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Rev. 0

INTERNATIONAL ATOMIC ENERGY AGENCY

NUCLEAR DATA SERVICES

DOCUMENTATION SERIES OF THE IAEA NUCLEAR DATA SECTION

XA9950009

EURLIB-4

Summary Documentation

Abstract: EURLIB-4 is a multigroup neutron and gamma data library based on ENDF/B-4, originated by Euratom/Ispra and IKE/Stuttgart. A summary documentation is given on the EURLIB-4 version that is available on magnetic tape, costfree, from the IAEA Nuclear Data Section.

H.D. Lemmel

June 1982

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EURLIB-4

Data: Multigroup library based on ENDF/B-4;
100 neutron groups, 20 gamma group, 24 materials

Purpose: Transport calculations, particularly shielding

Originator: EURATOM/Ispra and IKE/Stuttgrat

Version: EURLIB-3 was received at NDS from Ispra first in 1979. D.W. Muir then discovered an inconsistency in some gamma-gamma interactions. The corrected version, EURLIB-4, was received in Jan. 1980 from Elena Caglioti, Ispra. The format available from NDS is the fixed field FIDO fromat produced at NDS by the code FRIX from the free field FIDO format received from Ispra.

Group structure: See table I attached

Materials included: See table II attached

For use with codes: ANISN, DOT, MORSE

References: ESIS Newsletters 4 (1976) and 19 (1976)
Proc. IAEA Conf. on "Nuclear Reactor Shielding", Knoxville, 18-23 April 1977, p. 482

Related references:

Increased Stuttgart version of EURLIB-4:
Proc. of a Specialists' Meeting on Nuclear Data and Benchmarks for Reactor Shielding,
Paris, 27-29 Oct. 1980

Table I. Neutron/Gamma-Ray Coupled Set Energy Group Structure (EURLIB-3 120-group structure)

Group Index and Group Upper Energy (eV)

1[a]	1.4918 +7[c]	41	4.0762 +5	81	2.7536 +2
2	1.3499 +7	42	3.6883 +5	82	2.1445 +2
3	1.2214 +7	43	3.3373 +5	83	1.6702 +2
4	1.1052 +7	44	3.0197 +5	84	1.3007 +2
5	1.0000 +7	45	2.7324 +5	85	1.0130 +2
6	9.0484 +6	46	2.4724 +5	86	7.8893 +1
7	8.1873 +6	47	2.2371 +5	87	6.1442 +1
8	7.4082 +6	48	2.0242 +5	88	4.7851 +1
9	7.0469 +6	49	1.8316 +5	89	3.7267 +1
10	6.7032 +6	50	1.6573 +5	90	2.9023 +1
11	6.3763 +6	51	1.4996 +5	91	2.2603 +1
12	6.0653 +6	52	1.3569 +5	92	1.7603 +1
13	5.4881 +6	53	1.2277 +5	93	1.0677 +1
14	4.9659 +6	54	1.1109 +5	94	8.3153 +0
15	4.7240 +6	55	8.6517 +4	95	5.0435 +0
16	4.4933 +6	56	6.7379 +4	96	3.0592 +0
17	4.0657 +6	57	5.2475 +4	97	1.8554 +0
18	3.6788 +6	58	4.0868 +4	98	1.1254 +0
19	3.3287 +6	59	3.1828 +4	99	6.2500 -1
20	3.0112 +6	60	2.6050 +4	100	4.1399 -1
21	2.7253 +6	61	2.4788 +4	101[b]	1.40 +7
22	2.4660 +6	62	2.3570 +4	102	1.20 +7
23	2.3460 +6	63	2.1870 +4	103	1.00 +7
24	2.2313 +6	64	1.9305 +4	104	8.00 +6
25	2.0190 +6	65	1.5034 +4	105	6.50 +6
26	1.8268 +6	66	1.1709 +4	106	5.00 +6
27	1.6530 +6	67	9.1188 +3	107	4.00 +6
28	1.4957 +6	68	7.1017 +3	108	3.00 +6
29	1.3524 +6	69	5.5308 +3	109	2.50 +6
30	1.2246 +6	70	4.3074 +3	110	2.00 +6
31	1.1080 +6	71	3.3546 +3	111	1.66 +6
32	1.0026 +6	72	2.6126 +3	112	1.33 +6
33	9.0718 +5	73	2.0347 +3	113	1.00 +6
34	8.2085 +5	74	1.5846 +3	114	8.00 +5
35	7.4274 +5	75	1.2341 +3	115	6.00 +5
36	6.7206 +5	76	9.6112 +2	116	4.00 +5
37	6.0810 +5	77	7.4652 +2	117	3.00 +5
38	5.5023 +5	78	5.8295 +2	118	2.00 +5
39	4.9787 +5	79	4.5400 +2	119	1.00 +5
40	4.5049 +5	80	3.5357 +2	120	5.00 +4 - 2.00 +4

