

Updated Table 4. List of the IRDFFF reactions evaluations starting from the version IRDFFF-1.0 (Table 4 from INDC(NDS)-0616 “Basic data and sources of the cross sections in the new library IRDFFF release 1.0”) and finishing by IRDFFF-2.0: **the new releases, updates and new evaluations, noted deficiencies/corrections, additional references.**

No. in IRDFFF 1.0	Reaction Code	Reaction	Mat	MF	MT	Source/Ref. of XS in IRDFFF 1.0	Status and origin of XS data	Changes in	Changes in	Final release
								release 1.03 (March 2014)	release 1.05 (October 2014)	2.0 (end 2017) and noted deficiencies
1.	Li6T	${}^6\text{Li}(n,t){}^4\text{He}$	325	3	105	[3,4,10]	R			
2.	B10A	${}^{10}\text{B}(n,\alpha){}^7\text{Li}$	525	3	107	[3,4,10]	R			
3.	F192	${}^{19}\text{F}(n,2n){}^{18}\text{F}$	925	3	16	[18]	IRDF-2002			
4.	Na232	${}^{23}\text{Na}(n,2n){}^{22}\text{Na}$	1125	3	16	[18]	IRDF-2002			update [29]
5.	Na23G	${}^{23}\text{Na}(n,\gamma){}^{24}\text{Na}$	1125	3	102	[18]	IRDF-2002			update [29]
6.	Mg24P	${}^{24}\text{Mg}(n,p){}^{24}\text{Na}$	1225	3	103	[7]	R			
7.	Al27P	${}^{27}\text{Al}(n,p){}^{27}\text{Mg}$	1325	3	103	[5]	R			
8.	Al27A	${}^{27}\text{Al}(n,\alpha){}^{24}\text{Na}$	1325	3	107	[6]	R			
New	Al272G	${}^{27}\text{Al}(n,2n){}^{26g}\text{Al}$	1325	3	16					new [29]
New	Al272M	${}^{27}\text{Al}(n,2n){}^{26m}\text{Al}$	1325	3	16					new [29]
New	Si28P	${}^{28}\text{Si}(n,p){}^{28}\text{Al}$	1425	3	103				new [28]	
New	Si29D	${}^{29}\text{Si}(n,np+d){}^{28}\text{Al}$	1428	3	28				new [28]	
9.	P31P	${}^{31}\text{P}(n,p){}^{31}\text{Si}$	1525	3	103	[18]	IRDF-2002		update [28]	
10.	S32P	${}^{32}\text{S}(n,p){}^{32}\text{P}$	1625	3	103	[7]	R			
11.	Sc45G	${}^{45}\text{Sc}(n,\gamma){}^{46}\text{Sc}$	2125	3	102	[18]	IRDF-2002 NB: Mat 2126			
12.	Ti462	${}^{46}\text{Ti}(n,2n){}^{45}\text{Ti}$	2225	3	16	[18]	IRDF-2002			
13.	Ti46P	${}^{46}\text{Ti}(n,p){}^{46}\text{Sc}$	2225	3	103	[18]	IRDF-2002			
14.	Ti47NP	${}^{47}\text{Ti}(n,x){}^{46}\text{Sc}$	2228	10	5	[18]	IRDF-2002			
15.	Ti47P	${}^{47}\text{Ti}(n,p){}^{47}\text{Sc}$	2228	3	103	[8]	R			
16.	Ti48NP	${}^{48}\text{Ti}(n,x){}^{47}\text{Sc}$	2231	10	5	[18]	IRDF-2002			
17.	Ti48P	${}^{48}\text{Ti}(n,p){}^{48}\text{Sc}$	2231	3	103	[18]	IRDF-2002			
18.	Ti49NP	${}^{49}\text{Ti}(n,x){}^{48}\text{Sc}$	2234	10	5	[18]	IRDF-2002			
19.	V51A	${}^{51}\text{V}(n,\alpha){}^{48}\text{Sc}$	2328	3	107	[18]	IRDF-2002			
20.	Cr522	${}^{52}\text{Cr}(n,2n){}^{51}\text{Cr}$	2431	3	16	[18]	IRDF-2002			
21.	Mn55G	${}^{55}\text{Mn}(n,\gamma){}^{56}\text{Mn}$	2525	3	102	[3,9]	R			

