



INTERNATIONAL ATOMIC ENERGY AGENCY

NUCLEAR DATA SERVICES

DOCUMENTATION SERIES OF THE IAEA NUCLEAR DATA SECTION

(Rev. 4)

JENDL-2 (Rev. 1)

Japanese Evaluated Nuclear Data Library

Version 2 Rev. 1

Contents and Documentation

Abstract: This document summarizes the contents of JENDL-2, the Japanese Evaluated Nuclear Data Library in ENDF/B-4 format. Copies of the data library or selective retrievals from it are available upon request costfree from the IAEA Data Section.

V.G. Pronyaev, H.D. Lemmel

June 1984, updated November 1986

JENDL-2 (Rev. 1)

JAPANESE EVALUATED NUCLEAR DATA LIBRARY
Version 2, Rev. 1

Contents and Documentation

This document summarizes the Japanese Evaluated Nuclear Data Library, JENDL-2 (Rev. 1), which was released in February 1984. It contains complete evaluations of reaction cross-sections induced by neutrons with energy from 10^{-5} eV to 20 MeV for 89 nuclides from H-1 to Cm-245. The data are presented in ENDF-IV format.*) The list of nuclides, their accession-numbers (= "MAT-No.") and the history resp. documentation of evaluations are given in the present document. JENDL-2 (Rev. 1) supersedes JENDL-1 and the preliminary issue of JENDL-2 which had been issued in 1982 for 8 nuclides. Most of the evaluations in JENDL-2 are new evaluations dating between 1979 and 1982, only a small fraction of the evaluations was taken over from JENDL-1 with more or less significant revisions. Note that evaluations for 26 nuclides which were presented in JENDL-1 but not in the current JENDL-2 are now under compilation and will be included in a separate JENDL-2 Fission Product Library.

Documentation:

JAERI-M-84-103, Summary of JENDL-2 General Purpose File, June 1984, 378 pages, edited by T. Nakagawa.

JAERI-M-84-052, Graphs of Evaluated Neutron Cross-Sections in JENDL-2, March 1984, edited by Japanese Nuclear Data Committee.

See also the review article by Y. Kikuchi et al. "Second version of Japanese Evaluated Nuclear Data Library JENDL-2" in J. of Nucl. Sci. and Tech. 22(8), 593, 1985.

JENDL-2 or selective retrievals from it can be obtained on magnetic tape (or in the form of computer listings for separate materials), free of charge, from the IAEA Nuclear Data Section, upon request.

A note on processing codes: Some JENDL evaluations contain J-unknown resonances. These cannot be treated with standard ENDF/B processing codes; instead they should be treated with RESEND (a modified version of RESEND) as documented by T. Nakagawa in the report JAERI-M-84-192. This code is available from the OECD NEA Data Bank, B.P. N° 9 (Bât. 45), F-91190 Gif-sur-Yvette, France.

* D. Garber, C. Dunford, S. Pearlstein, BNL-NCS-50496 = ENDF-102, first ed. Oct. 1975. Reprint by IAEA as IAEA-NDS-74. Summary of ENDF/B format see IAEA-NDS-10.

Table

Contents and status of JENDL-2 in ENDF-IV Format

Nuclide	Mat No.	Author and Reference	Comment
1-H-1	2011	M. Yamamoto, JAERI-1261(1979)	Compiled by K. Shibata (1983) Main part was carried over from JENDL-1.
1-H-2	2012	K. Shibata, T. Narita, S. Igarasi, JAERI-M-83-006	New evaluation for JENDL-2 (1983).
3-Li-6	2031	S. Komoda, K. Shibata S. Igarasi, JAERI-M-7148(1977)	Based on JENDL-1 evaluation (1977). Partly revised by S. Komoda (1981).
Note: see JAERI-M-84-198 for 3-Li-6/JENDL-3.			
3-Li-7	2032	K. Shibata (1982) JAERI-M-84-163	New evaluation for JENDL-2 (1982).
4-Be-9	2041	K. Shibata, K. Ioki (1982) JAERI-M-84-165 (Sept. 1984)	New evaluation for JENDL-2 (1982).
Note: See JAERI-M-84-226 for 4-Be-9/JENDL-3.			
5-B-10	2051	M. Yamamoto, JAERI-1261(1979)	Based on JENDL-1 evaluation.
6-C-12	2061	M. Yamamoto, JAERI-1261(1979)	Main part was carried over from JENDL-1 (1983).
9-F-19	2091	T. Sugi, K. Nishimura, JAERI-M- 7253 (1977), Engl. transl. ORNL-TR-4605	Data above 100 keV were evalu- ated (1977). Resonance para- meters were evaluated by T. Sugi (1983). Modification of angul. distr. was made (1983).
11-Na-23	2111	M. Yamamoto, JAERI-1261(1979)	Based on JENDL-1 evaluation (1975).
13-Al-27	2131	Compilation Group, JAERI-1261 (1979)	Based on JENDL-1 evaluation (1975).
14-Si	2140	T. Asami, JAERI-1261 (1979)	Based on JENDL-1 evaluation (1976). Extended to 20 MeV and corrected (1983).
20-Ca	2200	M. Hatchya (1980)	New evaluation for JENDL-2 (1980). The total and elastic scattering cross-sections were re-evaluated (1984).
20-Ca-40	2201	- " -	New evaluation for JENDL-2 (1980)
20-Ca-42	2202	- " -	- " -