a. First neutron group
b. First gamma-ray group
c. Read as $1.4918 \times 10^{+7}$

Table II. Table of Contents of
IAEA/NDS Version of EURLIB-4

MATERIAL NUMBER 1

1000 H	P-0	NR = 972
1000 H	P-1	NR = 889
1000 H	P-2	NR = 897
1000 H	P-3	NR = 894
1000 H	P-4	NR = 897
1000 H	P-5	NR = 895

RECORD COUNT TO THIS POINT
5450

MATERIAL NUMBER 2

2000 HE	P-0	NR = 245
2000 HE	P-1	NR = 219
2000 HE	P-2	NR = 219
2000 HE	P-3	NR = 219
2000 HE	P-4	NR = 219
2000 HE	P-5	NR = 219

RECORD COUNT TO THIS POINT
6796

MATERIAL NUMBER 3

3006 LI-6	P-0	NR = 555
3006 LI-6	P-1	NR = 173
3006 LI-6	P-2	NR = 173
3006 LI-6	P-3	NR = 173
3006 LI-6	P-4	NR = 173
3006 LI-6	P-5	NR = 173

RECORD COUNT TO THIS POINT
8222

MATERIAL NUMBER 4

3007 LI-7	P-0	NR = 506
3007 LI-7	P-1	NR = 164
3007 LI-7	P-2	NR = 164
3007 LI-7	P-3	NR = 164
3007 LI-7	P-4	NR = 164
3007 LI-7	P-5	NR = 164

RECORD COUNT TO THIS POINT
9554

MATERIAL NUMBER 5

5010 B-10	P-0	NR = 385
5010 B-10	P-1	NR = 146
5010 B-10	P-2	NR = 146
5010 B-10	P-3	NR = 146
5010 B-10	P-4	NR = 146
5010 B-10	P-5	NR = 146

RECORD COUNT TO THIS POINT
10675

MATERIAL NUMBER 6

5011 B-11	P-0	NR = 525
5011 B-11	P-1	NR = 138
5011 B-11	P-2	NR = 138
5011 B-11	P-3	NR = 138
5011 B-11	P-4	NR = 138
5011 B-11	P-5	NR = 138

RECORD COUNT TO THIS POINT
11896

MATERIAL NUMBER 7

6000 C	P-0	NR = 288
6000 C	P-1	NR = 137
6000 C	P-2	NR = 139
6000 C	P-3	NR = 137
6000 C	P-4	NR = 139
6000 C	P-5	NR = 137

RECORD COUNT TO THIS POINT
12879

MATERIAL NUMBER 8

8000 O	P-0	NR = 329
8000 O	P-1	NR = 128
8000 O	P-2	NR = 131
8000 O	P-3	NR = 128
8000 O	P-4	NR = 129
8000 O	P-5	NR = 128

RECORD COUNT TO THIS POINT
13858

Table I. (continued)

MATERIAL NUMBER 9

11000 NA	P-0	NR = 593
11000 NA	P-1	NR = 113
11000 NA	P-2	NR = 113
11000 NA	P-3	NR = 113
11000 NA	P-4	NR = 113
11000 NA	P-5	NR = 113

RECORD COUNT TO THIS POINT
15022

MATERIAL NUMBER 10

13000 AL	P-0	NR = 617
13000 AL	P-1	NR = 111
13000 AL	P-2	NR = 111
13000 AL	P-3	NR = 111
13000 AL	P-4	NR = 111
13000 AL	P-5	NR = 111

RECORD COUNT TO THIS POINT
16200

MATERIAL NUMBER 11

14000 SI	P-0	NR = 686
14000 SI	P-1	NR = 111
14000 SI	P-2	NR = 111
14000 SI	P-3	NR = 111
14000 SI	P-4	NR = 111
14000 SI	P-5	NR = 111