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								release 1.03 (March 2014)	release 1.05 (October 2014)	2.0 (end 2017) and noted deficiencies
22.	Mn552	$^{55}\text{Mn}(n,2n)^{54}\text{Mn}$	2525	3	16	[6]	N			
23.	Fe542	$^{54}\text{Fe}(n,2n)^{53}\text{Fe}$	2625	3	16	[18]	IRDF-2002			
24.	Fe54P	$^{54}\text{Fe}(n,p)^{54}\text{Mn}$	2625	3	103	[18]	IRDF-2002	update [25,26]		
25.	Fe54A	$^{54}\text{Fe}(n,\alpha)^{51}\text{Cr}$	2625	3	107	[18]	IRDF-2002			
26.	Fe56P	$^{56}\text{Fe}(n,p)^{56}\text{Mn}$	2631	3	103	[18]	IRDF-2002			
27.	Fe58G	$^{58}\text{Fe}(n,\gamma)^{59}\text{Fe}$	2637	3	102	[12]	R			
28.	Co592	$^{59}\text{Co}(n,2n)^{58}\text{Co}$	2725	3	16	[6]	R			
29.	Co593	$^{59}\text{Co}(n,3n)^{57}\text{Co}$	2725	3	17	[16]	N			
30.	Co59G	$^{59}\text{Co}(n,\gamma)^{60}\text{Co}$	2725	3	102	[18]	IRDF-2002			
31.	Co59P	$^{59}\text{Co}(n,p)^{59}\text{Fe}$	2725	3	103	[6]	N			
32.	Co59A	$^{59}\text{Co}(n,\alpha)^{56}\text{Mn}$	2725	3	107	[18]	IRDF-2002			
33.	Ni582	$^{58}\text{Ni}(n,2n)^{57}\text{Ni}$	2825	3	16	[18]	IRDF-2002	update [25,26]		
34.	Ni58P	$^{58}\text{Ni}(n,p)^{58}\text{Co}$	2825	3	103	[18]	IRDF-2002			
35.	Ni60P	$^{60}\text{Ni}(n,p)^{60}\text{Co}$	2831	3	103	[7]	R			
36.	Cu632	$^{63}\text{Cu}(n,2n)^{62}\text{Cu}$	2925	3	16	[7]	R			
37.	Cu63G	$^{63}\text{Cu}(n,\gamma)^{64}\text{Cu}$	2925	3	102	[18]	IRDF-2002			
38.	Cu63A	$^{63}\text{Cu}(n,\alpha)^{60}\text{Co}$	2925	3	107	[18]	IRDF-2002			
39.	Cu652	$^{65}\text{Cu}(n,2n)^{64}\text{Cu}$	2931	3	16	[7]	R			
40.	Zn64P	$^{64}\text{Zn}(n,p)^{64}\text{Cu}$	3025	3	103	[7]	R			
41.	Zn67P	$^{67}\text{Zn}(n,p)^{67}\text{Cu}$	3034	3	103	[15]	N	update [25,26]		
42.	As752	$^{75}\text{As}(n,2n)^{74}\text{As}$	3325	3	16	[18]	IRDF-2002			
43.	Y892	$^{89}\text{Y}(n,2n)^{88}\text{Y}$	3925	3	16	[16]	R			
44.	Zr902	$^{90}\text{Zr}(n,2n)^{89}\text{Zr}$	4025	3	16	[6]	R			
45.	Mo92P	$^{92}\text{Mo}(n,p)^{92m}\text{Nb}$	4225	10	103	[15]	N	update [25,26]		
46.	Nb932	$^{93}\text{Nb}(n,2n)^{92m}\text{Nb}$	4125	10	16	[16]	R			
47.	Nb93N	$^{93}\text{Nb}(n,n')^{93m}\text{Nb}$	4125	10	4	[18]	IRDF-2002			
48.	Nb93G	$^{93}\text{Nb}(n,\gamma)^{94}\text{Nb}$	4125	3	102	[18]	IRDF-2002	update [25,26]		
49.	Rh103N	$^{103}\text{Rh}(n,n')^{103m}\text{Rh}$	4525	10	4	[18]	IRDF-2002			
50.	Ag109G	$^{109}\text{Ag}(n,\gamma)^{110m}\text{Ag}$	4731	10	102	[18]	IRDF-2002			

