

CINDA quantity codes - EXFOR reaction codes

Meinhart Lammer, NDS

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Generally the CINDA codes have a more global definition which is in several cases given separately. For some EXFOR reactions only the basic code is given, but further subfields may still be coded. A 1:1 correspondence between CINDA and EXFOR is indicated by a double arrow: ↔

CINDA	EXFOR reaction	further specification/comments
EVL	not applicable	
TOT ↔	(N,TOT),,SIG	total reaction cross section, no residual nucleus, no differential data
SEL	(N,EL)Z-S-A,,SIG (N,EL)Z-S-A,,AMP	integral total elastic scattering cross section, no -G or -M in SF4 elastic scattering amplitude
DEL	(N,EL)Z-S-A,,DA	angular distribution of outgoing neutrons
POL	(N,EL)Z-S-A,,POL (N,EL)Z-S-A,,POL/DA,,SF8  SF8=ANA,ASY,COS, ...	polarization data for neutron in the exit channel spin polarization probability of outgoing neutrons differential spin polarization probability with respect to emission angle analyzing power, angular asymmetry, cosine coefficient,
POT	(N,EL)Z-S-A,POT,SIG (N,EL)Z-S-A,POT,RAD	potential scattering cross section potential scattering radius
SIN ↔	(N,INL)Z-S-A,,SIG	integral inelastic scattering cross section, no -G or -M in SF4
DIN	(N,INL)Z-S-A(-X), (N,INL)Z-S-A,,DA (DE, DA/DE)	partial cross section to isomeric state, or to specified level (double) differential inelastic neutron scattering data
TSL	(N,THS)Z-S-A,SF5,SF6 SF6=SIG, AMP SF5=FA, BA, COH, INC FA/COH, FA/INC, ....	'thermal scattering law': if data depend on structure of target material thermal neutron scattering (molecular and crystalline binding) cross section, scattering amplitude free atom, bound atom, coherent, incoherent scattering free atom coherent scattering, free atom incoherent scattering, ....
SCT	(N,SCT)Z-S-A,	total scattering, below the (n,2n) threshold, integral and differential data
SNE ↔	(N,NON),,SIG	neutron nonelastic cross section
ABS ↔	(N,ABS),,SIG	neutron absorption cross section
RIA	(N,ABS),,RI	neutron absorption resonance integral (with all allowed SF combinations),

	(N,G)Z-S-A-X,,RI	for non-fissionable targets identical to the neutron capture integral
NG	(N,G)Z-S-A-X	neutron capture: all quantities except outgoing gammas considered
RIG	(N,G)Z-S-A-X,,RI	neutron capture resonance integral for fissionable targets
SNG		spectrum of gammas or conversion electrons following neutron capture
	(N,G)Z-S-A,,DE,G	neutron capture: energy spectrum of gammas
	(N,G)Z-S-A,,SPC	neutron capture: gamma spectrum
	(N,G)Z-S-A,PAR,SIG,G	neutron capture: partial gamma production cross section
	combinations with SF6=DA	angular distributions of outgoing gammas
DNG	(N,INL)Z-S-A,,DE,G	neutron inelastic scattering: energy spectrum of gammas
	(N,INL)Z-S-A,(PAR),SPC	neutron inelastic scattering: gamma spectrum
	(N,INL)Z-S-A,PAR,SIG,G	neutron inelastic scattering: partial gamma production cross section
	combinations with SF6=DA	angular distributions of outgoing gammas
NEG	(N,X)0-G-0	nonelastic gammas: SF5 + combinations with SF6 as DNG; no 'G' in SF7
N2N	(N,2N)Z-S-A	(n,2n) reaction with all permitted quantities from dictionary 36
NXN		(n,xn) reaction (x=3,4,...): integral and differential data
	(N,3N), (N,4N), .....	with all permitted quantities from dictionary 36
NEM		sum sigma for all nonelastic processes, weighted for number of neutrons
	(N,X)0-N-1 or (N,N+X)0-N-1	neutron emission from all nonelastic processes
	(N,XN)	variable number of emitted neutrons
		can be combined with all permitted quantities from dictionary 36
NX	(N,X)Z-S-A	sum of all (unspecified) processes in a given target leading to a given product; can be combined with all permitted quantities from dictionary 36
NP	(N,P)Z-S-A	(n,p) reaction with all permitted quantities from dictionary 36
NNP	(N,N+P)Z-S-A	(n,np) reaction with all permitted quantities from dictionary 36
PEM	(N,X)1-H-1 or (N,P+X)1-H-1	proton emission with all permitted quantities from dictionary 36
	(N,YP)	variable number of emitted protons
ND	(N,D)Z-S-A	(n,d) reaction with all permitted quantities from dictionary 36
NND	(N,N+D)Z-S-A	(n,nd) reaction with all permitted quantities from dictionary 36
DEM	N,X)1-H-2 or (N,D+X)1-H-2	deuteron emission with all permitted quantities from dictionary 36
NT	(N,T)Z-S-A	(n,t) reaction with all permitted quantities from dictionary 36
NNT	(N,N+T)Z-S-A	(n,nt) reaction with all permitted quantities from dictionary 36
TEM	(N,X)1-H-3 or (N,T+X)1-H-3	triton emission with all permitted quantities from dictionary 36