RECORD COUNT TO THIS POINT
17447

MATERIAL NUMBER 12

20000 CA	P-0	NR = 589
20000 CA	P-1	NR = 111
20000 CA	P-2	NR = 111
20000 CA	P-3	NR = 111
20000 CA	P-4	NR = 111
20000 CA	P-5	NR = 111

RECORD COUNT TO THIS POINT
18597

MATERIAL NUMBER 13

23000 V	P-0	NR = 787
23000 V	P-1	NR = 103
23000 V	P-2	NR = 103
23000 V	P-3	NR = 103
23000 V	P-4	NR = 103
23000 V	P-5	NR = 103

RECORD COUNT TO THIS POINT
19905

MATERIAL NUMBER 14

24000 CR	P-0	NR = 758
24000 CR	P-1	NR = 103
24000 CR	P-2	NR = 103
24000 CR	P-3	NR = 103
24000 CR	P-4	NR = 103
24000 CR	P-5	NR = 103

RECORD COUNT TO THIS POINT
21184

MATERIAL NUMBER 15

25000 MN	P-0	NR = 765
25000 MN	P-1	NR = 103
25000 MN	P-2	NR = 103
25000 MN	P-3	NR = 103
25000 MN	P-4	NR = 103
25000 MN	P-5	NR = 103

RECORD COUNT TO THIS POINT
22470

MATERIAL NUMBER 16

26000 FE	P-0	NR = 772
26000 FE	P-1	NR = 103
26000 FE	P-2	NR = 103
26000 FE	P-3	NR = 103
26000 FE	P-4	NR = 103
26000 FE	P-5	NR = 103

RECORD COUNT TO THIS POINT
23763

Table I. (continued)

MATERIAL NUMBER 17

28000 NI	P-0	NR = 656
28000 NI	P-1	NR = 103
28000 NI	P-2	NR = 103
28000 NI	P-3	NR = 103
28000 NI	P-4	NR = 103
28000 NI	P-5	NR = 103

RECORD COUNT TO THIS POINT
24940

MATERIAL NUMBER 18

29000 CU	P-0	NR = 870
29000 CU	P-1	NR = 103
29000 CU	P-2	NR = 103
29000 CU	P-3	NR = 103
29000 CU	P-4	NR = 103
29000 CU	P-5	NR = 103

RECORD COUNT TO THIS POINT
26331

MATERIAL NUMBER 19

41000 NB	P-0	NR = 761
41000 NB	P-1	NR = 101
41000 NB	P-2	NR = 101
41000 NB	P-3	NR = 101
41000 NB	P-4	NR = 101
41000 NB	P-5	NR = 101

RECORD COUNT TO THIS POINT
27603

MATERIAL NUMBER 20

73000 W	P-0	NR =1017
73000 W	P-1	NR = 101
73000 W	P-2	NR = 101
73000 W	P-3	NR = 101
73000 W	P-4	NR = 101
73000 W	P-5	NR = 101

RECORD COUNT TO THIS POINT
29131

MATERIAL NUMBER 21

82000 PB	P-0	NR = 776
82000 PB	P-1	NR = 101
82000 PB	P-2	NR = 101
82000 PB	P-3	NR = 101
82000 PB	P-4	NR = 101
82000 PB	P-5	NR = 101

RECORD COUNT TO THIS POINT
30418

MATERIAL NUMBER 22

92235 U-235	P-0	NR = 962
92235 U-235	P-1	NR = 101
92235 U-235	P-2	NR = 101
92235 U-235	P-3	NR = 101
92235 U-235	P-4	NR = 101
92235 U-235	P-5	NR = 101

RECORD COUNT TO THIS POINT
31891

MATERIAL NUMBER 23

92238 U-238	P-0	NR = 900
92238 U-238	P-1	NR = 101
92238 U-238	P-2	NR = 101
92238 U-238	P-3	NR = 101
92238 U-238	P-4	NR = 101
92238 U-238	P-5	NR = 101

RECORD COUNT TO THIS POINT
33302

MATERIAL NUMBER 24

94239 PU-239	P-0	NR =1021
94239 PU-239	P-1	NR = 101
94239 PU-239	P-2	NR = 101
94239 PU-239	P-3	NR = 101
94239 PU-239	P-4	NR = 101
94239 PU-239	P-5	NR = 101

RECORD COUNT TO THIS POINT
34834