Nuclide	Mat No.	Author and Reference	Comment
20-Ca-43	2203	- " -	New evaluation for JENDL-2 (1980)
20-Ca-44	2204	- " -	- " -
20-Ca-46	2205	- " -	- " -
20-Ca-48	2206	- " -	- " -
21-Sc-45	2211	Y. Oka, T. Nakagawa, Y. Kikuchi, JAERI-M-9981(1982)	New evaluation for JENDL-2 (1982).
23-V-51	2231	S. Tanaka, JAERI-M-82-151 (1982)	New evaluation for JENDL-2 (1982). Background cross-section was replaced (1984).
24-Cr	2240	T. Asami (1982)	New evaluation for JENDL-2 (1982).
24-Cr-50	2241	- " -	- " -
24-Cr-52	2242	- " -	- " -
24-Cr-53	2243	- " -	- " -
24-Cr-54	2244	- " -	- " -
25-Mn-55	2251	T. Hojuyama (1982)	New evaluation for JENDL-2 (1982)
26-Fe	2260	S. Iijima, H. Yamakoshi,	New evaluation for JENDL-2 (1978). Resonance region was revised (1983).
26-Fe-54	2261	S. Iijima, H. Yamakoshi,	New evaluation for JENDL-2 (1978). Scattering radius was corrected (1984).
26-Fe-56	2262	S. Iijima, H. Yamakoshi,	New evaluation for JENDL-2 (1978).
26-Fe-57	2263	S. Iijima, H. Yamakoshi,	New evaluation for JENDL-2 (1978).
26-Fe-58	2264	Compilation Group, JAERI-1261 (1979)	Based on JENDL-1 evaluation (1976). Resonance region and energy distributions were revised (1983).
27-Co-59	2271	T. Aoki, T. Asami (1982)	New evaluation for JENDL-2 (1982).

Nuclide	Mat No.	Author and Reference	Comment
28-Ni	2280	Y. Kikuchi, N. Sekine, (1979) JAERI-M-85-101 (1985)	New evaluation for JENDL-2 (1979). Secondary energy distr. were added (1983).
28-Ni-58	2281	- " -	- " -
28-Ni-60	2282	- " -	- " -
28-Ni-61	2283	- " -	- " -
28-Ni-62	2284	- " -	- " -
28-Ni-64	2285	- " -	- " -
29-Cu	2290	S. Igarasi, M. Sasaki (1975)	Based on JENDL-1 evaluation (1975). Data for energies above 35 keV were reevaluated (1983).
29-Cu-63	2291	- " -	- " -
29-Cu-65	2292	- " -	- " -
41-Nb-93	2411	FPND Working Group (1982)	New evaluation for JENDL-2 (1982).
42-Mo	2420	Y. Kikuchi, O. Togawa, T. Watanabe, T. Aoki, Y. Kanda, S. Iijima (1982)	New evaluation for JENDL-2 (1982).
42-Mo-92	2421	- " -	- " -
42-Mo-94	2422	Y. Kikuchi, O. Togawa, T. Watanabe, T. Aoki, Y. Kanda, S. Iijima (1982)	New evaluation for JENDL-2 (1982).
42-Mo-95	2423	- " -	- " -
42-Mo-96	2424	- " -	- " -
42-Mo-97	2425	- " -	- " -
42-Mo-98	2426	- " -	- " -
42-Mo-100	2427	- " -	- " -
72-Hf-174	2721	K. Hida, T. Yoshida, S. Iijima, H. Takano, Y. Kikuchi, T. Asami (1982)	New evaluation for JENDL-2 (1982).
72-Hf-176	2722	- " -	- " -

