

EXFOR News (April 2025)

New experimental data available from Nuclear Reaction Data Centres

EXFOR [1] is a world-wide data library for experimental neutron, charged-particle and photon induced reaction data compiled by the [International Network of the Nuclear Reaction Data Centres \(NRDC\)](#)^a co-ordinated by the [IAEA Nuclear Data Section](#). Regularly updated web retrieval databases are available at [IAEA-NDS](#) and [JCPRG](#).

This News lists newly created EXFOR entries as well as revised EXFOR entries where new data subentries are added. Entries from articles published in past 10 years are flagged by asterisks (*). Please send an email to the NRDC Coordinator (n.otsuka@iaea.org) for inclusion in the EXFOR News distribution list as well as any question on EXFOR.

[1] N. Otuka, E. Dupont, V. Semkova, B. Pritychenko et al., [Nucl.Data.Sheets](#) **120**(2014)272.

Quantity codes

ALF	α -value ($\sigma_{\text{capt}}/\sigma_{\text{fis}}$)	KE	Kinetic energy
AMP	Scattering length	INT	Cross section integral over incident energy
CHG	Fragment charge	KER	Kerma factor
CS	Cross section	MAS	Fragment mass
CSP	Partial cross section	MFQ	Differential fission neutron multiplicity
CST	Temperature dependent cross section	MLT	Multiplicity
D3A	Triple differential $d\Omega_1/d\Omega_2/dE'$	NQ	Nuclear quantity
D3E	Triple differential $d\Omega/dE'_1/dE'_2$	NU	Fission neutron multiplicity $\bar{\nu}$
D4A	Quadruple diff. $d\Omega_1/d\Omega_2/dE'_1/dE'_2$	NUD	Delayed fission neutron multiplicity $\bar{\nu}_d$
DA	Differential $d/d\Omega$	POL	Polarization
DAA	Double differential $d\Omega_1/d\Omega_2$	POD	Differential polarization
DAE	Double differential $d\Omega/dE'$	PY	Product yield (other than fission)
DAP	Partial differential $d/d\Omega$	RI	Resonance integral
DAT	Temperature-dependent Legendre coefficient	RP	Resonance parameter
DE	Differential d/dE'	RR	Reaction rate
DEP	Energy spectrum for specific group	SIF	Self indication
DP	Diff. by linear momentum of outgoing part.	SPC	Gamma spectrum
DT	Diff. by 4-momentum transfer squared	TSL	Thermal scattering
ETA	η -value = $\bar{\nu}\sigma_{\text{fis}}/(\sigma_{\text{capt}} + \sigma_{\text{fis}})$	TT	Thick target yield
EVL	Evaluation	TTD	Differential thick target yield, $d/d\Omega$
FY	Fission product yield	TTP	Partial thick target yield

Special codes in outgoing particle field

abs	Absorption	fus	Fusion	sct	Scattering	tot	Total
el	Elastic	inel	Inelastic	tex	Total charge changing		
fis	Fission	non	Nonelastic	ths	Thermal scattering		

Special codes in incident energy field

Fast	Fast reactor spectrum average	Maxw	Maxwellian spectrum average
Fiss	Fission spectrum average	Spont	Spontaneous (for fission)

^a[NNDC](#) (USA), [NEADB](#) (France), [NDS](#) (Austria), [CJD](#) (Russia), [CNDC](#) (China), [ATOMKI](#) (Hungary), [NDPCI](#) (India), [JAEA](#) (Japan), [JCPRG](#) (Japan), [KAERI](#) (Korea), [CDFE](#) (Russia), [CNPD](#) (Russia), [UkrNDC](#) (Ukraine)

3 Lithium 6

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* $^{10}\text{B},\text{el}$	^6Li	DA	3POLWWA	5.1+07	5.1+07	Jour	PR/C,106,014615	22	A.T.Rudchik+	D5207
* $^{10}\text{B},\text{inel}$	^6Li	DAP	3POLWWA	5.1+07	5.1+07	Jour	PR/C,106,014615	22	A.T.Rudchik+	D5207
* $^{15}\text{N},\text{el}$	^6Li	DA	3POLWWA	2.3+07	2.3+07	Jour	PR/C,103,044614	21	A.T.Rudchik+	D5206
* $^{15}\text{N},\text{inel}$	^6Li	DAP	3POLWWA	2.3+07	2.3+07	Jour	PR/C,103,044614	21	A.T.Rudchik+	D5206