NHE	(N,HE3)Z-S-A	(n,He-3) reaction with all permitted quantities from dictionary 36
NA	(N,A)Z-S-A	(n, $\alpha$ ) reaction with all permitted quantities from dictionary 36
NNA	(N,N+A)Z-S-A	(n,n $\alpha$ ) reaction with all permitted quantities from dictionary 36
AEM	(N,X)2-HE-4 or (N,A+X)2-HE-4	alpha emission with all permitted quantities from dictionary 36
NF	$\leftrightarrow$ (N,F),,SIG	neutron induced fission cross section
RIF	$\leftrightarrow$ (N,F),,RI	resonance integral for neutron induced fission
ALF	$\leftrightarrow$ (N,F),,ALF	alpha = capture to fission cross section ratio
ETA	$\leftrightarrow$ (N,F),, ETA	number of neutrons emitted per absorption

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NU	to (0,F) or (N,F)	<i>these CINDA codes are valid for spontaneous or neutron induced fission;</i>
CHG	<b>replaced by (...F)</b>	<i>therefore (0,F) or (N,F) is replaced by (...F) under EXFOR</i>
NU	(...,F),...,NU,... (...,F),,NU or (...,F),PR,NU SF5 <u>not</u> DL  SF5=PAR (...,F+XN),...,NU  (...,F),,DA,N or (...,F),PR,DA,N	all prompt neutron data or average total neutron yield per fission (nu-bar) total nu-bar or prompt nu-bar can be combined with codes as given in dictionary 36 except SF5=DL partial yield, to be used for probability/multiplicity distribution probability for the emission of X (prompt or total) neutrons in fission angular distribution of total or prompt fission neutrons
NUD	(...,F),DL,NU,... SF5=DL/CUM,DL/IND,DL/PAR (...,F),DL,DA,N (...,F),DL,DE,N	delayed neutrons from fission: total or group yields, energies, etc. delayed neutron yield possible to express cumulative, independent or partial dn yield angular distribution of delayed neutrons energy spectrum of delayed neutrons
NUF	(...,F)ELEM/MASS,,NU	prompt neutrons emitted from fission fragments
SFN	(...,F),(PR),DE,N	energy spectrum of (prompt) fission neutrons
SFG	(...,F),,DE,G (...,F),...,SPC  (...,F),PR or PAR/IND,FY,G	energy spectrum of fission gammas intensity of fission gammas, also with SF5=PAR, PR or PR/TER, <u>not DL</u> yield of prompt fission gammas (of defined energies)
FPG	(...,F),DL,DE,G or DL,SPC  (...,F),DL,FY,G	spectrum of delayed gammas emitted from unseparated fission fragments yield of delayed gammas emitted from unseparated fission fragments
FPB	not yet foreseen	spectra, mean energies, etc. of betas from unseparated fission fragments

NFY	all (...),F) with SF6=FY except ... ... except FY/DA or FY/DE ... except if SF7=G ... except CHG,FY ... except certain reaction ratios all with SF6,SF7=AP,HF or AP,LF	all yield types of fission fragments or products (indep., cumul., chain, etc.) ... except energy or angular distribution (FRS in CINDA) total yield of prompt fission gammas (SFG in CINDA) total element yield in fission to be coded as CHG in CINDA for coding of fractional (indep. or cumul.) yields: CHG in CINDA most probable mass for different kinds of mass distributions
FRS	all with SF6=KE,AKE,DE,DA ... except if SF7=G,N	energy or angular distribution of fission products or fragments
CHG	(...),...,IND,FY/(...),...,CHN,FY (...),...,CUM,FY/(...),...,CHN,FY (...)ELEM,CHG,FY (...),...,IND,FY/(...),...,CHG,FY all with SF6=AP and SF7=blank  all with SF6=ZP and SF7=blank	charge distribution of fission fragments with A or Z constant fractional independent yield for fragment A=constant fractional cumulative yields for fragment A=constant total element yield of fission fragments/products fractional independent yields for fragment Z=constant most probable mass for fragment mass distribution with Z=constant most probable charge for fragment charge distribution with A=constant
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RES	all under Res.Pars. in Dict. 36 except SF6=STF except all with SF8=RES	individual and averaged neutron resonance parameters strength function; to be coded as STF in CINDA quantities at resonance: to be coded for quantity according to SF5,SF6
STF	↔ (N,EL),(PAR),STF	(partial) neutron strength function
LDL	Z-S-A(0,0),,(LDP or TEM or SCO)	level density law: parameters for density of levels in the continuum level density parameter, nuclear temperature, spin cut-off factor in CINDA and EXFOR coded for the compound nucleus
GN	all (G,N) data	pure ( $\gamma,n$ ) reaction (no other outgoing particle), integral or differential
GF	all (G,F) data	photofission: all cross sections or data for fragments, gammas and neutrons from fission