = 1.0%
0.98b(11.)(NNDC COMPUT.CH.85), with θ = 0.97%
0.97b(CH.NUCL.84), with θ = 1.0%
1.12b(NUKLIDK.81), with θ = 1.0%

- cf. MAENHAUT73 : 0.51b(-)
HEFT79 : 0.562b(2.)
NIKOLOW80 : 0.557b(5.5)
} normalized

- see DECORTE85, DECORTE88

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative) (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sn 118.71 0.63 ; 6	^{116}Sn	14.7 14.53(0.8) (DEBIEVRE85)	0.006(33.) 0.00596(2.) (THIS WORK)	0.49(33.) 0.336(3.) ($Q_0 \times \sigma_0$)	82(-) 56.3(1.9) (DECORTE87)	128(3.1)	^{117m}Sn (I)	13.60d(0.3) (NDS87)	158.5 (E_{eff})	88.41 88.51(0.5) (NDS87)	$1.37.10^{-5}$	$\underline{1.35.10^{-5}}$(1.1) (↔σ_0=0.00596b(1.2))

COMMENTS

$\underline{\sigma_0}$ - other compil.: 0.006b(33.)(IAEA87)
0.006b(33.)(NNDC COMPUT.CH.85)
0.006b(CH.NUCL.84; NUKLIDK.81)
- experim.: ORNL85 : 0.006b(33.)
MAENHAUT : 0.00585b(-)
NIKOLOW80 : 0.00542b(5.5)
- see DECORTE83

$\underline{\bar{\sigma}_{n,n'}}$ - strong ^{117}Sn(n,n')^{117m}Sn interference :
$\bar{\sigma}_{n,n'} \approx$ 0.09b(11.)(see DECORTE83)

^{116}Sn(n,γ)^{117m}Sn IS NOT SUITED FOR COMPARATOR-TYPE NAA, EXCEPT IN STRONGLY THERMALIZED IRRADIATION CHANNELS

$\underline{\gamma}$ - 158.5 = E_{eff} of 156.0 & 158.6

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (⇔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sn 118.71 0.63 ; 6	^{122}Sn	4.6 4.63(0.6) (DEBIEVRE85)	0.180(11.) 0.146(2.5) (THIS WORK)	0.81(5.)+ 0.788(3.) ($Q_0 \times \sigma_0$)	4.5(-)+ 5.40(0.7) (DECORTE87)	424(14.)	^{123m}Sn (I)	40.08min(0.2) (NDS80)	160.3	84.0 85.6(2.3) (NDS80)	$1.22.10^{-4}$	$\frac{1.02.10^{-4}}{(\Leftrightarrow \sigma_0 = 0.146b(2.4))}$(0.5)

COMMENTS

σ_0 - other compil.: 0.180b(11.)(IAEA87)(with θ = 4.7%)
[misprinted for σ_0^g]
0.180b(11.)(NNDC COMPUT.CH.85)
(with θ = 4.63%)
0.16b(CH.NUCL.84)(with θ = 4.6%)
0.180b(NUKLIDK.81)(with θ = 4.6%)

- experim.: NELSON50 : 0.100b(20.)
HUGHES53 : 0.160b(19.)
MANGAL63 : 0.206b(15.)
TILBURY68 : 0.15b(13.), with γ_{160}= 87.5%
MAENHAUT73 : 0.145b(-), with γ_{160}= 86%
RICABARRA73 : 0.18b(11.)
HEFT79 : 0.134b(11.), with θ = 4.72% and γ_{160}= 84.0%; normal.: 0.134b

\+ - assuming that quoted $I_0 \simeq I_0^m$ (cf. σ_0^g = 0.001b)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (⇐ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sn 118.71 0.63 ; 6	^{124}Sn	5.6 5.79(0.9) (DEBIEVRE85)	0.130(3.8) 0.116 (3.) (THIS WORK)	8.0(2.5) 6.97(4.2) ($Q_0 \times \sigma_0$)	61.5(-) 60.1(2.9) (DECORTE87)	74.2(7.)	^{125m}Sn (I) β^- $F_{24}^{=1}$	9.525min(0.14) (THIS WORK)	331.9	99.0 99.57(2.0) (NDS81)	$1.27.10^{-4}$	$1.18.10^{-4}$(2.0) (⇐ σ_0=0.116b(2.8))

COMMENTS

σ_0 - other compil.: 0.130b(3.8)(IAEA87), with θ = 5.8%
0.130b(3.8)(NNDC COMPUT.CH.85) with θ = 5.79%
0.13b(CH.NUCL.84; NUKLIDK.81), with θ = 5.6%
- experim.: MANGAL63 : 0.125b(15.), with T = 9.8min
TILBURY68 : 0.13b(15.), with T = 9.5min
RICABARRA73 : 0.11b(36.)
GLEASON77 : 0.135b(4.), with T = 9.2min
HEFT79 : 0.070b(6.), with T = 9.7min and θ = 5.94%; normal. (for θ) : 0.072b
- see DECORTE88

T - note literature scatter on T; LEDERER78 : 9.5min; ERDTMANN79 : 9.7min; NDS81 : 9.52min (0.5); REUS83 : 9.52min

(cont'd)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sn (cont'd)			0.004(50.) 0.0042(-) (THIS WORK)	- 0.25(-) ($Q_0 \times \sigma_0$)	- 60.1(-)* (DECORTE87)		^{125}Sn (I) β⁻ F_{24}=1	9.64d(0.3) (NDS81)	332.1	1.35 1.31(4.4)**	$5.32.10^{-8}$	$(5.40.10^{-8})$ (→σ_0=0.00404b)
									822.5	3.90 3.99(4.6)**	$1.54.10^{-7}$	$(1.98.10^{-7})$ (→σ_0=0.00487b)
							β⁻ F_3=1		1067.1	9.00 9.04(2.8)**	$3.55.10^{-7}$	$(4.37.10^{-7})$ (→σ_0=0.00474b)
									1088.9 (E_{eff})	5.3 5.39(4.1)**	$2.09.10^{-7}$	$(2.48.10^{-7})$ (→σ_0=0.00451b)
							^{125}Sb (VII/b)	2.7617y(0.1) (YOSHIZAWA85)	176.3	6.3 6.75(1.2)***	$2.48.10^{-7}$	$(2.47.10^{-7})$ (→σ_0=0.00359b)
									427.9	29.6 29.6(1.0)***	$1.17.10^{-6}$	$(1.23.10^{-6})$ (→σ_0=0.00408b)
									463.4	10.0 10.42(1.2)***	$3.94.10^{-7}$	$(4.43.10^{-7})$ (→σ_0=0.00417b)
									600.6	18.4 17.61(1.1)***	$7.25.10^{-7}$	$(7.05.10^{-7})$ (→σ_0=0.00393b)
									606.6	5.2 5.02(1.2)***	$2.05.10^{-7}$	$(1.71.10^{-7})$ (→σ_0=0.00334b)
									635.9	11.2 11.23(1.2)***	$4.42.10^{-7}$	$(4.91.10^{-7})$ (→σ_0=0.00429b)

COMMENTS

σ_0 - other compil.: 0.004b(50.)(IAEA87)
0.004b(50.)(NNDC COMPUT.CH.85)
0.004b(CH.NUCL.84; NUKLIDK.81)
- experim.: MANGAL 63 : 0.0039b(56.)

I_0 - no experim. data available
- I_0,calc. : 0.032b(WALKER72), leading to Q_0 = 8.0

Q_0 - * assuming $Q_0^g = Q_0^m$

γ - ** from NDS81
- 1088.9 keV = E_{eff} of 1087.1 and 1089.2
- *** from YOSHIZAWA85

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (⇔ σ_0 from this line)
Sb 121.75 5.4 ; 170	^{121}Sb	57.3 57.3(1.6) (DEBIEVRE85)				13.1(3.8)	^{122m}Sb I.T. F_2^{Cd}=1 ^{122}Sb	4.2min(-) (LEDERER78) 2.70d(1.1) (LMRI85)	564.1 692.8	71.0 70.55(0.5)** 3.92 3.7(5.4)**	$4.12.10^{-2}$ $2.27.10^{-3}$	$4.38.10^{-2}$(1.5) (⇔ σ_0=6.31b(1.6)) $2.38.10^{-3}$(2.0) (⇔ σ_0=6.54b(5.8))
			5.9(3.4)* 6.33(2.3)* (THIS WORK)	200(10.)* 209(4.2)* ($Q_0 \times \sigma_0$)	33.9(-)* 33.0(3.5)* (DECORTE87)							

COMMENTS

θ - the only experimental θ-determination dates from 1948 (WHITE48)(see DEBIEVRE85); accurate redetermination desirable

* - for m+g

σ_0 - other compil.: 5.9b(3.4)(IAEA87)
5.9b(3.4)(NNDC COMPUT.CH.85)
6.25b(CH.NUCL.84)
6.255b(NUKLIDK.81)

F_{Cd} = 0.99 (ELNIMR81)

γ - ** from LMRI85

T - accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation - decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sb 121.75 5.4 ; 170	^{123}Sb	42.7 42.7(2.1) (DEBIEVRE85)				28.2(6.4)	^{124m_2}Sb I.T. F_2=1 ^{124m_1}Sb I.T. F_3=0.75(7.) (NDS84) ^{124}Sb (VI)	20.2min(1.) (NDS84) 93s(5.4) (NDS84) 60.20d(0.05) (LMRI85)	602.7 645.9 722.8 1691.0 2090.9	98.1 97.89(0.05)** 7.24 7.42(0.7)** 11.8 10.80(0.6)** 30.0 47.6(0.4)** 6.03 5.48(0.9)**	$2.98.10^{-2}$ $2.20.10^{-3}$ $3.58.10^{-3}$ $1.52.10^{-2}$ $1.83.10^{-3}$	$2.96.10^{-2}$(0.6) (→σ_0=4.13b(0.6)) $2.21.10^{-3}$(0.7) (→σ_0=4.06b(1.0)) $3.19.10^{-3}$(0.8) (→σ_0=4.03b(1.0)) $1.41.10^{-2}$(1.1) (→σ_0=4.04b(1.2)) $1.58.10^{-3}$(2.0) (→σ_0=3.93b(2.2))
			4.14(2.4)* 4.08(2.3)* (THIS WORK)	125(16.)*+ 118(4.4)* ($Q_0 \times \sigma_0$)	30.2(-)* 28.8(3.7)* (DECORTE87)							

COMMENTS

θ - the only experimental θ-determination dates from 1948 (WHITE48)(see DEBIEVRE85); accurate redetermination desirable

* - for $F_3(m_2+m_1)$+g: (+ : assignment not clear)

σ_0 - other compil.: 4.14b(2.4)(IAEA87)
4.14b(2.4)(NNDC COMPUT.CH.85)
4.145b(CH.NUCL.84)
4.31b(NUKLIDK.81)

γ - * from LMRI85
- note large discrepancy with ERDTMANN79 for γ_{722} & γ_{2091}; cf. NDS84 : γ_{722} = 10.76%(1.); γ_{2091} = 5.57%(1.8)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
I 126.90 6.2 ; ∿150	^{127}I	100 100(-) (DEBIEVRE85)	6.2(3.2) 4.04(10.) (THIS WORK)	147(4.1) 100(11.) ($Q_0 \times \sigma_0$)	23.7(-) 24.8(2.7) (DECORTE87)	57.6(4.0)	^{128}I (I)	24.99min(0.08) (NDS83)	442.9 526.6	17.5 16.9(10.1)* 1.68 1.59(11.0)*	$1.79.10^{-2}$ $1.72.10^{-3}$	$1.12.10^{-2}$(1.7) (↔σ_0=4.03b(1.7)) $1.07.10^{-3}$(1.4) (↔σ_0=4.09b(4.5))

