INTERNATIONAL ATOMIC ENERGY AGENCY

NUCLEAR DATA SERVICES

DOCUMENTATION SERIES OF THE IAEA NUCLEAR DATA SECTION

ENDF/B-5 ACTIVATION FILE

(Revision 2)

Abstract

This document summarizes the contents of the ENDF/B-5 Neutron Activation Cross-Sections File released by the US National Nuclear Data Center. This library is available on magnetic tape, free of charge, from the IAEA Nuclear Data Section. The present file is Rev. 2 of March 1984.

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Revised by P.K.McLaughlin IAEA/NDS Jan. 2005

The file was revised to conform with ENDF/B format standards.. The merged file was corrected for format errors and processed through the code CHECKR to ensure, as far as possible, format compatibility.

Note:

The IAEA-NDS-reports should not be considered as formal publications. When a nuclear data library is sent out by the IAEA Nuclear Data Section, it will be accompanied by an IAEA-NDS-report which should give the data user all necessary documentation on contents, format and origin of the data library.

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Citation guideline:

ENDF/B-5 Activation File

CONTENTS

The ENDF/B-5 Neutron Activation Cross-Sections File includes data for 127 nuclides ranging from 1-H-3 to 96-Cm-242, containing partly neutron activation cross-sections, partly radioactive decay data, or both.

- Most of the data are based on the evaluation of experimental data; some data were estimated from calculations with nuclear model computer codes.

- The file was originally distributed in March 1980. The present revised version (Rev. 2) includes decay data for additional three nuclides (MAT = 7026, 7089, 7090) that did not exist in the 1980 version;

- revised evaluations (C.R. Reich, December 1979) of the decay data for 14 nuclides superseding the data given in 1980 version (C.R. Reich, April 1978);

- more or less significant corrections to twelve more materials of the 1980 version.

In all cases, corrections apply only to MF=l (text) and MF=8 (decay data). All cross-section data of the 1980 version were left unchanged, except for MAT=7240 (24-Cr-50).

For the list of nuclides, material numbers (MAT No.) and data types covered, refer to Table I. The materials which were added or revised in comparison with the 1980 version of the file are marked as "new" in column "version" of Table I.

The ENDF/B-5 (Rev. 2) Activation File is written in the ENDF-5 computerized format which is documented in ENDF-102, 2nd ed. , Oct. 1979 (BNL-NCS-50496), rev. by R. Kinsey, available as microfiche IAEA-NDS-10/l02. For quick reference of the ENDF/B format (file numbers and reaction type numbers of the most important data types) refer to document IAEA-NDS-10.

This file has 20476 logical records. Magnetic tape copies of the entire file or selective retrievals from it are available, free of charge, from the IAEA Nuclear Data Section, upon request.

TABLE I

Nuclides, material numbers (MAT) and quantities in ENDF/B-5 Activation File. Symbols for quantities stand for as follows:

RDD = Radioactive decay data
RP   = Resonance Parameters
SCTR = Scattering radius
MPR = Multiplicities for production of radioactive
        nuclides
(n,x)= Neutron cross-section
SIGR = Cross-sections for production of radioactive
        nuclides

Nuclide	MAT No.	Class of Data and Reaction Type	Version
1-T-3	7013	RDD	Apr78
2-He-6	7026	RDD	Dec77 new
3-Li-6	7036	SCTR, (n,t), RDD, MPR	Sep77
3-Li-7	7037	SCTR, (n,γ), (n,n't)α, RDD, MPR	Oct72
3-Li-8	7038	RDD	Apr78
5-B-10	7050	SCTR, (n,t2α), RDD, MPR	Dec76, Rev.1-Jan77
6-C-14	7064	RDD	Apr78
7-N-14	7074	SCTR, (n,p), RDD, MPR	Jul73
7-N-16	7076	RDD	Apr78
8-O-16	7086	SCTR, (n,p), RDD, MPR	Aug73
8-O-19	7089	RDD	Aug80 new
9-F-18	7098	RDD	Apr78
9-F-19	7099	SCTR, (n,2n)	Nov79
9-F-20	7090	RDD	Aug80 new
10-Ne-23	7103	RDD	Apr78
11-Na-22	7112	RDD	Apr78
11-Na-23	7113	RP, (n,2n), (n,γ), (n,p), RDD, MPR	Nov79
11-Na-24	7114	RDD	Apr78