6 Carbon

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
n,tot		CS	4UKRIJD	7.5+04	1.7+05	Conf	2012KYIV,,439	12	O.O.Gritzay+	32238

6 Carbon 12

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* γ,α	^8Be	DAE	3INDIND	9.7+06	1.4+07	Jour	PR/C,111,014608	25	R.K.Bharathan+	G0519
$^3\text{He},\text{el}$	^{12}C	DA	4UKRIJD	9.8+07	9.8+07	Jour	SNP,54,552	91	A.S.Goncharov+	D5204
$^3\text{He},\text{inel}$	^{12}C	DAP	4UKRIJD	9.8+07	9.8+07	Jour	SNP,54,552	91	A.S.Goncharov+	D5204
α,el	^{12}C	DA	4UKRIJD	9.0+07	9.0+07	Jour	SNP,54,552	91	A.S.Goncharov+	D5204
α,el	^{12}C	DA	4UKRIJD	9.0+07	9.0+07	Jour	SNP,55,1527	92	A.S.Dem'Yanova+	D5205
α,inel	^{12}C	DAP	4UKRIJD	9.0+07	9.0+07	Jour	SNP,54,552	91	A.S.Goncharov+	D5204

6 Carbon 13

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
* $^{11}\text{B},^{10}\text{B}$	^{14}C	DAP	3POLWWA	4.5+07	4.5+07	Jour	PS,99,105316	24	S.Yu.Mezhevych+	D5210

22 Titanium

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* n,x	^{46}Sc	CS	3CPRNPC	1.4+07	1.5+07	Jour	RPC,211,111049	23	Fengqun Zhou+	32905
* n,x	^{47}Sc	CS	3CPRNPC	1.4+07	1.5+07	Jour	RPC,211,111049	23	Fengqun Zhou+	32905
* n,x	^{48}Sc	CS	3CPRNPC	1.4+07	1.5+07	Jour	RPC,211,111049	23	Fengqun Zhou+	32905

29 Copper 63

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* n,α	^{60}Co	CS	3CPRBJG	4.5+06	1.0+07	Jour	JP/G,50,045106	23	Jie Liu+	32903

37 Rubidium 85

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* $n,2n$	^{84}Rb	CS	3INDTAT	1.3+07	1.9+07	Jour	JRN,333,5231	24	M.Mehta+	33207
* n,p	^{85}Kr	CS	3INDTAT	1.3+07	1.9+07	Jour	JRN,333,5231	24	M.Mehta+	33207

39 Yttrium 89

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* $^{14}\text{N},3n$	^{100}Pd	CS	3INDTAT	4.3+07	5.8+07	Jour	PR/C,110,054603	24	H.Sharma+	D6473
* $^{14}\text{N},4n$	^{99}Pd	CS	3INDTAT	4.3+07	5.8+07	Jour	PR/C,110,054603	24	H.Sharma+	D6473
* $^{14}\text{N},x$	^{90}Y	CS	3INDTAT	4.3+07	5.8+07	Jour	PR/C,110,054603	24	H.Sharma+	D6473
* $^{14}\text{N},x$	^{97}Ru	CS	3INDTAT	4.3+07	5.8+07	Jour	PR/C,110,054603	24	H.Sharma+	D6473
* $^{14}\text{N},x$	^{99}Rh	CS	3INDTAT	4.3+07	5.8+07	Jour	PR/C,110,054603	24	H.Sharma+	D6473
* $^{14}\text{N},x$	^{100}Rh	CS	3INDTAT	4.3+07	5.8+07	Jour	PR/C,110,054603	24	H.Sharma+	D6473

42 Molybdenum

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* γ,x	^{95}Nb	CS	4UKRKFT		9.3+07	Jour	EPJ/A,60,60	24	I.S.Timchenko+	G4113

42 Molybdenum 100

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* p,x	^{99}Tc	TT	4UKRUKR		1.1+07	Jour	ARI,189,110431	22	B.M.Bondar+	D5208

45 Rhodium 103

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* γ,x	^{99}Rh	CS	4UKRKFT		8.6+07	Jour	EPJ/CS,239,01026	20	O.Bezshyyko+	G4111

70 Ytterbium 174

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* $^{28}\text{Si,fis}$	Many	FY	3CPRAEP	1.1+08	1.3+08	Jour	CNPR,34,534	17	Wang Dongxi+	S0253