COMMENTS

σ_0 - other compil.: 6.2b(3.2)(IAEA87)
6.2b(3.2)(NNDC COMPUT.CH.85)
6.2b(CH.NUCL.84; NUKLIDK.81)

- experim.: SEREN47; 6.25b(20.)
HARRIS50; 9.23b(σ_{abs})
COLMER50; 8.0b(σ_{abs})
POMERANCE51; 6.35b(σ_{abs})
GRIMELAND58; 5.7b
TATTERSALL60; 6.6b(4.5)(σ_{abs})
MEADOWS61; 6.22b(4.)(σ_{abs})
JOZEFOWICS63; 5.9b(3.)
ROBERTSON65; 6.17b(3.)
STAVISKII65; 5.6b(5.)
RYVES70; 6.12b(2.)
GLEASON77; 6.60b(3.)
FRIEDMAN83; 4.7b(4.) with γ_{443}= 16.0%, normal.: 4.45b

- see DECORTE88

γ - * from NDS83
- note large uncertainty on γ's; cf. KOCHER81 : γ_{433} = 14.2%(11.), γ_{527} = 1.39%(14.); accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, Z	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, Z (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ca 132.91 29 ; 420	^{133}Cs	100 100(0.) (DEBIEVRE85)	2.5(8.) 2.74(3.) (THIS WORK)	- 32.3(4.2) ($Q_0 \times \sigma_0$)	- 11.8(3.) (DECORTE87)	9.27(11.)	^{134m}Cs (I).	2.91h(0.3) (NDS81)	127.5	13.6 12.7(2.4) (NDS81)	$5.35.10^{-3}$	$5.48.10^{-3}$(1.7) (→ σ_0=2.74b(2.9))
		COMMENTS σ_0 - other compil.: 2.5b(8.)(IAEA87) 2.5b(8.)(NNDC COMPUT.CH.85) 2.6b(CH.NUCL.84) 2.5b(NUKLIDK.81) - $g_{WESTCOTT}$ (20°C) = 1.0024 (ENDF/B-V82) γ - note discrepancy with ERDTMANN79 for γ_{127}; cf. KOCHER81 : 12.9%(2.3)					I.T. E_2=1					
			29(5.2)* 30.7(1.)* (THIS WORK)	437(5.9)* 390(-)* ($Q_0 \times \sigma_0$)	15.1(-)* 12.7(-)* + (DECORTE87)		^{134}Cs (IV/b)	2.062y(0.2) (NDS81)	563.2	8.38 8.38(0.6)**	$3.82.10^{-2}$	$4.14.10^{-2}$(1.7) (→ σ_0=31.4(1.8))
									569.3	15.43 15.43(0.7)**	$7.03.10^{-2}$	$7.34.10^{-2}$(1.5) (→ σ_0=30.3(1.7))
									604.7	97.6 97.56(0.3)**	$4.45.10^{-1}$	$4.76.10^{-1}$(2.0) (→ σ_0=31.0(2.0))
									795.8	85.4 85.44(0.4)**	$3.89.10^{-1}$	$4.15.10^{-1}$(2.0) (→ σ_0=30.9(2.0))
									801.9	8.73 8.73(0.5)**	$3.98.10^{-2}$	$4.11.10^{-2}$(2.0) (→ σ_0=29.9(2.1))
		COMMENTS * - for m+g σ_0 - other compil.: 29.0b(5.2)(IAEA87) 29b(5.2)(NNDC COMPUT.CH.85) 29.6b(CH.NUCL.84) 29b(NUKLIDK.81) - $g_{WESTCOTT}$ (20°C) = 1.0024 (ENDF/B-V82) γ - ** from NDS81										

Table 1 (cont'd)

Element At.Weight σ_{abs},b; I_{abs},b (CR.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTS89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (⇔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ba 137.33 1.3 ; 10	^{130}Ba						^{131m}Ba I.T. ↓ E_2=1 ^{131}Ba (IV/b)	14.6min(1.4) (LEDERER78) 11.8d(1.7) (KOCHER81)				
		0.106	11.3(9.)*+	200(10.0)+	17.7(-)+	69.9(5.0)			123.8	29.05	$5.29.10^{-5}$	$\underline{4.13.10^{-5}}$(1.3)
		0.106(1.9)	9.04(3.)+	224(-)+	24.8(-)+					29.0(3.1)**		(⇔ σ_0 = 8.83b(3.4))
		(DEBIEVRE85)	(THIS WORK)	(Q_0*σ_0)	(DECORTE87)				133.6	2.189	$3.99.10^{-6}$	(3.24.10^{-6})
										2.16(3.2)**		(⇔ σ_0 = 9.30b)
									216.1	19.90	$3.63.10^{-5}$	$\underline{2.91.10^{-5}}$(1.0)
										19.7(2.5)**		(⇔ σ_0 = 9.16b(2.7))
									373.2	13.33	$2.43.10^{-5}$	$\underline{2.03.10^{-5}}$(1.5)
										14.0(2.9)**		(⇔ σ_0 = 8.99b(3.3))
									486.5	1.89	$3.44.10^{-6}$	(3.44.10^{-6})
										2.07(1.9)**		(⇔ σ_0 = 10.3b)
									496.3	43.78	$7.98.10^{-5}$	$\underline{6.84.10^{-5}}$(1.4)
										46.8(1.1)**		(⇔ σ_0 = 9.06b(1.8))
									620.1	1.572	$2.86.10^{-6}$	(2.34.10^{-6})
										1.36(6.6)**		(⇔ σ_0 = 10.7b)

COMMENTS

\+ - for g+m (14.6min)

$\underline{\sigma_0^{m+g}}$ - * composed of $\underline{\sigma_0^m}$=2.58b(12.)(= $\underline{\sigma_0^m}$ from TILBURY68) and $\underline{\sigma_m^g}$ = 8.8b(10%)(= $\underline{\sigma_0^{m+g}}$ from LYON60)

- other compil.: 11.3b(9.)(IAEA87)
  11.3b(9.)(NNDC COMPUT.CH.85)
  11.5b(CH.NUCL.84)
  13.5b(NUKLIDK.81)
- experim.: LYON60; 8.8b(10.), probably m+g
  ARINO64; 13.7b(16%), probably m+g
- see DECORTE88

Y - ** from KOCHER81

- note large discrepancies with ERDTMANN79 for Y_{487} and Y_{620}; cf. REUS83 : Y_{487} = 2.09%; Y_{620} = 1.37%

T - accurate redetermination desirable.

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ba 137.33 1.3 ; 10	^{132}Ba	0.101 0.101(2.0) (DEBIEVRE85)	0.5(-) 0.84(-) (THIS WORK)	2.8(-) 4.6(-) ($Q_0 \times \sigma_0$)	5.6(-) 5.6(-) (DECORTE87)	143(-)	^{133m}Ba (I)	38.9h(0.3) (NDS86)	276.1	18.0 17.5(0.6) (NDS86)	$1.38.10^{-6}$	$(2.27.10^{-6})$ (→ σ_0=0.84b)
		COMMENTS σ_0 - other compil.: 0.5b(-)(IAEA87) 0.5b(-)(NNDC COMPUT.CH.85) 0.6b(CH.NUCL.84) 0.68b(NUKLIDK.81) - experim.: HANS60; 4.1b(37.) MANGAL63; <0.15b ISHII69; 0.98b(15.)										
	^{138}Ba	71.70 71.70(0.1) (DEBIEVRE85)	0.360(10.) 0.405(1.4) (THIS WORK)	0.32(12.5) 0.36(-) ($Q_0 \times \sigma_0$)	0.89(-) 0.88(-) (DECORTE87)	15700(3.2)	^{139}Ba (I)	83.06min(0.3) (GEHRKE80)	165.9	18.8 23.76(1.1) (GEHRKE80)	$7.39.10^{-4}$	$1.05.10^{-3}$(0.7) (→ σ_0=0.405b(1.3))
		COMMENTS σ_0 - other compil.: 0.360b(10.)(IAEA87) 0.360b(10.)(NNDC COMPUT.CH.85) 0.4b(CH.NUCL.84) 0.35b(NUKLIDK.81) - experim.: SEREN47; 0.511b(20.) POMERANCE52; 0.68b(15.) LYON60; 0.230b(10.) KRAMER65; 0.360b(10.), with γ_{166}= 22.4%, normal.: 0.339b GLEASON77; 0.47b(4.) HEFT79; 0.447b(2.), with γ_{166}= 22.0%, normal.: 0.414b - $g_{WESTCOTT}$ (20°C) = 0.9986 (ENDF/B-V82) - see DECORTE88 γ - note large discrepancies in literature for γ_{166}: LEDERER78 : 22%(18.), KOCHER81 : 17%(35.), NDS81 : 22.0%(4.5), REUS83 : 23.8%										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ -(rel.err.,%) (recommended or (tentative)) (⇐ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
La 138.91 8.98 ; 12	^{139}La	99.91 99.91(0.01) (DEBIEVRE85)	8.93(0.4) 9.43(1.) (THIS WORK)	11.8(6.8) 11.6(-) ($Q_0 \times \sigma_0$)	1.32(-) 1.24(-) (DECORTE87	76.0(3.9)	^{140}La (I)	40.27h(0.02) (NDS87)	328.8 487.0 815.8 1596.5	18.5 20.6(1.9)* 43.0 44.3(1.7)* 22.32 22.9(1.7)* 95.47 95.4(0.08)*	$2.48.10^{-2}$ $5.77.10^{-2}$ $3.00.10^{-2}$ $1.28.10^{-1}$	$2.87.10^{-2}$(1.0) (⇐ σ_0=9.27 b(2.1)) $6.37.10^{-2}$(0.9) (⇐ σ_0=9.57b(1.9)) $3.32.10^{-2}$(0.6) (⇐ σ_0=9.65b(1.8)) $1.34.10^{-1}$(1.1) (⇐ σ_0=9.35b(1.1))
		COMMENTS σ_0 - other compil.: 8.93b(0.4)(IAEA87) 8.93b(0.4)(NNDC COMPUT.CH.85) 8.94b(CH.NUCL.84) 9.0b(NUKLIDK.81) γ - * from NDS87 - note discrepancy with ERDTMANN79 for γ_{329}; cf. DEBERTIN77, NDS79, LMRI80, HOLLOWAY82, REUS83, KOCHER81, all consistent with NDS87										
Ce 140.12 0.6 ; 0.7	^{140}Ce	88.48 88.48(0.1) (DEBIEVRE85)	0.57(7.) 0.576 1.2) (THIS WORK)	0.47(11.) 0.48(-) ($Q_0 \times \sigma_0$)	0.82(-) 0.83(-) (DECORTE87)	7200(18.)	^{141}Ce (I)	32.501d(0.015) (NDS85)	145.4	48.0 48.2(0.6) (NDS85)	$3.61.10^{-3}$	$3.66.10^{-3}$(0.9) (⇐ σ_0=0.576b(1.1))
		COMMENTS σ_0 - other compil.: 0.57b(7.)(IAEA87) 0.57b(7.)(NNDC COMPUT.CH.85) 0.58b(CH.NUCL.84) 0.57b(NUKLIDK.81)										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ce 140.12 0.6 ; 0.7	^{142}Ce	11.08 11.08(0.9) (DEBIEVRE85)	0.95(5.3) 0.974(1.) (THIS WORK)	1.15(4.3) 1.17(-) ($Q_0 \times \sigma_0$)	1.21(-) 1.20(-) (DECORTE87)	1540(120.)	^{143}Ce (I)	33.0h(0.6) (NDS86)	231.6	2.00 2.05(2.2)*	$3.14.10^{-5}$	$3.37.10^{-5}$(1.4) (↔σ_0=0.995b(2.6))
									293.3	43.4 42.8(1.0)*	$6.81.10^{-4}$	$6.89.10^{-4}$(0.5) (↔σ_0=0.974b(1.1))
									350.6	3.2 3.23(1.2)*	$5.02.10^{-5}$	$5.14.10^{-5}$(0.5) (↔σ_0=0.963b(1.3))
									664.5	5.8 5.69(1.2)*	$9.10.10^{-5}$	$9.18.10^{-5}$(1.5) (↔σ_0=0.976b(1.9))
									722.0	5.5 5.39(1.2)*	$8.63.10^{-5}$	$8.78.10^{-5}$(0.9) (↔σ_0=0.986b(1.5))
		COMMENTS σ_0 other compil.: 0.95b(5.3)(IAEA87) 0.95b(5.3)(NNDC COMPUT.CH.85) 0.95b(CH.NUCL.84; NUKLIDK.81) γ - * from NDS86										
Pr 140.91 11.4 ; 14.1	^{141}Pr	100 100(0.) (DEBIEVRE85)				296(4.1)	^{142m}Pr I.T. F_2=1 ^{142}Pr (IV/b)	14.6min(3.4) (NDS84) 19.12h(0.2) (NDS84)	1575.6	3.7 3.7(14.) (NDS84)	$6.31.10^{-3}$	$6.12.10^{-3}$(0.6) (↔σ_0=11.2b(14.))
			11.5(2.6)* 11.2(14.)* (THIS WORK)	17.4(11.)* 16.9(-)* ($Q_0 \times \sigma_0$)	1.51(-)* 1.51(-)* (DECORTE87)							
		COMMENTS * - for m+g σ_0 - other compil.: 11.5b(2.6)(IAEA87) 11.5b(2.6)(NNDC COMPUT.CH.85) 11.4b(CH.NUCL.84) 11.5b(NUKLIDK.81) γ - note large uncertainty on γ_{1576}; accurate re-determination desirable										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Nd 144.24 49 ; ~42	^{146}Nd	17.19 17.19(0.5) (DEBIEVRE85)	1.4(7. 1.45(3.) (THIS WORK)	3.2(15.6) 2.90(3.5) ($Q_0 \times \sigma_0$)	2.3(-) 2.00(1.2) (DECORTE87)	874(5.9)	^{147}Nd (I)	10.98d(0.09) (LMRI85)	91.1	28.3 28.1(3.6)*	$9.87.10^{-4}$	$1.02.10^{-3}$(2.5) (→σ_0=1.46b(4.4))
									120.5	0.4 0.373(4.0)*	$1.39.10^{-5}$	($1.28.10^{-5}$) (→σ_0=1.38b)
									275.4	1.0 0.77(3.9)*	$3.49.10^{-5}$	$2.86.10^{-5}$(2.0) (→σ_0=1.49b(4.4))
									319.4	2.2 1.91(3.1)*	$7.67.10^{-5}$	$6.78.10^{-5}$(0.9) (→σ_0=1.43b(3.2))
									398.2	0.9 0.83(3.6)*	$3.14.10^{-5}$	($2.90.10^{-5}$) (→σ_0=1.40b)
									439.9	1.2 1.17(6.0)*	$4.18.10^{-5}$	$4.22.10^{-5}$(1.4) (→σ_0=1.45b(6.2))
									531.0	13.5 12.7(2.4)*	$4.71.10^{-4}$	$4.56.10^{-4}$(1.1) (→σ_0=1.44b(2.6))
									685.9	0.8 0.78(3.8)*	$2.79.10^{-5}$	($2.68.10^{-5}$) (→σ_0=1.38b)