Nuclide	MAT No.	Class of Data and Reaction Type	Version
12-Mg-24	7124	SCTR, (n,p), RDD, MPR	Nov79
12-Mg-27	7127	RDD	Apr78
13-Al-27	7137	SCTR, (n,γ), (n,p), (n,α) RDD, MPR	Dec73 Rev.1-Aug77
13-Al-28	7138	RDD	Apr78
14-Si-31	7141	RDD	Apr78
15-P-31	7151	SCTR, (n,p), RDD, MPR	Oct77
15-P-32	7152	RDD	Apr78
16-S-32	7162	SCTR, (n,p), RDD, MPR	Oct77
18-Ar-40	7180	RP, (n,γ), MPR	Jan79
18-Ar-41	7181	RDD	Apr78
19-K-41	7191	SCTR, (n,p), RDD, MPR	Jan79
20-Ca-45	7205	RDD	Apr78
20-Ca-47	7207	RDD	Apr78
21-Sc-44M	7213	RDD	Apr78
21-Sc-44	7214	RDD	Apr78
21-Sc-45	7215	RP, (n,2n), (n,γ), RDD, MPR	Jul79
21-Sc-46	7216	RDD	Apr78
21-Sc-47	7217	RDD	Apr78
21-Sc-48	7218	RDD	Apr78
22-Ti-50	7220	SCTR, (n,α), RDD, MPR	May79
22-Ti-46	7226	SCTR, (n,p), RDD, MPR	Jan77
22-Ti-47	7227	SCTR, (n,n'p), (n,p), RDD, MPR	Jan77
22-Ti-48	7228	SCTR, (n,n'p), (n,p), (n,α), RDD, MPR	Jan77
24-Cr-50	7240	RP, (n,2n), (n,γ), RDD, MPR A resonance with negative energy was added in Mar84	Aug79 new

Nuclide	MAT No.	Class of Data and Reaction Type	Version	
24-Cr-51	7241	RDD	Apr78	
24-Cr-52	7242	SCTR, (n,2n), RDD, MPR	Aug79	
24-Cr-49	7449	RDD	Apr78	
25-Mn-54	7254	RDD		
25-Mn-55	7255	RP, (n,2n), (n,γ), RDD, MPR	Mar77	
25-Mn-56	7256	RDD	Apr78	
26-Fe-54	7264	RP, (n,γ), (n,p), (n,α), RDD, MPR	Jun79	
26-Fe-55	7265	RDD	Apr78	
26-Fe-56	7266	SCTR, (n,2n), (n,p), RDD, MPR	Jul78	
26-Fe-58	7268	RP, (n,γ), RDD, MPR	Jun79	
26-Fe-59	7269	RDD	Apr78	
27-Co-60	7270	RDD	Apr78	
27-Co-57	7277	RDD	Apr78	
27-Co-58	7278	RDD	Apr78	
27-Co-59	7229	RP, (n,2n), (n,γ), (n,p), RDD, MPR	Jun77	
28-Ni-60	7280	SCTR, (n,2n), (n,p), RDD, MPR, SIGR	May78	
28-Ni-62	7282	SCTR, (n,γ), (n,α), RDD, SIGR	May78	
28-Ni-63	7283	RDD	Apr78	
28-Ni-57	7287	RDD	Apr78	
28-Ni-58	7288	SCTR, (n,2n), (n,γ), (n,p), (n,d), (n,α), RDD, MPR, SIGR	May78	
28-Ni-59	7289	RDD	Apr78	
29-Cu-63	7293	RP, (n,γ), (n,p), (n,α), RDD, MPR	Jul78	
29-Cu-64	7294	RDD	Apr78	
29-Cu-65	7295	SCTR, (n,2n), RDD, MPR	Jul78	
40-Zr-90	7400	SCTR, (n,2n), RDD, MPR small modification of RDD Mar84	Apr76	new