Nuclide	Mat No.	Author and Reference	Comment
72-Hf-177	2723	- " -	New evaluation for JENDL-2 (1982).
72-Hf-178	2724	- " -	- " -
72-Hf-179	2725	- " -	- " -
72-Hf-180	2726	- " -	- " -
73-Ta-181	2731	H. Yamakoshi, Y. Kikuchi, JAERI 1261 (1979)	Based on JENDL-1 evaluation (1976). Extended to 20 MeV, secondary energy distributions revised and unresolved resonance parameters added (1983)
82-Pb	2820	T. Asami (1981)	New evaluation for JENDL-2 (1981). Total cross-section was reevaluated (1984)
82-Pb-204	2821	- " -	New evaluation for JENDL-2 (1981).
82-Pb-206	2822	- " -	- " -
82-Pb-207	2823	- " -	- " -
82-Pb-208	2824	- " -	- " -
90-Th-228	2901	T. Ohsawa, M. Ohta, Memoris Faculty of Engineering, Kyushu Univ., 40, 149 (1980)	New evaluation for JENDL-2 (1981). Fission spectrum was added. Resonance parameters, total, (n,2n), (n,3n) cross sections were modified (1983).
90-Th-230	2902	- " -	- " -
90-Th-232	2903	T. Ohsawa, M. Ohta, J. Nucl. Sci. Technol, 18, 408 (1981)	New evaluation for JENDL-2 (1980)
90-Th-233	2904	T. Ohsawa, M. Ohta, Memoris Faculty of Engineering, Kyushu Univ., 40, 149 (1980)	New evaluation for JENDL-2 (1981). Fission spectrum was added. Resonance parameters, total, (n,2n), (n,3n) cross sections were modified (1983).
90-Th-234	2905	T. Ohsawa, M. Ohta, Memoris Faculty of Engineering, Kyushu Univ., 40, 149 (1980)	New evaluation for JENDL-2 (1981). Fission spectrum was added. Resonance parameters, total, (n,2n), (n,3n) cross sections were modified (1983).

Nuclide	Mat No.	Author and Reference	Comment
91-Pa-233	2911	Y. Kanda, JENDL Compilation Group (1976)	Based on Drake and Nichols evaluation, see GA-7462 (1967) Modified by using optical and statistical model (1976). Extended to 20 MeV, secondary energy distribution revised (1983).
92-U-233	2921	N. Asano, H. Matsunobu, Y. Kikuchi (1982)	New evaluation for JENDL-2
92-U-234	2922	T. Asami, JAERI 1261 (1979)	Based on JENDL-1 evaluation. Extended to 20 MeV (1983). Resonance formula was changed, secondary energy distributions were added (1984).
92-U-235	2923	H. Matsunobu, A. Asami, Y. Kikuchi, 79 Knoxville, 715 (1979).	New evaluation for JENDL-2 (1979).
92-U-236	2924	T. Yoshida (1979).	New evaluation for JENDL-2 (1979). Secondary energy distributions were added (1983).
92-U-238	2925	Y. Kanda, T. Nakagawa, Y. Kikuchi, (1979)	New evaluation for JENDL-2 (1979). Secondary energy distributions were revised (1983).
93-Np-237	2931	N. Wachi, Y. Kanda, Y. Kikuchi (1979)	New evaluation for JENDL-2 (1979).
93-Np-239	2932	Y. Kanda, JENDL Compilation Group, JAERI-1261 (1979)	Based on JENDL-1 evaluation (1976). Extended to 20 MeV, secondary energy distributions revised (1983)
94-Pu-236	2941	T. Hojuyama, Proc. of 79 Fall Meet. of A.E.S.J., Tokai (1979)	New evaluation for JENDL-2 (1979)
94-Pu-238	2942	R. Kawakita (1979)	New evaluation for JENDL-2 (1979)
94-Pu-239	2943	M. Kawai, T. Yoshida, Y. Kikuchi (1979)	New evaluation for JENDL-2 (1979).

Nuclide	Mat No.	Author and Reference	Comment
94-Pu-240	2944	T. Murata, A. Zukeran, Y. Kikuchi (1979)	New evaluation for JENDL-2 (1979). Secondary energy distributions were added (1983).
94-Pu-241	2945	Y. Kikuchi, N. Sekine, J. Nucl. Sci. Technol, 17 567 (1980), and JAERI-M-84-111 (1984)	New evaluation for JENDL-2 (1979). Secondary energy distributions were added (1983).
94-Pu-242	2946	M. Kawai, T. Murata (1981)	New evaluation for JENDL-2 (1981). Secondary energy distributions were added (1983).
95-Am-241	2951	Y. Kikuchi, JAERI-M82-096 (1982)	New evaluation for JENDL-2 (1982).
95-Am-242g	2952	T. Nakagawa, S. Igarasi, JAERI-M-8903 (1980)	New evaluation for JENDL-2 (1980)
95-Am-242m	2953	T. Nakagawa, S. Igarasi, JAERI-M-8903 (1980)	New evaluation for JENDL-2 (1980). Cross-sections around 3.5 eV were corrected (1984)
95-Am-243	2954	Y. Kikuchi, JAERI-M82-096 (1982)	Complete reevaluation for JENDL-2 (1982)
96-Cm-242	2961	S. Igarasi, T. Nakagawa, JAERI-M-8342 (1979)	New evaluation for JENDL-2 (1979)
96-Cm-243	2962	T. Nakagawa, S. Igarasi, JAERI-M-9601 (1981)	New evaluation for JENDL-2 (1981)
96-Cm-244	2963	S. Igarasi, T. Nakagawa, JAERI-M-7175 (1977)	New evaluation for JENDL-2 (1977)
96-Cm-245	2964	S. Igarasi, T. Nakagawa, JAERI-M-7733 (1978)	New evaluation for JENDL-2 (1978)