COMMENTS

σ_0 - other compil. 1.4b(7.)(IAEA87)
1.4b(7.)(NNDC COMPUT.CH.85)
1.4b(CH.NUCL.84)
1.3b(NUKLIDK.81)

γ - * from LMRI80
- note large discrepancies with ERDTMANN79 for γ_{275} and γ_{319}; cf. KOCHER81 : γ_{275} = 0.80%(7.), γ_{319} = 1.96%(6.)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) recommended or (tentative) ($\leftarrow\sigma_0$ from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Nd 144.24 49 ; ∿42	^{148}Nd	5.76 5.76(0.5) (DEBIEVRE85)	2.5(8.0) 2.36(6.7) (THIS WORK)	14(7.1) 12.1(7.2) ($Q_0 \times \sigma_0$)	5.6(-) 5.08(2.5) (DECORTE87)	236(5.9)	^{149}Nd (I)	1.72h(0.6) (NDS85)	97.0 (E_{eff}) 114.3 155.9 (E_{eff}) 198.9 (E_{eff}) 208.1 211.3 240.2 267.7 270.2 326.6 349.1 (E_{eff}) 423.6 (E_{eff}) 540.5 654.8	1.512 1.48(8.0)* 18.58 19.0(8.2)* 5.994 5.96(5.2)* 1.442 1.44(4.8)* 2.889 2.55(3.9)* 27.00 25.9(5.6)* 3.915 3.94(5.5)* 5.994 6.03(4.6)* 10.61 10.7(4.7)* 4.617 4.56(4.5)* 1.647 1.54(4.5)* 9.342 7.71(6.4)* 7.587 6.58(5.2)* 7.263 7.95(6.2)*	$3.15.10^{-5}$ $3.88.10^{-4}$ $1.25.10^{-4}$ $3.01.10^{-5}$ $6.03.10^{-5}$ $5.63.10^{-4}$ $8.17.10^{-5}$ $1.25.10^{-4}$ $2.21.10^{-4}$ $9.63.10^{-5}$ $3.43.10^{-5}$ $1.95.10^{-4}$ $1.58.10^{-4}$ $1.51^{5}.10^{-4}$	$(3.32.10^{-5})$ ($\leftarrow\sigma_0$=2.67b) $(4.05.10^{-4})$ ($\leftarrow\sigma_0$=2.55b) $(1.22.10^{-4})$ ($\leftarrow\sigma_0$=2.45b) $(2.98.10^{-5})$ ($\leftarrow\sigma_0$=2.48b) $(5.71.10^{-5})$ ($\leftarrow\sigma_0$=2.68b) $(5.26.10^{-4})$ ($\leftarrow\sigma_0$=2.43b) $(7.72.10^{-5})$ ($\leftarrow\sigma_0$=2.35b) $(1.16.10^{-4})$ ($\leftarrow\sigma_0$=2.31b) $(2.12.10^{-4})$ ($\leftarrow\sigma_0$=2.37b) $(9.10.10^{-5})$ ($\leftarrow\sigma_0$=2.39b) $(2.96.10^{-5})$ ($\leftarrow\sigma_0$=2.30b) $(1.60.10^{-4})$ ($\leftarrow\sigma_0$=2.49b) $(1.35.10^{-4})$ ($\leftarrow\sigma_0$=2.46b) $(1.66.10^{-4})$ ($\leftarrow\sigma_0$=2.50b)
							β^-, F_2=1					
							^{149}Pm (II/a)	53.08h(0.09) (NDS85)	285.9	3.10 3.1(6.5)*	$6.47.10^{-5}$	$6.10.10^{-5}$(1.1) ($\leftarrow\sigma_0$=2.36b(6.6))

COMMENTS

σ_0 - other compil.: 2.5b(8.)(IAEA87)
2.5b(8.)(NNDC COMPUT.CH.85)
2.5b(CH.NUCL.84)
2.48b(NUKLIDK.81)
- THIS WORK from non-recommended ^{149}Nd-lines : 2.46b

γ - * from NDS85
- note large discrepancies with ERDTMANN79 for γ_{208}, γ_{424}, γ_{541} and γ_{655}; cf. KOCHER81 : γ_{208} = 2.9% (14.), γ_{424} = 9.4%(11.), γ_{541} = 7.7%(10.), γ_{655} = 7.3%(11.)
- 97.0 keV = E_{eff} of 96.9 and 97.0; 155.9 keV = E_{eff} of 155.1 and 155.9; 198.9 keV = E_{eff} of 197.8 and 198.9; 349.1 keV = E_{eff} of 347.8 and 349.2; 423.6 keV = E_{eff} of 423.6 and 425.2
- accurate redetermination desirable

BURN-UP ^{149}Pm(n,γ) : σ_0 = 1400b(21.)(MUGHABGHAB84);
I_0 = 800b(-)(GRYNTAKIS83);
$\bar{E}_r$ unknown (10 eV assumed)

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, % Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ_γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
Nd 144.24 49 ; ∿42	^{150}Nd	5.64 5.64(0.5) (DEBIEVRE85)	1.2(17.) 0.91(-) (THIS WORK)	14(14.) 11.2(-) ($Q_0 \times \sigma_0$)	12(-) 12.3(0.8) (DECORTE87)	173(12.)	^{151}Nd (I) $t_{1/2}$ $E_{\gamma=1}$ ^{151}Pm (II/a)	12.4min(1.) (LEDERER78) 28.40h(0.14) (KOCHER81)	255.6 1180.6 340.1	16.83 16.9(7.9)* 15.3 15.3(6.5)* 22.4 22.9(3.9) (KOCHER81)	$1.65.10^{-4}$ $1.50.10^{-4}$ $2.20.10^{-4}$	$(1.31.10^{-4})$ $(\rightarrow \sigma_0$=0.95b) $(1.09.10^{-4})$ $(\rightarrow \sigma_0$=0.87b) $(1.73.10^{-4})$ $(\rightarrow \sigma_0$=0.92b)

COMMENTS

σ_0 - other compil.: 1.2b(17.)(IAEA87)
1.2b(17.)(NNDC COMPUT.CH.85)
1.2b(CH.NUCL.84)
1.2b(NUKLIDK.81)
- experim.: SEHGAL59; 1.5b(13.), with T = 18.8min
ALSTAD67; 1.0b(20.), no inform.
KIM72; from ^{151}Pm : 0.94b(2.), with γ_{340} = 21%; normal.: 0.86b
from ^{151}Nd : 1.17b(6.), with γ_{174} = 11.8% (not consistent), γ_{256} = 12.7%, γ_{1181} = 10.0%; normal.: 0.82b (174 keV not considered)
GRYNTAKIS76/78; results identical with KIM72
HEFT79; 1.03b(4.), with γ_{117} = 30.6% (not consistent), γ_{340} = 19.6%; normal.: 0.88b (117 keV not considered)