Nuclide	MAT No.	Class of Data and Reaction Type	Version	
40-Zr-92	7402	RP, (n,γ), RDD, MPR	Apr76	
40-Zr-93	7403	RDD	Dec79	new
40-Zr-94	7404	RP, (n,γ), RDD, MPR	Apr76	
40-Zr-95	7405	RDD	Dec79	new
40-Zr-89M	7408	RDD	Apr78	
40-Zr-89	7409	RDD	Apr78	
41-Nb-93M	7410	RDD	Dec79	new
41-Nb-92M	7411	RDD	Apr78	
41-Nb-92	7412	RDD	Apr78	
41-Nb-93	7413	RP, (n,inel), (n,2n), (n,γ), RDD, MPR	May74	
41-Nb-94	7414	RDD	Dec79	new
42-Mo-100	7420	RP, (n,γ), RDD, MPR	Feb80	
42-Mo-101	7421	RDD	Dec79	new
42-Mo-92	7422	RP, (n,γ), RDD, MPR	Feb80	
42-Mo-93	7423	RDD	Apr78	
42-Mo-98	7428	RP, (n,γ), RDD, MPR	Feb80	
42-Mo-99	7429	RDD	Dec79	new
47-Ag-110	7470	RDD	Dec79	new
47-Ag-110M	7471	RDD	Dec79	new
47-Ag-109	7479	RP, (n,γ), RDD, MPR RDD and MPR revised Mar84	Nov78	new
49-In-115M	7494	RDD	Dec79	new
49-In-115	7495	RP, (n,inel), (n,γ), RDD, MPR	Jan78	
49-In-116	7496	RDD	Dec79	new
50-Sn-120	7500	RP, (n,γ), RDD, MPR	Oct74	
50-Sn-121	7501	RDD	Dec79	new

Nuclide	MAT No.	Class of Data and Reaction Type	Version	
50-Sn-122	7502	RP, (n,γ), RDD, MPR	Oct74	
50-Sn-123	7503	RDD	Dec79	new
50-Sn-124	7504	RP, (n,γ), RDD, MPR	Oct74	
50-Sn-125	7505	RDD	Dec79	new
50-Sn-121	7506	RDD	Dec79	new
50-Sn-123M	7507	RDD	Dec79	new
50-Sn-125M	7508	RDD	Dec79	new
53-I-126	7536	RDD	Apr78	
53-I-127	7537	RP, (n,2n), (n,γ), RDD, MPR	Feb80	
53-I-128	7538	RDD	Apr78	
57-La-140	7570	RDD	Dec79	new
57-La-139	7579	RP, (n,γ), RDD, MPR	Feb80	
66-Dy-164	7664	RP, (n,γ), RDD, MPR	Jun67	
66-Dy-165	7665	RDD	Apr78	
66-Dy-165M	7666	RDD	Apr78	
73-Ta-181	7731	RP, (n,γ), RDD, MPR	Jan72 Rev.1-Nov74	
73-Ta-182	7732	RDD	Apr78	
79-Au-195	7795	RDD	Apr78	
79-Au-196	7796	RDD	Apr78	
79-Au-197	7797	RP, (n,2n), (n,3n), (n,γ), RDD, MPR	Feb77	
79-Au-198	7798	RDD	Apr78	
90-Th-231	7901	RDD	Aug78	new
90-Th-232	7902	RP, (n,2n), (n,γ), RDD, MPR	Dec77	
90-Th-233	7903	RDD	Aug78	new
91-Pa-231	7911	RP, (n,γ), RDD, MPR	Nov77	

Nuclide	MAT No.	Class of Data and Reaction Type	Version	
91-Pa-232	7912	RDD	Aug78	new
91-Pa-233	7913	RP, (n,2n), RDD, MPR	May78	
92-U-232	7922	RDD	Apr78	
92-U-233	7923	SCTR, (n,2n), RDD, MPR	Dec78	
92-U-238	7928	RP, (n,γ), RDD, MPR	Jun77	
92-U-239	7929	RDD	Aug78	new
95-Am-241	7951	RP, (n,γ), RDD, MPR	Apr78	
95-Am-242	7952	RDD	Aug78	new
95-Am-242M	7953	RDD	Apr78	
96-Cm-242	7962	RDD	Aug78	new