71 Lutetium 175

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* n,α	^{172}Tm	CS	4UKRKGU	1.5+07	1.5+07	Jour	NP/A,1041,122788	24	A.M.Savrasov+	32254
* n,p	^{175}Yb	CS	4UKRKGU	1.5+07	1.5+07	Jour	NP/A,1041,122788	24	A.M.Savrasov+	32254

71 Lutetium 176

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* n,α	^{173}Tm	CS	4UKRKGU	1.5+07	1.5+07	Jour	NP/A,1041,122788	24	A.M.Savrasov+	32254
* n,γ	^{177}Lu	CS	4UKRKGU	1.5+07	1.5+07	Jour	NP/A,1041,122788	24	A.M.Savrasov+	32254

73 Tantalum

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* α,x	^{178}Hf	CS	4UKRIJD	8.0+07	1.0+08	Jour	ARI,198,110864	23	V.I.Kirischuk+	D5209

79 Gold 197

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* p,n	^{197}Hg	CS	3CPRAEP	9.2+06	9.2+06	Jour	CST,57,(S),1	23	Cheng Hao+	S0312

92 Uranium 233

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation Ref Vol Page	Date	Author	Data #
				Min	Max					
* n,fis	Many	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205
* n,fis	Many	FY	3INDTRM	5.0-01		Jour	NSE,198,1566	24	H.Naik+	33208
* n,fis		MAS	3INDTRM	5.0-01		Jour	NSE,198,1566	24	H.Naik+	33208
* n,fis	^{128}Sb	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205
* n,fis	^{130}Sb	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205
* n,fis	^{132}Sb	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205
* n,fis	^{131}Te	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205
* n,fis	^{133}Te	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205
* n,fis	^{132}I	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205
* n,fis	^{134}I	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205

*	n, fis	^{136}I	FY	3INDTRM	5.0-01		Jour	ARI,208,111304	24	H.Naik+	33205
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92 Uranium 235

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #	
				Min	Max						
*	n, fis	Many	FY	3CPRAEP	5.7+05	1.5+06	Jour	HFH,45,216	23	Ren Si-Xi+	32906

92 Uranium 238

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #	
				Min	Max						Ref Vol Page
*	<i>n</i> ,fis	Many	FY	3CPRNPC	1.5+07	1.5+07	Jour	CPH/C,47,024001	23	Xianlin Yang+	32897

94 Plutonium 239

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #	
				Min	Max		Ref Vol Page				
*	n, fis	Many	FY	3CPRNIX	2.5-02	2.5-02	Jour	CST,57,1066	23	Yu Gongshuo+	32907

94 Plutonium 241

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation		Date	Author	Data #
					Min	Max		Ref	Vol			
*	n, fis	Many	FY	3INDTRM	5.0-01		Jour	NSE,197,3110		23	H.Naik+	33200
*	n, fis		MAS	3INDTRM	5.0-01		Jour	NSE,197,3110		23	H.Naik+	33200
*	n, fis	^{135}Xe	FY	3INDTRM	5.0-01		Jour	ARI,208,111304		24	H.Naik+	33205
*	n, fis	^{138}Cs	FY	3INDTRM	5.0-01		Jour	ARI,208,111304		24	H.Naik+	33205

94 Plutonium 242

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
				Min	Max					
* $^{48}\text{Ca}, 4n$	^{286}Fl	CS	2GERGSI	2.4+08	2.4+08	Jour	PR/C,107,024301	23	A.Samark-Roth+	D8105

94 Plutonium 244

	Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation	Date	Author	Data #
					Min	Max					
*	$^{48}\text{Ca}, 3n$	^{289}Fl	CS	2GERGSI	2.4+08	2.4+08	Jour	PR/C,107,024301	23	A.Samark-Roth+	D8105
*	$^{48}\text{Ca}, 4n$	^{288}Fl	CS	2GERGSI	2.4+08	2.4+08	Jour	PR/C,107,024301	23	A.Samark-Roth+	D8105

100 Fermium 244

Reaction	Product	Quant.	Lab.	Energy (eV)		Type	Documentation			Date	Author	Data #
				Min	Max		Ref	Vol	Page			
*	0,fis	NU	4ZZZDUB	Spont		Jour	EPJ/A,60,223			24	R.S.Mukhin+	41778