γ - * from LEDERER78 (γ_{1181} absolute; γ_{256} relative); cf. REUS83 : γ_{256} = 15.3%; γ_{1181} = 15.3% (both largely uncertain)
- accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Sm 150.36 5900 ; 1400	^{152}Sm	26.6 26.7(0.75) (DEBIEVRE85)	206(2.9) 220(2.4) (THIS WORK)	2970(3.4) 3168(3.2) ($Q_0 \times \sigma_0$)	14.4(-) 14.4(2.1) (DECORTE87)	8.53(1.1)	^{153}Sm (I)	46.7h(0.2) (NDS82)	69.7 103.2	5.25 5.25(4.8)* 28.3 28.30(2.1)*	4.00.10^{-2}	(3.80.10^{-2}) (→ σ_0=185b) 2.31.10^{-1} (0.4) (→ σ_0=220b(2.2))
		COMMENTS: σ_0 - other compil.: 206b(2.9)(IAEA87) — 206b(2.9)(NNDC COMPUT.CH.85) 208b(CH.NUCL.84) 206b(NUKLIDK.81) F_{Cd} - possibly < 1 (ELNIMR81) γ - * from NDS82									2.15.10^{-1}	
	^{154}Sm	22.6 22.7(0.9) (DEBIEVRE85)	8.4(5.9) 7.74(6.) (THIS WORK)	32(18.8) 33.3(9.) ($Q_0 \times \sigma_0$)	3.81(-) 4.30(7.0) (DECORTE87)	142(7.0)	^{155}Sm (I)	22.3min(0.9) (NDS87)	141.2 246.0	2.015 2.00(6.6)* 3.73 3.70(5.4)*	5.32.10^{-4} 9.85.10^{-4}	4.83.10^{-4} (1.3) (→ σ_0=7.66b(3.9)) 9.05.10^{-4} (1.4) (→ σ_0=7.75b(1.4))
		COMMENTS: σ_0 - other compil.: 5.5b(20.)(IAEA87) 5.5b(20.)(NNDC COMPUT.CH.85) 8b(CH.NUCL.84) 5.5b(NUKLIDK.81) - experim.: SEREN64; 5.5b(20%) SEREN67; 4.8b(20.), if θ_{154} = 22.7% HEFT79; 8.5b(5.9); 104 keV measured, with γ_{104} = 63.5%; normal. to 74%(*) = 7.3b - see DECORTE86 γ - * from NDS87 - accurate redetermination desirable										

Table 1 (cont'd)

Element; At.Weight; σ_{abs}, b; I'_{abs}, b (CH+NUCL.84)	Target isotope	θ, %	σ_0, b	I'_0, b	Q'_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed; Activation-decay type; (DECORTE89)	T	Main γ-energies E_γ, keV	Iγ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (ref.+err.,%); (recommended or (tentative)); (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81; Z = 61-100 : MUGHABGHAB84										
Eu; 151.96; 4600 ; 2400	^{153}Eu	52.14; 52.2(1.0); (DEBLEWRE85)	312(2.2)**; 307(4.)*; (THIS WORK)	1420(7.0)*; 173B(—)*; ($Q_0 \times \sigma_0$)	4.55(—)*; 5.66(—)*; (DECORTE87)	5.80(4.0)	^{154m}Eu → I.T. P_2=1 → ^{154}Eu; (IV/b)	46.0min(0.7); (NDS79); 8.561y(0.3); (YOSHIZAWA85)	248.0 591.8 723.3 756.9 873.2 996.4 1274.4	6.6; 6.95(1.3)** 4.6; 5.00(1.2)** 19.7; 20.28(3.2)** 4.1; 4.60(3.3)** 11.3; 12.27(4.1)** 10.7; 10.50(4.1)** 35.5; 34.9(4.1)**	1.48.10^{-1} 1.03.10^{-1} 4.43.10^{-1} 9.18.10^{-2} 2.53.10^{-1} 2.40.10^{-1} 7.95.10^{-1}	(1.55.10^{-1})***; (→ σ_0=311b); 1.08.10^{-1}(1.5)***; (→ σ_0=301b(1.5)); 4.46.10^{-1}(1.5)***; (→ σ_0=306b(1.5)); (1.08.10^{-1})***; (→ σ_0=327b); 2.72.10^{-1}(1.4)***; (→ σ_0=309b(1.4)); (2.38.10^{-1})***; (→ σ_0=305b); 7.77.10^{-1}(1.1)***; (→ σ_0=310b(1.1))

COMMENTS:

T – other recent values: 8.49y(1.3)(NNS82); 8.57y(0.8)(PIB78); 8.583y(0.06)(WOODS86)
– former deviating values: 15.6y(10%)(KASTNER53); 16y(25%)(KARRAKER52)
– note that in the activ.meth., with reasonably short t_{irr}, t_d and t_{ab}, σ_0 is approx. proportional to the introduced T-value

$k_{0,Au}$(exp.) – *** incl.MOENS84; recalc. for T = 8.561y

* – for mtg

* – with T = 8.59y

σ_0^{m*} – other compil.: 603b(4.)(IAEA87), with T = 8.5y; 390b(8.)(NNDC COMPUTE1CH.85), with T = 8.8y; 350b(CH.NUCL.84), with T = 8.5y; 390b(NUKLIDE81), with T = 8.8y
– experim.: TATTERSALL60: 317b(2.), pile oscill.; SIMS67: 639b(1.) with T = 16y and γ_{1274} = 38%; normal.: 372b; KIM75: 603b(4.) with T = 16y; normal.: 323b; WIDDER76: 382b(4.), TOF; LUCAS77: 325b(-), with T = 8.6y; normal.: 324b; HEFT79: 295b(2.), with T = 7.84y and γ_{123} = 40.5%; normal.: (γ_{123} = 41.0%,**) 318b
– $g_{WESTCOTT}$ (20°C) = 1.0290; (100°C) = 1.00074 (CRAMERAKIS73); = 0.9963 (ENDF/B-V82)
– see DECORTE86, DECORTE88

F_{Cd} – possibly < 1 (ELNIMR81)

Y – ** from YOSHIZAWA85
– note good consistency with data in NNS82

BURN-UP ^{154}Eu(n,γ) : σ_0 = 1340b(10.), I_0 = 802b(-)(MUGHABGHAB84); $\bar{E}_r$ = 0.34 eV(-)(THIS WORK); $g_{WESTCOTT} \neq 1$

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, Z σ_0, b I_0, b Q_0 Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, Z (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (← σ_0 from this line)
Gd 157.25 49000 ; 400	^{158}Gd	24.8 24.84(0.5) (DEELEVRE85) 2.2(9.1) 3.1(>38.)* (THIS WORK) 73(9.6) 96(-)* ($Q_0 * \sigma_0$) 33.2(-) 31.0(4.5) (DECORTE87)	48.2(8.)	^{159}Gd (I)	18.56h(0.4) (KOCHER81)	363.6	10.33 8.(38.) (KOCHER81)	$7.49.10^{-4}$	$(8.28.10^{-4})$ (← σ_0=3.14b)

COMMENTS

* with γ_{364} = 10.33%, THIS WORK yields σ_0 = 2.4b; this leads to I_0 = 74b

σ_0 - other compil.: 2.5b(20.)(IAEA87)
2.5b(20.)(NNDC COMPUT.CH.85)
2.4b(CH.NUCL.84)
2.5b(NUKLIDK.81)
- cf. experim.; HEFT79 : 2.44b, with γ_{364} = 10.0%, normal.: 3.05b

γ - note large discrepancy with ERDTMANN79; cf. LEDERER78; ∿ 10%, from level scheme; REUS83:10.8%(>25.)
- note large uncertainty; accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Gd 157.25 49000 ; 400	^{160}Gd	21.8 21.86(0.2) (DEBIEVRE85)	0.77(2.6) 1.51(-) (THIS WORK)	- 5.78(-) ($Q_0 \times \sigma_0$)	- 3.83(1.9) (DECORTE87)	480(7.1)	^{161}Gd (I)	3.66min(1.4) (NDS84)	102.3 165.2 283.6 314.9 360.9 480.1	15.25 13.9(5.7)** 1.83 2.58(7.7)** 5.612 5.95(4.2)** 20.31 22.7(4.0)** 61.0 60.1(2.5)** 1.891 2.68(5.6)**	$3.40.10^{-4}$ $4.08.10^{-5}$ $1.25.10^{-4}$ $4.53.10^{-4}$ $1.36.10^{-3}$ $4.22.10^{-5}$	$(7.88.10^{-4})$* (← σ_0=1.95b)* $(1.07.10^{-4})$* (← σ_0=1.43b)* $(2.84.10^{-4})$* (← σ_0=1.64b)* $(1.03.10^{-3})$* (← σ_0=1.56b)* $(2.72.10^{-3})$* (← σ_0=1.56b)* $(1.04.10^{-4})$* (← σ_0=1.34b)*

COMMENTS

σ_0 - other compil.: 0.77b(2.6)(IAEA87)
0.77b(2.6)(NNDC COMPUT.CH.85)
0.8b(CH.NUCL.84)
0.77b(NUKLIDK.81)
- experim.: MANGAL63; 0.768b(1.6)
- THIS WORK : - σ_0 from 102 keV-line not consistent; rejected for average
- * based on experiments with 98.71% ^{160}Gd-enrichment; ∿ 30 µg $^{160}Gd_2O_3$ on W41-paper

γ - ** from NDS84
- note large discrepancy with ERDTMANN79 for γ_{102}, γ_{165}, γ_{315} & γ_{480}

T - accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Tb 158.93 23.0 ; 390	^{159}Tb	100 100(0.) (DEBIEVRE85)	23.4(1.7) 23.8(1.) (THIS WORK)	418(4.8) 426(4.) ($Q_0 \times \sigma_0$)	17.9(-) 17.9(3.8) (DECORTE87)	18.1(5.)	^{160}Tb (I)	72.1d(0.4) (YOSHIZAWA85)	86.8	13.4 13.3(6.0)**	$4.12.10^{-2}$	$4.20.10^{-2}$(1.1) (→ σ_0=24.0b(6.1))
									197.0	5.24 5.18(1.5)*	$1.61.10^{-2}$	$1.62.10^{-2}$(0.5) (→ σ_0=23.8b(1.6))
									215.6	4.02 4.06(1.2)*	$1.24.10^{-2}$	$1.27.10^{-2}$(0.4) (→ σ_0=23.8b(1.3))
									298.6	27.4 26.64(0.6)*	$8.43.10^{-2}$	$8.25.10^{-2}$(1.2) (→ σ_0=23.6b(1.3))
									879.4	30.0 30.35(0.3)*	$9.23.10^{-2}$	$9.42.10^{-2}$(0.9) (→ σ_0=23.6b(0.9))
									962.3	10.0 9.72(0.4)*	$3.08.10^{-2}$	($3.05.10^{-2}$) (→ σ_0=23.9b)
									965.1 (E_{eff})	35.5 34.78(0.2)*	$1.09.10^{-1}$	$1.08.10^{-1}$(1.4) (→ σ_0=23.6b(1.4))
									966.2	25.5 25.06(0.3)*	$7.84.10^{-2}$	($7.84.10^{-2}$) (→ σ_0=23.8b)
									1178.0	15.5 14.97(0.3)*	$4.77.10^{-2}$	$4.71.10^{-2}$(1.1) (→ σ_0=23.9b(1.1))
									1199.9	2.36 2.379(0.4)*	$7.26.10^{-3}$	$7.53.10^{-3}$(1.3) (→ σ_0=24.1b(1.4))
									1271.9	7.6 7.605(0.4)*	$2.34.10^{-2}$	$2.35.10^{-2}$(0.8) (→ σ_0=23.8b(0.9))
									1312.1	2.97 2.838(0.4)*	$9.14.10^{-3}$	$8.98.10^{-3}$(0.9) (→ σ_0=24.1b(1.0))

COMMENTS

σ_0 - other compil.: 23.2b(2.2)(IAEA87)
25.5b(4.3)(NNDC COMPUT.CH.85)
23.0b(CH.NUCL.84)
25.5b(NUKLIDK.81)

F_{Cd} = 0.995 (ELNIMR81)

γ - * from YOSHIZAWA85
- ** from KOCHER81
- note discrepancies with NDS85 : γ_{87} = 12.8%(2.2); γ_{197} = 5.61%(2.3); γ_{216} = 4.41%(2.0); γ_{299} = 28.9%(1.9); γ_{879} = 32.9%(1.8); γ_{962} = 10.3%(1.9); γ_{965} = 37.7%(1.9); γ_{966} = 27.2%(1.8); γ_{1178} = 16.2%(1.9); γ_{1200} = 2.58%(1.9); γ_{1272} = 8.13%(1.9); γ_{1312} = 3.08%(1.9);
- 965.1 keV = E_{eff} of 962.3 & 966.2

