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1 of 1

A Room Temperature, ENDF/B-VI, Mod. 2
Cross Section Library

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I - Introduction

The ENDF/B-VI Library distributed in Sept. 1993 has now been updated to include the most recent modifications; mod. 2. Between the original (mod. 0) and current (mod. 2) libraries, 74 evaluations were updated; no completely new evaluations were added to the library. These evaluations were processed using the most recent version of the ENDF/B Pre-processing codes - PREPRO94 (IAEA-NDS-39, Rev. 8, Jan. 1994).

II - Data processing

Starting from the ENDF/B-VI data as distributed by the National Nuclear Data Center, Brookhaven National Laboratory, the data was processed through a series of the ENDF/B Pre-processing codes. Below I have summarized the steps and indicated the result of each step and the code used (the name of the code is given in parenthesis; see IAEA-NDS-39, Rev. 8, for details of each code),

- 1) Linearly interpolable, tabulated cross sections (LINEAR)
- 2) Including the resonance contribution (RECENT)
- 3) All cross sections are at room temperature - 300 Kelvin (SIGMA1)
- 4) All redundant cross sections (e.g., total, total inelastic, etc.) are defined to be exactly equal to the sum of their parts (FIXUP)

The result is linearly interpolable, tabulated, room temperature cross sections, in the ENDF/B-VI format which can be used in applications.

III - Contents of the Library

The following page summarizes the contents of the ENDF/B-VI library. This library contains evaluations for 321 materials (isotopes or naturally occurring elemental mixtures of isotopes). This library contains data for some metastable materials, which are indicated by an "m" at the end of their description. The library contains two evaluations for 26-Fe-56; a standard evaluation extending up to neutron incident energies of 20 MeV, and a second high energy evaluation extending up to 1 GeV; the latter is identified in the following table as 26-Fe-56x.

The majority of these evaluations are complete, in the sense that they include all cross sections over the energy range $1.0E-5$ eV to 20 MeV. However, the following are only partial evaluations that either only contain single reactions and no total cross section: 12-Mg-24, 19-K-41, 22-Ti-46, 22-Ti-47, 22-Ti-48, 22-Ti-50 and 28-Ni-59, or contain no elastic cross section above the resonance region: 18-Ar-40, 42-Mo-92, 42-Mo-98, 42-Mo-100, 49-In-115, 50-Sn-120, 50-Sn-122 and 50-Sn-124.

Each evaluation is stored as a separate file. The following table defines each material and the corresponding filename. The entire library is in the computer independent ENDF/B-VI character format, which allows the data to be easily transported between computers. The entire library requires about 129 mega-bytes of storage.

IV - UPDATE: September 1993

The following results were updated to include the effects of a convention used by the evaluators which is not clearly described in the ENDF/B-VI Formats and Procedures manual. These changes only effect the elastic scattering cross section of the following three evaluations, Fe-54, Fe-56, Ni-58

V - UPDATE: July 1994

The 74 evaluations modified between the original (mod. 0) and current (mod. 2) library are included in the current distribution of this library; the mod. 2 results have replaced the older results. For details see the table of evaluations modified between the original and mod. 2 libraries.

VI - Acknowledgement

I thank the Nuclear Data Section of the International Atomic Energy Agency, Vienna, Austria, for providing the computer time and programmer support to process all of the mod. 2 data on their VAX computer.