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								release 1.03 (March 2014)	release 1.05 (October 2014)	and noted deficiencies
New	In113G	$^{113}\text{In}(n,\gamma)^{114\text{m}}\text{In}$	4925	10	102				new [28]	
51.	In113N	$^{113}\text{In}(n,n')^{113\text{m}}\text{In}$	4925	10	4	[15]	N	update [25,26]		
52.	In1152M	$^{115}\text{In}(n,2n)^{114\text{m}}\text{In}$	4931	10	16	[17]	R			
53.	In115N	$^{115}\text{In}(n,n')^{115\text{m}}\text{In}$	4931	10	4	[17]	R			
54.	In115G	$^{115}\text{In}(n,\gamma)^{116\text{m}}\text{In}$	4931	10	102	[3]	R	update [25,26] LFS=2(m1+m2)		
55.	I1272	$^{127}\text{I}(n,2n)^{126}\text{I}$	5325	3	16	[17]	R			
56.	La139G	$^{139}\text{La}(n,\gamma)^{140}\text{La}$	5728	3	102	[18]	IRDF-2002			
57.	Pr1412	$^{141}\text{Pr}(n,2n)^{140}\text{Pr}$	5925	3	16	[18]	IRDF-2002			
58.	Tm1692	$^{169}\text{Tm}(n,2n)^{168}\text{Tm}$	6925	3	16	[16]	R			
59.	Tm1693	$^{169}\text{Tm}(n,3n)^{167}\text{Tm}$	6925	3	17	[15]	N			
60.	Ta181G	$^{181}\text{Ta}(n,\gamma)^{182}\text{Ta}$	7328	3	102	[18]	IRDF-2002			does not fit exp. data at 14 MeV
61.	W186G	$^{186}\text{W}(n,\gamma)^{187}\text{W}$	7443	3	102	[3,9]	R			
62.	Au1972	$^{197}\text{Au}(n,2n)^{196}\text{Au}$	7925	3	16	[7]	R			
63.	Au197G	$^{197}\text{Au}(n,\gamma)^{198}\text{Au}$	7925	3	102	[4,10,19]	R			
64.	Hg199N	$^{199}\text{Hg}(n,n')^{199\text{m}}\text{Hg}$	8034	10	4	[7]	R			
65.	Pb204N	$^{204}\text{Pb}(n,n')^{204\text{m}}\text{Pb}$	8225	10	4	[18]	IRDF-2002			
66.	Bi2093	$^{209}\text{Bi}(n,3n)^{207}\text{Bi}$	8325	3	17	[16]	N			
67.	Th232F	$^{232}\text{Th}(n,\text{f})\text{FP}$	9040	3	18	[9,20,21]	R			
68.	Th232G	$^{232}\text{Th}(n,\gamma)^{233}\text{Th}$	9040	3	102	[9,20]	R			
69.	U235F	$^{235}\text{U}(n,\text{f})\text{FP}$	9228	3	18	[4,10,19,21]	R			
70.	U235G	$^{235}\text{U}(n,\gamma)^{236}\text{U}$	9228	3	102	[20]	N			
New	U2382	$^{238}\text{U}(n,2n)^{237}\text{U}$	9237	3	16	[27]			new [27]	
71.	U238F	$^{238}\text{U}(n,\text{f})\text{FP}$	9237	3	18	[4,10,19,21]	R			
72.	U238G	$^{238}\text{U}(n,\gamma)^{239}\text{U}$	9237	3	102	[4,10,19,21]	R		update [27]	
73.	Np237F	$^{237}\text{Np}(n,\text{f})\text{FP}$	9346	3	18	[22]	R			
74.	Pu39F	$^{239}\text{Pu}(n,\text{f})\text{FP}$	9437	3	18	[4,10,19,21]	R			
75.	Am241F	$^{241}\text{Am}(n,\text{f})\text{FP}$	9543	3	18	[18]	IRDF-2002			

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Total Number of Reactions in the IRDFF releases							75	76	79	81

Current comments to the updated Table 4:

- standard reactions will be updated;
- 7 new reactions $^{209}\text{Bi}(n,xn)$ $^{210-x}\text{Bi}$ (where $x = 4 - 10$) probably will be included in IRDFF-2.0, then the Number of Reactions in IRDFF will be 88.

Cover materials (without uncertainties)								
1	---	B-COVER	500	3	001	[3]	R	
2	---	CD-COVER	4800	3	001	[20,23]	R	
3	---	GD-COVER	6400	3	001	[3]	R	

Explanations to Table 4

R = replacement of IRDF-2002 data by new evaluations.

N = new evaluation, not present in IRDF-2002.

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