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (⇔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Dy 162.50 920 ; 1600	^{164}Dy	28.1	1610(15.)	-	-	224(4.9)	^{165m}Dy	1.258min(0.5)	108.2	21.2	1.23	$(1.88.10^{-1})$
		28.2(0.7)	1697(-)	424(-)	0.25(-)		(I)	(NDS87)		3.01(1.0)*		(⇔σ_0=1723)
		(DEBIEVRE85)	(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)				515.5	11.7	$6.81.10^{-1}$	$(9.25.10^{-2})$
							I.T. F_2=0.976(0.3) (NDS87)			1.527(6.1)*		(⇔σ_0=1671)
			2611(10.)*	340(5.9)*+	0.13(-)*		^{165}Dy	2.334h(0.3)	94.7	3.343	$3.16.10^{-1}$	$3.57.10^{-1}$(1.4)
			2725(13.)*	518(23.)*	0.19(19.3)*		(IV/b)	(NDS87)		3.58(13.)**		(⇔σ_0=2750(13.))
			(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)				279.8	0.5015	$4.74.10^{-2}$	$4.88.10^{-2}$(0.8)
										0.498(13.)**		(⇔σ_0=2703(13.))
									361.7	0.840	$7.93.10^{-2}$	$8.36.10^{-2}$(0.7)
										0.84(13.)**		(⇔σ_0=2745b(13.))
									633.4	0.5628	$5.32.10^{-2}$	$5.62.10^{-2}$(1.5)
										0.568(12.)**		(⇔σ_0=2729(12.))
									715.3	0.5309	$5.01.10^{-2}$	$5.23.10^{-2}$(1.2)
										0.534(12.)**		(⇔σ_0=2701(12.))

COMMENTS

σ_0 - other compil.: 1700b(15.)(IAEA87)
1700b(15.)(NNDC COMPUT.CH.85)
1700b(CH.NUCL.84; NUKLIDK.81)
- $g_{WESTCOTT}$ (20°C) = 0.9876 (ENDF/B-V82)

T - note discrepancy with BODE75 : 1.275min(0.9)

γ - * from NDS87
- note large discrepancies with ERDTMANN79

COMMENTS

* - for F_2 m+g (+ : probably for m+g)

$\sigma_0^{F_2 m+g}$ - other compil.: 2659b(11.)(IAEA87)
2659b(11.)(NNDC COMPUT.CH.85)
2659b(CH.NUCL.84; NUKLIDK.81)
- $g_{WESTCOTT}$ (20°C) = 0.9876(ENDF/B-V82)

σ_0^g - THIS WORK : 1063b(-); cf. 1000b(15.)(NNDC COMPUT. CH.85), 1040b(13.5)(MUGHABGHAB84), 1000b(CH.NUCL. 84; NUKLIDK.81)

γ - ** from NDS87
- note large discrepancy with ERDTMANN79 for γ_{95}
- accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ho 164.93 65 ; 670	^{165}Ho	100 100(0.) (DEBIEVRE85)	61.2(1.8) 58.1(4.) (THIS WORK)	650(3.4) 636(5.) ($Q_0 \propto \sigma_0$)	10.6(-) 10.9^5(2.4) (DECORTE87)	12.3(3.3)	^{166}Ho (I)**	26.80h(0.07) (NDS87)	80.6 1379.4 1581.9 1662.4	6.2 6.33(3.2)*+ 0.93 0.93(5.4)* 0.185 0.183(3.3)* 0.118 0.121(3.3)*	$4.81.10^{-2}$ $7.21.10^{-3}$ $1.43.10^{-3}$ $9.15.10^{-4}$	$5.45.10^{-2}$(1.6) (← σ_0=68.0b(3.6)) $6.91.10^{-3}$(1.9) (← σ_0=58.6b(5.7)) $1.39.10^{-3}$(2.4) (← σ_0=60.0b(4.1)) $8.68.10^{-4}$(1.1) (← σ_0=56.6b(3.5))

COMMENTS

σ_0 - other compil.: 61.2b(1.8)(IAEA87)
63.0b(5.2)(NNDC COMPUT.CH.85)
62b(CH.NUCL.84)
63.0b(NUKLIDK.81)
- σ_0 (THIS WORK) from 81 keV-line not consistent; rejected for average

** - ^{166m}Ho(T = 1200y) gives no I.T. to ^{166}Ho

F_{Cd} = 0.99 (ELNIMR81)

γ - * from NDS87
- + interference from ^{166m}Ho 80.6 keV-line possible after long t_d
- accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Er 167.26 160 ; 740	^{170}Er	14.9 14.9(0.7) (DEBIEVRE85)	5.8(5.2) 8.85(3.) (THIS WORK)	24(12.5) 39.1(4.5) ($Q_0 \times \sigma_0$)	4.1(-) 4.42(3.3) (DECORTE87)	129(2.3)	^{171}Er (I)	7.52h(0.4) (NDS84)	111.6	20.5 20.5(3.9)*	$2.21.10^{-3}$	$3.41.10^{-3}$(0.8) (→ σ_0=8.94b(4.0))
									116.7	2.3 2.30(2.6)*	$2.48.10^{-4}$	$3.36.10^{-4}$(1.8) (→ σ_0=7.85b(3.2))
									124.0	9.1 9.1(3.3)*	$9.82.10^{-4}$	$1.52.10^{-3}$(0.6) (→ σ_0=8.97b(3.4))
									210.6 (E_{eff})	0.649 0.649(3.0)*	$7.01.10^{-5}$	$(1.09.10^{-4})$ (→ σ_0=9.02b)
									237.1	0.302 0.302 (3.3)*	$3.26.10^{-5}$	$(5.23.10^{-5})$ (→ σ_0=9.30b)
									295.9	28.9 28.9(2.8)*	$3.12.10^{-3}$	$4.79.10^{-3}$(1.5) (→ σ_0=8.90b(3.2))
									308.3	64.4 64.4(2.5)*	$6.95.10^{-3}$	$1.04.10^{-2}$(1.4) (→ σ_0=8.68b(2.9))

COMMENTS

σ_0 - other compil.: 5.7b(3.5)(IAEA87)
5.7b(3.5)(NNDC COMPUT.CH.85)
5.8b(CH.NUCL.84)
5.7b(NUKLIDK.81)
- experim.: BARNES54; 8.72b(20.)
MANGAL63; 4.3b(15.)
GILETTE67; 5.7b(3.)
GOLDMAN68; 6.0b
VERTEBNYI68; 12b(42.)
GLOMSET72; 5.8b(5.)
HEFT79; 6b(17.)
- σ_0 from 116.7 keV not consistent; rejected for average
- see DECORTE88

γ - * from NDS84
- 210.6 keV = E_{eff} of 210.1 and 210.6

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Tm 168.93 105;1710	^{169}Tm	100 100(0.) (DEBIEVRE85)	105(1.9) 107(-) (THIS WORK)	1720(1.7) 1552(-) ($Q_0 \times \sigma_0$)	16.4(-) 14.5(-) (DECORTE87)	4.80(2.1)	^{170}Tm (I)	128.6d(0.2) (NDS87)	84.3	10.0 3.26(4.9) (NDS87)	$1.30.10^{-1}$	$(4.30.10^{-2})$ (↔σ_0=107b)
		COMMENTS σ_0 - other compil.: 103b(2.9)(IAEA87) 95b(2.1)(NNDC COMPUT.CH.85) 105b(CH.NUCL.84) 103b(NUKLIDK.81) γ - note large discrepancy with ERDTMANN79 for γ_{84}; cf. LEDERER78 : γ_{84}= 3.2%(9.4), from level scheme; cf. REUS83 : 3.26%, KOCHER81 : 3.26%(5.)										
Yb 173.04 35 ; 170	^{174}Yb	31.83 31.8(1.3) (DEBIEVRE85)	69.4(7.2)* 128(6.5)* (THIS WORK)	27.(11.)* 58.9(-)* ($Q_0 \times \sigma_0$)	0.39(-)* 0.46(-)* (DECORTE87)	602(8.)	^{175}Yb (IV/b)	4.19d(0.2) (KOCHER81)	113.8 137.7 144.9 282.5 396.3	1.824 1.88(13.)** 0.111 0.104(18.)** 0.317 0.34(18.)** 2.9 3.0(13.)** 6.21 6.5(12.)**	$4.87.10^{-3}$ $2.96.10^{-4}$ $8.46.10^{-4}$ $7.74.10^{-3}$ $1.66.10^{-2}$	$9.42.10^{-3}$(1.3) (↔σ_0=130b(13.)) $5.69.10^{-4}$(0.6) (↔σ_0=142b(18.)) $1.59.10^{-3}$(1.5) (↔σ_0=122b(18.)) $1.46.10^{-2}$(0.3) (↔σ_0=127b(13.)) $3.12.10^{-2}$(0.6) (↔σ_0=125b(12.))
		COMMENTS * - for g+m (68.2 ms) σ_0 - other compil.: 65b(7.7)(IAEA87) 65b(7.7)(NNDC COMPUT.CH.85) 65b(CH.NUCL.84; NUKLIDK.81) - see DECORTE85; DECORTE88 γ - ** from KOCHER81 - accurate redetermination desirable										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.37)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Yb 173.04 35 ; 170	^{176}Yb	12.76 12.7(0.8) (DEBIEVRE85)	2.85(1.8)* 3.11(-)* (THIS WORK)	6.3(9.5)* 7.8(-)* ($Q_0 \times \sigma_0$)	2.21(-)* 2.50(1.8)* (DECORTE87)	412(5.1)	^{177}Yb (IV/b)	1.9h(5.) (LEDERER78)	121.6	3.379 3.41(20.)**	$1.48.10^{-4}$	$(1.64.10^{-4})$ (↔ σ_0=3.13b)
									138.6	1.328 1.33(21.)**	$5.83.10^{-5}$	$(6.48.10^{-5})$ (↔ σ_0=3.18b)
									150.4	20.04 20.0(20.)**	$8.80.10^{-4}$	$(8.94.10^{-4})$ (↔ σ_0=2.91b)
									899.2	0.6409 0.644(19.)**	$2.81.10^{-5}$	$(3.12.10^{-5})$ (↔ σ_0=3.16b)
									941.7	1.014 1.01(19.)**	$4.45.10^{-5}$	$(4.87.10^{-5})$ (↔ σ_0=3.14b)
									1028.0	0.6409 0.633(19.)**	$2.81.10^{-5}$	$(2.94.10^{-5})$ (↔ σ_0=3.03b)
									1080.1	5.50 5.5(18.)**	$2.42.10^{-4}$	$(2.68.10^{-4})$ (↔ σ_0=3.18b)
									1119.6	0.5477 0.545(19.)**	$2.41.10^{-5}$	$(2.74.10^{-5})$ (↔ σ_0=3.28b)
									1149.7	0.6409 0.643(19.)**	$2.81.10^{-5}$	$(2.96.10^{-5})$ (↔ σ_0=3.00b)
									1241.4	3.356 3.36(19.)**	$1.47.10^{-4}$	$(1.62.10^{-4})$ (↔ σ_0=3.14b)

COMMENTS

* - for g+m (11.4s)