Summary of ENDF/B-VI Evaluations with a neutron incident

Material	Filename	Material	Filename	Material	Filename	Material	Filename	Material	Filename	Material	Filename
1-H -1	za001001	31-Ga-Nat	za031000	44-Ru-98	za044098	52-Te-124	za052124	61-Pm-148m	za061148m	82-Pb-206	za082206
1-H -2	za001002	32-Ge-72	za032072	44-Ru-99	za044099	52-Te-125	za052125	61-Pm-149	za061149	82-Pb-207	za082207
1-H -3	za001003	32-Ge-73	za032073	44-Ru-100	za044100	52-Te-126	za052126	61-Pm-151	za061151	82-Pb-208	za082208
2-He-3	za002003	32-Ge-74	za032074	44-Ru-101	za044101	52-Te-127m	za052127m	62-Sm-144	za062144	83-Bi-209	za083209
2-He-4	za002004	32-Ge-76	za032076	44-Ru-102	za044102	52-Te-128	za052128	62-Sm-147	za062147	90-Th-230	za090230
3-Li-6	za003006	33-As-75	za033075	44-Ru-103	za044103	52-Te-129m	za052129m	62-Sm-148	za062148	90-Th-232	za090232
3-Li-7	za003007	34-Se-74	za034074	44-Ru-104	za044104	52-Te-130	za052130	62-Sm-149	za062149	91-Pa-231	za091231
4-Be-9	za004009	34-Se-76	za034076	44-Ru-105	za044105	52-Te-132	za052132	62-Sm-150	za062150	91-Pa-233	za091233
5-B -10	za005010	34-Se-77	za034077	44-Ru-106	za044106	53-I -127	za053127	62-Sm-151	za062151	92-U -232	za092232
5-B -11	za005011	34-Se-78	za034078	45-Rh-103	za045103	53-I -129	za053129	62-Sm-152	za062152	92-U -233	za092233
6-C -Nat	za006000	34-Se-80	za034080	45-Rh-105	za045105	53-I -130	za053130	62-Sm-153	za062153	92-U -234	za092234
7-N -14	za007014	34-Se-82	za034082	46-Pd-102	za046102	53-I -131	za053131	62-Sm-154	za062154	92-U -235	za092235
7-N -15	za007015	35-Br-79	za035079	46-Pd-104	za046104	53-I -135	za053135	63-Eu-151	za063151	92-U -236	za092236
8-O -16	za008016	35-Br-81	za035081	46-Pd-105	za046105	54-Xe-124	za054124	63-Eu-152	za063152	92-U -237	za092237
8-O -17	za008017	36-Kr-78	za036078	46-Pd-106	za046106	54-Xe-126	za054126	63-Eu-153	za063153	92-U -238	za092238
9-F -19	za009019	36-Kr-80	za036080	46-Pd-107	za046107	54-Xe-128	za054128	63-Eu-154	za063154	93-Np-237	za093237
11-Na-23	za011023	36-Kr-82	za036082	46-Pd-108	za046108	54-Xe-129	za054129	63-Eu-155	za063155	93-Np-238	za093238
12-Mg-Nat	za012000	36-Kr-83	za036083	46-Pd-110	za046110	54-Xe-130	za054130	63-Eu-156	za063156	93-Np-239	za093239
12-Mg-24	za012024	36-Kr-84	za036084	47-Ag-107	za047107	54-Xe-131	za054131	63-Eu-157	za063157	94-Pu-236	za094236
13-Al-27	za013027	36-Kr-85	za036085	47-Ag-109	za047109	54-Xe-132	za054132	64-Gd-152	za064152	94-Pu-237	za094237
14-Si-Nat	za014000	36-Kr-86	za036086	47-Ag-111	za047111	54-Xe-133	za054133	64-Gd-154	za064154	94-Pu-238	za094238
15-P -31	za015031	37-Rb-85	za037085	48-Cd-Nat	za048000	54-Xe-134	za054134	64-Gd-155	za064155	94-Pu-239	za094239
16-S -Nat	za016000	37-Rb-86	za037086	48-Cd-106	za048106	54-Xe-135	za054135	64-Gd-156	za064156	94-Pu-240	za094240
16-S -32	za016032	37-Rb-87	za037087	48-Cd-108	za048108	54-Xe-136	za054136	64-Gd-157	za064157	94-Pu-241	za094241
17-Cl-Nat	za017000	38-Sr-84	za038084	48-Cd-110	za048110	55-Cs-133	za055133	64-Gd-158	za064158	94-Pu-242	za094242
18-Ar-40	za018040	38-Sr-86	za038086	48-Cd-111	za048111	55-Cs-134	za055134	64-Gd-160	za064160	94-Pu-243	za094243
19-K -Nat	za019000	38-Sr-87	za038087	48-Cd-112	za048112	55-Cs-135	za055135	65-Tb-159	za065159	94-Pu-244	za094244
19-K -41	za019041	38-Sr-88	za038088	48-Cd-113	za048113	55-Cs-136	za055136	65-Tb-160	za065160	95-Am-241	za095241
20-Ca-Nat	za020000	38-Sr-89	za038089	48-Cd-114	za048114	55-Cs-137	za055137	66-Dy-160	za066160	95-Am-242	za095242
21-Sc-45	za021045	38-Sr-90	za038090	48-Cd-115m	za048115m	56-Ba-134	za056134	66-Dy-161	za066161	95-Am-242m	za095242m
22-Ti-Nat	za022000	39-Y -89	za039089	48-Cd-116	za048116	56-Ba-135	za056135	66-Dy-162	za066162	95-Am-243	za095243
22-Ti-46	za022046	39-Y -90	za039090	49-In-Nat	za049000	56-Ba-136	za056136	66-Dy-163	za066163	96-Cm-241	za096241
22-Ti-47	za022047	39-Y -91	za039091	49-In-113	za049113	56-Ba-137	za056137	66-Dy-164	za066164	96-Cm-242	za096242
22-Ti-48	za022048	40-Zr-Nat	za040000	49-In-115	za049115	56-Ba-138	za056138	67-Ho-165	za067165	96-Cm-243	za096243
22-Ti-50	za022050	40-Zr-90	za040090	50-Sn-112	za050112	56-Ba-140	za056140	68-Er-166	za068166	96-Cm-244	za096244
23-V -Nat	za023000	40-Zr-91	za040091	50-Sn-114	za050114	57-La-139	za057139	68-Er-167	za068167	96-Cm-245	za096245
24-Cr-50	za024050	40-Zr-92	za040092	50-Sn-115	za050115	57-La-140	za057140	71-Lu-175	za071175	96-Cm-246	za096246
24-Cr-52	za024052	40-Zr-93	za040093	50-Sn-116	za050116	58-Ce-140	za058140	71-Lu-176	za071176	96-Cm-247	za096247
24-Cr-53	za024053	40-Zr-94	za040094	50-Sn-117	za050117	58-Ce-141	za058141	72-Hf-Nat	za072000	96-Cm-248	za096248
24-Cr-54	za024054	40-Zr-95	za040095	50-Sn-118	za050118	58-Ce-142	za058142	72-Hf-174	za072174	97-Bk-249	za097249
25-Mn-55	za025055	40-Zr-96	za040096	50-Sn-119	za050119	58-Ce-143	za058143	72-Hf-176	za072176	98-Cf-249	za098249
26-Fe-54	za026054	41-Nb-93	za041093	50-Sn-120	za050120	58-Ce-144	za058144	72-Hf-177	za072177	98-Cf-250	za098250
26-Fe-56	za026056	41-Nb-94	za041094	50-Sn-122	za050122	59-Pr-141	za059141	72-Hf-178	za072178	98-Cf-251	za098251
26-Fe-56x	za026056x	41-Nb-95	za041095	50-Sn-123	za050123	59-Pr-142	za059142	72-Hf-179	za072179	98-Cf-252	za098252
26-Fe-57	za026057	42-Mo-Nat	za042000	50-Sn-124	za050124	59-Pr-143	za059143	72-Hf-180	za072180	98-Cf-253	za098253
26-Fe-58	za026058	42-Mo-92	za042092	50-Sn-125	za050125	60-Nd-142	za060142	73-Ta-181	za073181	99-Es-253	za099253
27-Co-59	za027059	42-Mo-94	za042094	50-Sn-126	za050126	60-Nd-143	za060143	73-Ta-182	za073182		
28-Ni-58	za028058	42-Mo-95	za042095	51-Sb-121	za051121	60-Nd-144	za060144	74-W -Nat	za074000		
28-Ni-59	za028059	42-Mo-96	za042096	51-Sb-123	za051123	60-Nd-145	za060145	74-W -182	za074182		
28-Ni-60	za028060	42-Mo-97	za042097	51-Sb-124	za051124	60-Nd-146	za060146	74-W -183	za074183		
28-Ni-61	za028061	42-Mo-98	za042098	51-Sb-125	za051125	60-Nd-147	za060147	74-W -184	za074184		
28-Ni-62	za028062	42-Mo-99	za042099	51-Sb-126	za051126	60-Nd-148	za060148	74-W -186	za074186		
28-Ni-64	za028064	42-Mo-100	za042100	52-Te-120	za052120	60-Nd-150	za060150	75-Re-185	za075185		
29-Cu-63	za029063	43-Tc-99	za043099	52-Te-122	za052122	61-Pm-147	za061147	75-Re-187	za075187		
29-Cu-65	za029065	44-Ru-96	za044096	52-Te-123	za052123	61-Pm-148	za061148	79-Au-197	za079197		