σ_0 - other compil.: 2.4b(8.3)(IAEA87)
2.4b(8.3)(NNDC COMPUT.CH.85)
3b(CH.NUCL.84)
2.4b(NUKLIDK.81)
- cf. experim.: HEFT79; 3.02b(1.7) with γ_{150}= 21.0%, normal.: 3.17b

γ - ** from LEDERER78 (γ^{abs}_{1080}; others relative)
- note large uncertainties on γ's; accurate redetermination desirable

T - accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation - decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 ; MUGHABGHAB84										
Lu 174.97 84 ; ∿860	^{175}Lu	97.41 97.41(0.02) (DEBIEVRE85)	16.2(3.1) 16.7(3.8) (THIS WORK)	550(5.5) 581(4.9) ($Q_0 \times \sigma_0$)	34.0(-) 34.8(3.1) (DECORTE87)	16.1(5.0)	^{176m}Lu (I)	3.635h(0.3) (LAGOUTINE82)	88.4	8.76 8.90(1.7) (LOWENTHAL81)	$1.65.10^{-2}$	$1.73.10^{-2}$(1.5) (→σ_0=16.7b(2.3))
		COMMENTS σ_0 - other compil.: 15.10b(8.2)(IAEA87) 16.4b(5.5)(NNDC COMPUT.CH.85) 16b(CH.NUCL.84) 16.4b(NUKLIDK.81) - $g_{WESTCOTT}$ (20°C) = 0.9766 (ENDF/B-V82) F_{Cd} - possibly < 1 (ELNIMR81)										
Hf 178.49 104 ; 2000	^{174}Hf	0.163 0.162(1.2) (DEBIEVRE85)	561(6.2) 549(1.8) (THIS WORK)	436(8.0) 428(-) ($Q_0 \times \sigma_0$)	0.78(-) 0.78(-) (DECORTE87)	29.6(7.1)	^{175}Hf (I)	70d(2.9) (LEDERER78)	343.6	86.92 87.0(0.6) (LEDERER78)	$9.30.10^{-3}$	$9.06.10^{-3}$(1.0) (→σ_0=549b(1.2))
		COMMENTS σ_0 - other compil.: 390b(14.)(IAEA87) 390b(14.)(NNDC COMPUT.CH.85) 500b(CH.NUCL.84) 390b(NUKLIDK.81) - experim.: POMERANCE52; 500b(100.), pile oscill.meth. versus σ_{Au} = 95b; normal.:519b ESCH61; 390b(14.), activ.meth. HEFT79; 620b(3.), activ.meth.with θ = 0.18% and γ_{344} = 88.0%; normal.: 697b T - accurate redetermination desirable										

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Hf 178.49 104 ; 2000	^{179}Hf	13.75	0.445(0.7)	6.9(8.7)	15.5(-)	16.2(11.7)	^{180m}Hf (I)	5.5h(1.8) (NDS87)	93.3	17.05 17.3(0.9)*	$1.22.10^{-4}$	$1.24.10^{-4}$(0.5) (← σ_0=0.449b(1.0))
		13.629(0.04)	0.445(1.2)	6.4(4.)	14.4(2.4)				215.2	82.7 81.7(0.8)*	$5.92.10^{-4}$	$5.91.10^{-4}$(1.5) (← σ_0=0.453b(1.7))
		(DEBIEVRE85)	(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)				332.3	95.3 94.4(0.9)*	$6.83.10^{-4}$	$6.74.10^{-4}$(2.0) (← σ_0=0.448b(2.2))
		COMMENTS σ_0 - other compil.: 0.34b(9.)(IAEA87) 0.34b(9.)(NNDC COMPUT.CH.85) 0.45b(CH.NUCL.84) 0.34b(NUKLIDK.81) - value of 0.34b probably originating from SCHARFF66 (σ_0 = 0.339b(7.4)) - cf. 0.4326b(0.6)(MANNHART75), 0.407b(5.)(HEFT79) γ - * from NDS87 T - accurate redetermination desirable							443.2	83.65 83.3(1.4)*	$5.99.10^{-4}$	$5.88.10^{-4}$(1.9) (← σ_0=0.442b(2.4))
									500.7	14.8 14.7(0.8)*	$1.06.10^{-4}$	$1.02.10^{-4}$(0.9) (← σ_0=0.435b(1.2))
	^{180}Hf	35.22	13.04(0.5)	35.0(2.9)	2.68(-)	115(6.1)	^{181}Hf (I)	42.39d(0.14) (NDS84)	133.0	43.0 41.7(3.8)*	$2.31.10^{-2}$	$2.37.10^{-2}$(0.6) (← σ_0=13.8b(3.8))
		35.100(0.02)	13.5(1.3)	34.0(4.)	2.52(3.6)				133.4 (E_{eff})	50.9 47.7(3.4)*	$2.74.10^{-2}$	$2.76.10^{-2}$(1.0) (← σ_0=14.1b(3.5))
		(DEBIEVRE85)	(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)				136.3 (E_{eff})	7.9 5.96(5.6)*	$4.25.10^{-3}$	($3.65.10^{-3}$) (← σ_0=14.9b)
		COMMENTS σ_0 - other compil.: 12.6b(5.6)(IAEA87) 12.6b(5.6)(NNDC COMPUT.CH.85) 13.0b(CH.NUCL.84) 12.6b(NUKLIDK.81) γ - * from KOCHER81 - note discrepancies with ERDTMANN79; cf. inconsistent data from NDS84 : γ_{133} = 35.9% (2.2); $\gamma_{133.4}$ = 42.1%(2.); γ_{136} = 6.2%(4.2); γ_{346} = 15.1%(6.4); γ_{482} = 80.6%(-) - 133.4 keV = E_{eff} of 133.0, 136.2 & 136.9; 136.3 keV = E_{eff} of 136.2 ± 136.9 - accurate redetermination desirable							345.9	14.0 17.2(3.5)*	$7.53.10^{-3}$	($7.93.10^{-3}$) (← σ_0=11.2b)
									482.2	86.0 82.8(1.0)*	$4.62.10^{-3}$	$4.56.10^{-2}$(0.9) (← σ_0=13.4b(1.3))

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ta 180.95 ∿ 20.5 ; 660	^{181}Ta	99.988 99.988(0.002) (DEBIEVRE85)				10.4(5.8)	^{182m}Ta I.T. E_2=1 ^{182}Ta (IV/b)	15.8min(-) (LEDERER78) 114.43d(0.03) (YOSHIZAWA85)				
			20.5(2.4)* 20.4(1.1)* (THIS WORK)	660(3.5)* 679(-)* ($Q_0 \times \sigma_0$)	32.2(-)* 33.3(-)* (DECORTE87)				152.4	7.175 6.95(1.3)**	$1.70.10^{-2}$	$1.61.10^{-2}$(0.7) (→ σ_0=20.1b(1.5))
									222.1	7.56 7.50(1.3)**	$1.79.10^{-2}$	$1.78.10^{-2}$(1.1) (→ σ_0=20.6b(1.7))
									1121.3	35.0 35.30(0.9)**	$8.28.10^{-2}$	$8.27.10^{-2}$(0.8) (→ σ_0=20.3b(1.2))
									1189.0	16.45 16.44(0.9)**	$3.89.10^{-2}$	$3.88.10^{-2}$(0.7) (→ σ_0=20.4b(1.1))
									1221.4	27.4 27.17(0.9)**	$6.49.10^{-2}$	$6.45.10^{-2}$(0.8) (→ σ_0=20.6b(1.2))
									1231.0	11.58 11.58(0.9)**	$2.74.10^{-2}$	$2.72.10^{-2}$(0.7) (→ σ_0=20.3b(1.1))

COMMENTS

* - for u+g

σ_0 - other compil.: 21.5b(2.8)(IAEA87)
21.0b(3.3)(NNDC COMPUT.CH.85)
20.5b(CH.NUCL.84)
22.0b(NUKLIDK.81)
$g_{WESTCOTT}$ (20°C) = 1.0038(ENDF/B-V 82)

F_{Cd} - possibly < 1 (ELNIMR81)

γ - ** from INDC83

BURN-UP ^{182}Ta(n,γ) : σ_0 = 8700b(6.), I_0 = 862b(10.) (MUGHABGHAB84);
$\bar{E}_r$ = 0.16 eV(-)(THIS WORK);
$g_{WESTCOTT} \neq 1$

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
W 183.85 18.4 ; 350	^{186}W	28.64 28.6(0.7) (DEBIEVRE85)	37.9(1.6) 38.7(5.) (THIS WORK)	485(3.1) 530(5.3) ($Q_0 \times \sigma_0$)	12.8(-) 13.7(1.8) (DECORTE87)	20.5(1.)	^{187}W (I)	23.9h(0.4) (NDS82)	134.2 479.6 551.5 618.3 685.7 772.9	9.4 9.5(4.2)* 23.4 23.4(4.3)* 5.45 5.44(4.2)* 6.7 6.7(4.5)* 29.2 29.2(4.5)* 4.41 4.40(4.3)*	$1.16.10^{-2}$ $2.89.10^{-2}$ $6.72.10^{-3}$ $8.27.10^{-3}$ $3.60.10^{-2}$ $5.44.10^{-3}$	$1.13.10^{-2}$(0.7) (→ σ_0=36.6b(4.3)) $2.97.10^{-2}$(1.0) (→ σ_0=39.0b(4.4)) $6.91.10^{-3}$(0.5) (→ σ_0=39.1b(4.2)) $8.65.10^{-3}$(0.5) (→ σ_0=39.7b(4.5)) $3.71.10^{-2}$(0.5) (→ σ_0=39.1b(4.5)) $5.61.10^{-3}$(0.7) (→ σ_0=39.2b(4.4))

COMMENTS

σ_0 - other compil.: 37.0b(4.)(IAEA87)
37.8b(4.)(NNDC COMPUT.CH.85)
38b(CH.NUCL.84)
37.8b(NUKLIDK.81)
- $g_{WESTCOTT}$ (20°C) = 1.0014(ENDF/B-V82)

F_{Cd} = 0.908 (ELNIMR81)

γ - * from KOCHER81
- cf. ∿ 11% lower data from NDS82 : γ_{134} = 8.56%(4.), γ_{480} = 21.1%(4.2), γ_{551} = 4.92%(4.), γ_{618} = 6.07%(4.), γ_{686} = 26.4%(4.1), γ_{773} = 3.98%(4.1); cf. REUS83 : γ_{134} = 10.3%, γ_{480} = 25.3%, γ_{551} = 5.89%, γ_{618} = 7.27%, γ_{685} = 31.6%, γ_{773} = 4.77% (all ∿ 8% higher than KOCHER81)
- accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} ← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Re 186.21 90 ; 830	^{185}Re	37.40 37.40(0.5) (DEBIEVRE85)	112(1.8)+ 106(16.) (THIS WORK)	1717(2.9)+ 1632(16.) ($Q_0 \times \sigma_0$)	15.3(-)+ 15.4(2.5) (DECORTE87)	3.40(4.1)	^{186}Re ** (I)	90.64h(0.1) (KOCHER81)	122.3 137.2	0.67 0.70(33.)* 9.2 9.5(16.)*	$3.15.10^{-3}$ $4.33.10^{-2}$	$2.79.10^{-3}$(1.1) ← σ_0=95.0b(33.)) $4.33.10^{-2}$(0.7) ← σ_0=109b(16.))
		COMMENTS σ_0 - other compil.: 112b(2.7)(IAEA87) 112b(2.7)(NNDC COMPUT.CH.85)+ 111b(CH.NUCL.84)+ 112b(NUKLIDK.81)+ - $g_{WESTCOTT}$ (20°C) = 1.0049(ENDF/B-V82) - + : assignment not clear F_{Cd} = 0.98 (ELNIMR81) γ - * from KOCHER81 - ** negligible contribution from ^{186m}Re ($2.0.10^5$ y) - note large uncertainties; accurate redetermination desirable										
	^{187}Re	62.6 62.60(0.03) (DEBIEVRE85)	2.8(3.6) 2.05(4.3) (THIS WORK)	- 9.4(8.) ($Q_0 \times \sigma_0$)	- 4.57(6.4) (DECORTE87)	41.1(3.9)	^{188m}Re (I) I.T. F_2=1	18.6min(0.5) (NDS81)	92.5 106.0	5.45 5.15(5.1)* 11.45 10.8(4.9)*	$1.07.10^{-3}$ $2.25.10^{-3}$	$7.77.10^{-4}$(1.5) ← σ_0=2.15b(5.2)) $1.50.10^{-3}$(1.6) ← σ_0=1.98b(5.0))
(cont'd)		COMMENTS σ_0^m - other compil.: 1.6b(19.)(IAEA87), misprinted for σ_0^g 1.6b(19.)(NNDC COMPUT.CH.85) 2.8b(CH.NUCL.84) 1.6b(NUKLIDK.81) - experim. (from σ_0^g = 73.2b(6.)(THIS WORK) and σ_0^m/σ_0^g): TAKAHASHI64; 1.3b(17.) GULYAS64; 6.3b(33.) ARIFOV78; 2.65b(6.) $g_{WESTCOTT}$ (20°) = 0.9819 (ENDF/B-V82) γ - * from NDS81 - accurate redetermination desirable										

Table 1 (cont'd)

Element, At.Weight, σ_{abs},b; I_{abs},b (CH.NUCL.84)	Target Isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed, Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	I_γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) recommended or (tentative) (→σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Re (cont'd)			73.6(1.4) 73.2(4.2) (THIS WORK)	- 318(8.) ($Q_0 \times \sigma_0$)	- 4.34(6.4) (DECORTE87)		^{188}Re (IV/a)	16.98h(0.1) (NDS81)	155.0 478.0 633.3 (E_{eff}) 829.5 931.3	15.0 15.0(5.3)** 1.11 1.04(5.8)** 1.595 1.41(9.7)** 0.444 0.411(5.4)** 0.60 0.565(4.4)**	$7.90.10^{-2}$ $5.85.10^{-3}$ $8.40.10^{-3}$ $2.34.10^{-3}$ $3.16.10^{-3}$	$7.77.10^{-2}$(0.6) (→σ_0=73.7b(2.5)) $5.29.10^{-3}$(0.8) (→σ_0=72.4b(2.6)) $7.64.10^{-3}$(1.3) (→σ_0=77.1b(9.0)) ($2.17.10^{-3}$) (→σ_0=75.2b) ($2.85.10^{-3}$) (→σ_0=71.8b)

COMMENTS

σ_0^g - other compil.: 73b(5.5)(IAEA87), misprinted for σ_0^m
73b(5.5)(NNDC COMPUT.CH.85)
75b(CH.NUCL.84)
73b(NUKLIDK.81)
- $g_{WESTCOTT}$ (20°C) = 0.9819 (ENDF/B-V82)

σ_0^m/σ_0^g - THIS WORK : 0.028(8)
- compil.: 0.038(4.)(MUGHABGHAB84)
0.022(20.)(NNDC COMPUT.CH.85)
0.037(CH.NUCL.84)
0.022(NUKLIDK.81)
- experim.: SIMONS62; 0.19(9.)(spectrum average)
GULYAS64; 0.085(33.)
TAKAHASHI64; 0.018(13.)(spectrum average)
ARIFOV78; 0.036(0.6)

I_γ - ** from KOCHER81
- note large discrepancies with ERDTMANN79 for γ_{633}; cf.NDS81 : γ_{633} = 1.40%(10.)
- 633.3 keV = E_{eff} of 633.1 and 635.0
- accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Os 190.2 15 ; 170	^{184}Os	0.02 0.02(50.) (DEBIEVRE85)	3000(5.0) 3613(50.) (THIS WORK)	601(8.5) 1554(-) ($Q_0 \propto \sigma_0$)	0.200(-) 0.43(-) (DECORTE87)	-	^{185}Os (I)	93.6d(0.5) (NDS81)	646.1	81.0 81.0(1.2) (NDS81)	$5.34.10^{-3}$	$6.43.10^{-3}$(1.5) (↔σ_0=3613b(1.9))

COMMENTS

θ - note 50% uncertainty on θ; the only experimental θ-determination for the Os-isotopes dates from 1937 (NIER37)(see DEBIEVRE84); redetermination desirable

σ_0 - other compil.; 3005b(4.)(IAEA87), with θ = 0.018%
3000b(5.)(NNDC COMPUT.CH.85), with θ = 0.02%
3000b(CH.NUCL.84; NUKLIDK.81), with θ = 0.02%
experim.: LINDNER51; 20b(-)
KIM68; 3005b(4.), with θ_{184} = 0.018% and γ_{646} = 80.08%; normal.: 2670b
- see DECORTE86, DECORTE88

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, Z	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, Z (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,Z) {recommended or (tentative)} (↔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Os 190.2 15 ; 170	^{190}Os	26.4 26.4(1.5) (DEBIEVRE85)				114(1.8)	^{191m}Os I.T. ↓ $T_{1/2}$=15 ^{191}Os (IV/a)	13.03h(1.6) (KOCHER81) 15.4d(0.6) (KOCHER81)	 129.4	 35.0 25.9(2.3) (KOCHER81)	 $3.96.10^{-3}$	 $2.91.10^{-3}$(1.6) (↔ σ_0^g=3.90b(2.8))
			3.9(15.4) 3.90(3.2) (THIS WORK)	7.9(25.0) 7.9(-) ($Q_0 \times \sigma_0$)	2.03(-) 2.03(-) (DECORTE87)							

COMMENTS

θ - the only experimental θ - determination dates from 1937 (NIER37)(see DEBIEVRE84); redetermination desirable

σ_0^g - other compil.: 3.9b(21.)(IAEA87)
3.9b(23.)(NNDC COMPUT.CH.85)
4b(CH.NUCL.84)
3.9b(NUKLIDK.81)
- adopted values : σ_0^m/σ_0^g = 2.36, Q_0^m = 2.40, Q_0^g = 2.03 (MUGHABGHAB84)

γ - note large discrepancy with ERDTMANN79 for γ_{129}; cf. NDS80 : 25.7Z(9.3); REUS83 : 25.7Z

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Os 190.2 15 ; 170	^{192}Os	41.0	2.0(5.0)	4.6(4.3)	2.3(-)	89.7(4.0)	^{193}Os (L)	30.5h(1.3) (NDS81)	139.0 (E_{eff})	4.14 4.34(6.0)*	$3.73.10^{-4}$	$5.44.10^{-4}$(1.4) (← σ_0=2.78b(4.8))
		41.0(0.7)	3.12(5.)	7.30(-)	2.34(-)				180.9 (E_{eff})	0.367 0.375(8.4)*	$3.31.10^{-5}$	$(4.76.10^{-5})$ (← σ_0=2.82b)
		(DEBIEVRE85)	(THIS WORK)	($Q_0 \times \sigma_0$)	(DECORTE87)				219.1 (E_{eff})	0.267 0.285(7.9)*	$2.41.10^{-5}$	$(3.86.10^{-5})$ (← σ_0=3.01b)
									251.6	0.211 0.217(8.2)*	$1.90.10^{-5}$	$(3.04.10^{-5})$ (← σ_0=3.11b)
									280.4	1.24 1.24(6.3)*	$1.12.10^{-4}$	$1.79.10^{-4}$(0.5) (← σ_0=3.21b(5.1))
									298.8	0.187 0.186(9.3)*	$1.68.10^{-5}$	$(2.83.10^{-5})$ (← σ_0=3.38b)
									321.6	1.32 1.28(6.2)*	$1.19.10^{-4}$	$1.78.10^{-4}$(0.9) (← σ_0=3.09b(5.0))
									361.8	0.274 0.296(8.9)*	$2.47.10^{-5}$	$(3.81.10^{-5})$ (← σ_0=2.86b)
									387.5	1.20 1.26(6.3)*	$1.08.10^{-4}$	$1.73.10^{-4}$(1.5) (← σ_0=3.05b(5.2))
									460.5	3.92 3.95(6.3)*	$3.53.10^{-4}$	$5.55.10^{-4}$(1.4) (← σ_0=3.12b(5.2))
									557.9 (E_{eff})	1.96 1.80 (8.1)*	$1.77.10^{-4}$	$2.54.10^{-4}$(1.7) (← σ_0=3.13b(7.3))

COMMENTS

θ – the only experimental θ-determination for the Os-isotopes dates from 1937 (NIER37)(see DEBIEVRE84); redetermination desirable

σ_0 – other compil.: 1.97b(5.6)(IAEA87)
2.0b(5.)(NNDC COMPUT.CH.85)
2.0b(CH.NUCL.84; NUKLIDK.84)
– experim.: KIM68; 2.0b(5.)(with γ_{460} = 3.83%);
normal.: 1.9b
– σ_0 from 139 keV not consistent; rejected for average; reasonable consistency is obtained with ERDTMANN79
– see DECORTE88

γ – * from NDS81
– 139.0 keV = E_{eff} of 138.9 and 142.1;
180.9 keV = E_{eff} of 180.0 and 181.8;
219.1 keV = E_{eff} of 218.8 and 219.1;
557.9 keV = E_{eff} of 556.0, 557.4, 559.3 and 560.0
– accurate redetermination desirable

T – accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Ir 192.22 426-; 2000	^{193}Ir	62.7 62.7(0.8) (DEBIEVRE85)	111(4.5)** 115(13.)* (THIS WORK)	1350(7.4)** 1380(14.)* ($Q_0 \times \sigma_0$)	12.2(-)** 12.0(2.9)* (DECORTE87)	2.21(9.0)	^{194}Ir (IV/b)	19.15h(0.2) (KOCHER81)	293.5 328.4 645.1 938.7	2.9 2.6(15.4)** 13.0 13.1(13.0)** 1.16 1.17(12.8)** 0.65 0.60(13.3)**	$2.19.10^{-2}$ $9.83.10^{-2}$ $8.78.10^{-3}$ $4.92.10^{-3}$	$2.03.10^{-2}$(1.3) (→σ_0=114.6b(15.5)) $1.03.10^{-1}$(1.0) (→σ_0=115.4b(13.0)) ($9.38.10^{-3}$) (→σ_0=117.6b) ($4.76.10^{-3}$) (→σ_0=116.4b)

COMMENTS

θ - the only experimental θ-determination for the Ir-isotopes dates from 1954 (BALDOCK54)(see DEBIEVRE84); redetermination desirable

* - for g+m_1 (32ms); + : assignment not clear

σ_0 - other compil.: 110b (13.)(IAEA87)+
112.5b(7.)(NNDC COMPUT.CH.85)+
111b(CH.NUCL.84)+
110b(NUKLIDK.81)
$\bar{g}_{WESTCOTT}$ (20°C) = 1.0218; (100°C) = 1.0400
(GRYNTAKIS75)

F_{Cd} - possibly < 1 (ELNIMR81)

γ - ** from KOCHER81
- for 328 keV-line, contribution from decay (only β^-) of ^{194m2}Ir (171 d) is negligible in practice, since σ_0^{m2} is very low (> 0.035b; NNDC COMPUT.CH.85)
- note large discrepancies with ERDTMANN79 for γ_{293} and γ_{939}
- note large uncertainties on γ's; accurate redetermination desirable