Summary of ENDF/B-VI Evaluations with a neutron incident
 Modified between the Original and Mod. 2 Libraries

Material	Filename	Material	Filename
1-H -1	za001001	53-I -127	za053127
2-He-3	za002003	57-La-139	za057139
3-Li-6	za003006	60-Nd-143	za060143
5-B -10	za005010	60-Nd-145	za060145
6-C -Nat	za006000	60-Nd-147	za060147
7-N -14	za007014	61-Pm-147	za061147
11-Na-23	za011023	62-Sm-150	za062150
21-Sc-45	za021045	62-Sm-151	za062151
24-Cr-50	za024050	62-Sm-152	za062152
24-Cr-52	za024052	63-Eu-155	za063155
24-Cr-53	za024053	72-Hf-174	za072174
24-Cr-54	za024054	72-Hf-176	za072176
26-Fe-54	za026054	72-Hf-177	za072177
26-Fe-56	za026056	72-Hf-178	za072178
26-Fe-57	za026057	72-Hf-179	za072179
26-Fe-58	za026058	72-Hf-180	za072180
27-Co-59	za027059	74-W -Nat	za074000
28-Ni-58	za028058	79-Au-197	za079197
28-Ni-60	za028060	82-Pb-207	za082207
28-Ni-61	za028061	92-U -235	za092235
28-Ni-62	za028062	92-U -237	za092237
28-Ni-64	za028064	92-U -238	za092238
29-Cu-63	za029063	93-Np-237	za093237
29-Cu-65	za029065	93-Np-238	za093238
32-Ge-73	za032073	94-Pu-239	za094239
40-Zr-Nat	za040000	94-Pu-240	za094240
41-Nb-93	za041093	94-Pu-241	za094241
44-Ru-101	za044101	94-Pu-243	za094243
44-Ru-102	za044102	95-Am-241	za095241
48-Cd-106	za048106	95-Am-242	za095242
48-Cd-108	za048108	96-Cm-245	za096245
48-Cd-110	za048110	96-Cm-246	za096246
48-Cd-112	za048112	96-Cm-247	za096247
48-Cd-114	za048114	98-Cf-250	za098250
48-Cd-116	za048116	98-Cf-251	za098251
50-Sn-112	za050112	98-Cf-252	za098252
50-Sn-114	za050114	98-Cf-253	za098253

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