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (↔ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Pt 195.08 10 ; 140	^{198}Pt	7.20 7.2(2.8) (DEBIEVRE85)				106(2.8)	^{199m}Pt I.T. F_2=1 ^{199}Pt β^- F_3=1 ^{199}Au (V/b)	14s(-) (LEDERER78) 30.8min(-) (LEDERER78) 3.139d(0.2) (KOCHER81)	158.4 208.2	40.0 36.8(3.0)** 9.1 8.4(4.8)**	$1.13.10^{-3}$ $2.57.10^{-4}$	$1.03.10^{-3}$(1.4) (↔ σ_0=3.63b(3.3)) $2.26.10^{-4}$(1.0) (↔ σ_0=3.49b(4.9))
			3.66(5.2)* 3.58(4.)* (THIS WORK)	54(7.4)* 60.9(4.4)* ($Q_0 \times \sigma_0$)	14.8(-)* 17.0(1.8)* (DECORTE87)							

COMMENTS

* - for m+g

σ_0 - other compil.: 3.7b(5.4)(IAEA87)
3.7b(5.4)(NNDC COMPUT.CH.85)
3.8b(CH.NUCL.84)
3.73b(NUKLIDK.81)

γ - ** from KOCHER81
- note large discrepancies with ERDTMANN79 for γ_{158} & γ_{208}; cf. LEDERER78 : γ_{158} = 39%(-), from level scheme; cf. REUS83 : γ_{158} = 36.9%, γ_{208} = 8.38%

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Au 196.97 98.7 ; 1550	^{197}Au	100 100(0.) (DEBIEVRE85)	98.65(0.09) (HOLDEN81)	1550(1.8) (HOLDEN81)	15.71(1.8) (DECORTE87)	5.65(7.1)	^{198}Au (I)	2.695d(0.1) (NBS82)	411.8	95.53 95.56(0.1) (NBS82)	≡ 1	≡ 1

COMMENTS:

σ_0, I_0 – ^{197}Au(n,γ)^{198}Au is a CROSS-SECTION STANDARD :
σ_0 = 98.65 ± 0.09b (± 0.09%)
I_0 = 1550 ± 28b (± 1.8%)
see : HOLDEN81; MUGHABGHAB81, HOLDEN85
– IN THIS WORK ALL VALUES (σ_0, I_0, Q_0, γ, etc.) ARE CONSIDERED AS ULTIMATE STANDARD DATA
– $g_{WESTCOTT}$ (20°C) = 1.0051 (ENDF/B-V82)

F_{Cd} – F_{Cd} = 0.991 (ELNIMR81)

γ – excellent consistency with NDS83 [γ = 95.50%(0.1)]

BURN-UP ^{198}Au(n,γ) : σ_0 = 25800b(4.7)(NNDC COMPUT.CH.85);
I_0 = 31031b(35.)(GRYNTAKIS76);
$\bar{E}_r$ unknown (10 eV assumed)

NOTE – f- and α-monitor

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Hg 200.59 ∿ 374 ; 80	^{196}Hg	0.15 0.14(71.) (DEBIEVRE85)	109(5.5) 101(71.) (THIS WORK)	58.9(40.7) 46.(-) ($Q_0 \times \sigma_0$)	0.54(-) 0.49(-) (DECORTE87)	93.5(0.1)	^{197m}Hg (I)	23.8h(0.4) (KOCHER81)	134.0	34.0 34.0(2.4) (KOCHER81)	$5.79.10^{-4}$	$4.99.10^{-4}$(1.0) (→ σ_0=101b(2.6))

COMMENTS

θ - natural variations in normal terrestrial material possible, range ∿ ± 1.5% (FLEMING83); more accurate value desired

σ_0 - other compil.: 120b(11.)(IAEA87)
109b(5.5)(NNDC COMPUT.CH.85)
120b(CH.NUCL.84; NUKLIDK.81)
- experim.: SEHGAL59; 420b(19.), no θ given, with γ_{134} = 36.1%; normal.: 446b
MANGAL63; 130b(12.), no θ given, with γ_{134} = 36.1%; normal.: 138b
ARINO64; 117b(11.)(natural (θ_{196} = 0.145%) and enriched material (θ_{196} = 4.2%)) with γ_{134} = 31%; normal. (for γ) : 107b
KIM67; 106.7b(12.), no θ given, with γ_{134} = 32.2%; normal.: 101b
TILBURY68; 125b(10.), no θ given, with γ_{134} = 31%; normal.: 114b
HEFT79; 107.3b(1.4), with θ = 0.146% and γ_{134} = 34.1%; normal.: 112b

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target Isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (→ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Hg 200.59 ∿374 ; 80	^{202}Hg	29.7 29.80(0.5) (DERIEVRE85)	4.89(1.0) 4.35(1.9) (THIS WORK)	4.2(4.8) 3.8(-) ($Q_0 \times \sigma_0$)	0.86(-) 0.88(-) (DECORTE87)	1960(8.2)	^{203}Hg (I)	46.612d(0.04) (NDS85)	279.2	81.5 81.46(0.2) (NDS85)	$1.23.10^{-2}$	$1.10.10^{-2}$(1.7) (→ σ_0=4.35b(1.7))

COMMENTS

θ - natural variations in normal terrestrial material possible, range ≤ ± 0.6% (FLEMING83)

σ_0 - other compil.: 4.9b(2.)(IAEA87)
4.9b(2.)(NNDC COMPUT.CH.85)
4.9b(CH.NUCL.84; NUKLIDK.81)
- experim.: LYON51; 3.8b(20.), with β counting
SEHGAL62; 4.6b(15.), no γ given
KIM67; 5.04b(7.5), with γ_{279} = 83.1%; normal.: 5.14b
SIMS68; 4.87b(1.0), with γ_{279} = 86.2%; normal.: 5.15b
HEFT79; 4.91b(1.0), with γ_{279} = 81.0%; normal.: 4.88b
- note that 279.0 keV line of ^{197m}Hg (γ = 5%) can give significant positive error if t_d not sufficiently large !

γ - note large discrepancy with KOGHER81 : γ_{279} = 77.3%(1.); cf. REUS83 : 81.5%

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation - decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) (recommended or (tentative)) (← σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
Th 232.04 7.4 ; 285	^{232}Th	100 100(0.) (DESIEVRE85)	7.37(0.8) 7.26(1.1) (THIS WORK)	85(3.5) 83.7(4.) ($Q_0 * \sigma_0$)	11.53(-) 11.53(3.6) (DECORTE87)	54.4(0.9)	^{233}Th ↓ β⁻ F_2=1 ^{233}Pa (II/b)	22.3min(0.4) (KOCHER81) 27.0d(0.4) (KOCHER81)	300.1 312.0 340.5 375.4 398.6 415.8	5.8 6.64(5.2)* 33.7 38.6(1.0)* 3.88 4.44(5.4)* 0.59 0.676(5.1)* 1.29 1.48(5.4)* 1.59 1.82(5.0)*	$3.85.10^{-3}$ $2.24.10^{-2}$ $2.57.10^{-3}$ $3.92.10^{-4}$ $8.56.10^{-4}$ $1.06.10^{-3}$	$4.37.10^{-3}$(0.3) (← σ_0=7.31b(5.2)) $2.52.10^{-2}$(0.5) (← σ_0=7.25b(1.1)) $2.95.10^{-3}$(0.7) (← σ_0=7.38b(5.4)) $4.49.10^{-4}$(0.6) (← σ_0=7.38b(5.1)) $9.26.10^{-4}$(0.5) (← σ_0=6.95b(5.4)) $1.16.10^{-3}$(1.0) (← σ_0=7.08b(5.1))

COMMENTS

σ_0
- other compil.: 7.40b(1.1)(LAEA87)
  7.40b(1.1)(NNDC COMPUT.CH.85)
  7.4b(CH.NUCL.84; NUKEIDK.81)
- σ_0 (THIS WORK) from 399 keV and 416 keV lines not consistent; rejected for average
- $g_{WESTCOTT}$ (20°C) = 0.9982 (ENDF/B-V82)

γ
- * from ZIJP79, normal. to γ_{312} = 38.6%(1.0)(ZIJP79; added in proof)
- note large discrepancies with ERDTMANN79; cf. KOCHER81 : γ_{300} = 6.62%(6.); γ_{312} = 38.6%(1.); γ_{340} = 4.5%(11.); γ_{375} = 0.62%(19.)(not consistent); γ_{399} = 1.27%(13.)(not consistent); γ_{416} = 1.62%(10.)(not consistent). cf. NDS78 (normal. to γ_{312} = 38.6% : γ_{300} = 6.67%(7.); γ_{340} = 4.51%(12.); γ_{375} = 0.618%(20.)(not consistent); γ_{399} = 1.28%(13.)(not consistent); γ_{416} = 1.62%(11.)(not consistent)
- accurate redetermination desirable

NOTE - adopted as α-monitor

Table 1 (cont'd)

Element At.Weight σ_{abs},b;I_{abs},b (CH.NUCL.84)	Target isotope	θ, %	σ_0, b	I_0, b	Q_0	$\bar{E}_r$, eV (JOVAN.87)	Isotope formed Activation-decay type (DECORTE89)	T	Main γ-energies E_γ, keV	γ, % (ERDTMANN79)	$k_{0,Au}$ (calc.)	Measured $k_{0,Au}$ (rel.err.,%) {recommended or (tentative)} (⇐ σ_0 from this line)
		Z = 1-60 : MUGHABGHAB81 Z = 61-100 : MUGHABGHAB84										
U 238.03 7.57 ; 278	^{238}U	99.2746 99.2745(0.002) (DEBIEVRE85)	2.68(0.7) 2.75(2.) (THIS WORK)	277(1.1) 284(2.4) ($Q_0 \times \sigma_0$)	103.4(-) 103.4(1.3) (DECORTE87)	16.9(1.2)	^{239}U I_γ, F_2=1 ^{239}Np (II/b)	23.50min(0.2) (NDS83) 2.355d(0.2) (NDS83)	209.8 228.1 (E_{eff}) 277.6 285.5 315.9 334.3	3.24 3.27(7.1)* 10.72 11.1(6.5)* 14.1 14.2(1.4)* 0.776 0.781(9.2)* 1.59 1.61(6.4)* 2.03 2.05(8.5)*	$7.57.10^{-4}$ $2.50.10^{-3}$ $3.29.10^{-3}$ $1.81.10^{-4}$ $3.71.10^{-4}$ $4.74.10^{-4}$	$7.80.10^{-4}$(0.5) (⇐ σ_0=2.74b(7.0)) $2.77.10^{-3}$(0.7) (⇐ σ_0=2.86b(6.4)) $3.40.10^{-3}$(0.8) (⇐ σ_0=2.75b(0.8)) ($1.83.10^{-4}$) (⇐ σ_0=2.69b) $3.68.10^{-4}$(1.5) (⇐ σ_0=2.62b(6.3)) $4.81.10^{-4}$(1.0) (⇐ σ_0=2.69b(8.3))

COMMENTS

θ - natural variations in normal terrestrial material possible (DEBIEVRE85), range very small

σ_0 - other compil.: 2.70b(0.7)(IAEA87)
2.70b(0.7)(NNDC COMPUT.CH.85)
2.68b(CH.NUCL.84)
2.70b(NUKLIDK.81)
- $g_{WESTCOTT}$ (20°C) = 1.0029 (ENDF-B/V82)

γ - * from NDS83
- 228.1 = E_{eff} of 226.4 & 228.2;
- note high uncertainties (except for 277.6 keV)
- accurate redetermination desirable

NOTE - adopted as α-monitor

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