

**Graphics and Tables
of the SCALE 27-Group ENDF/B-IV Cross-Section Library**

August 1996

**Tokai Works
Power Reactor and Nuclear Fuel Development Corporation**

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動力炉・核燃料開発事業団

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Graphics and Tables of the SCALE 27-Group ENDF/B-IV Cross-Sections Library

Toshiyuki Suto* and Yuki Takahashi**

Abstract

The 27-group ENDF/B-IV cross section library included in the SCALE code system is a general-purpose criticality analysis library. This library has been extensively validated against critical experiments and has been widely used in the world.

The purpose of this report is to present the cross sections in a graphic manner so that the report can be useful for criticality analysts to understand the characteristics of the library. The graphic plots include total, absorption, capture cross sections and fission cross section multiplied by ν -value. In addition, numerical data of these cross sections and elastic, inelastic, fission cross section and ν -value are tabulated for convenience.

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** Nuclear Energy System Inc.

SCALE 27 群核断面積ライブラリのグラフ及びデータ集

須藤俊幸*、高橋有紀**

要 旨

SCALEコードシステム内の27群核断面積ライブラリは汎用の臨界解析用ライブラリであり、十分な検証が行われ、臨界評価において最もよく使用されるものの1つである。このライブラリのデータを視覚的に表現することで、各種の核データの特徴を把握し、臨界評価を行う方々にいくらかでも役立つものとするべく、ライブラリに含まれる約80核種の核データについてグラフにまとめた。グラフには、全断面積、吸収及び捕獲断面積、核分裂断面積と核分裂当たりの中性子発生数の積を含めた。また便利のために、これらに加えて弾性及び非弾性散乱断面積、核分裂断面積並びに核分裂当たりの中性子発生数の数値データを表として記載した。

* 再処理工場工務部技術課 解析・評価 Gr

** 原子力システム(株)

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1. Introduction

The 27-group ENDF/B-IV library included in the SCALE code system⁽¹⁾ is a general-purpose criticality analysis library. This library has been extensively validated against critical experiments and has been widely used in the world.

The purpose of this reports is to present the cross sections in a graphic manner. We have found very colorful and understandable graphic plots of the Hansen-Roach cross sections presented by N.L.Privost and M.L.Prueitt⁽²⁾. We wished to make such beautiful plots but we don't have powerful graphic software at hand. Instead, we made simpler X-Y plots and attached tables of the cross sections for convenience. We hope these plots will be of some use for understanding the characteristics of the library.

2. Explanation of the presented data

The presented data are from Scale 4.2 - 27 group neutron library based on ENDF-B version 4 data (compiled for NRC 1/27/89; last updated 9/15/93). Table of contents for this library is shown in Table 2.2. The neutron energy group structure of the library is shown in Table 2.3.

Numerical data of the cross-sections were produced by ALE (see section M15.4 in Ref.1) which is a utility module in SCALE to list information from the 27 group AMPX master library. The data presented in this reports are shown below (Table 2.1).

Table 2.1 List of the presented cross section data

item	MT number*	description	presented form	
			graph	table
total	1	total cross section	○	○
elastic	2	elastic scattering cross section		○
inelastic	4	total inelastic cross section		○
fission	18	total fission cross section	○	○
absorption	27	absorption cross section (sum of fission and neutron disappearance cross section) includes particle reactions	○	○
capture	102	(n, γ) radiative capture cross section	○	○
ν	452	average total(prompt plus delayed) number of neutrons released per fission event		○
ν *fission	1452	product of ν times fission cross section	○	○

* see section F3.12 in Ref.1

In graphic data, when part or whole of absorption and capture cross sections are the same, only capture cross sections are plotted (by blue line).

Table 2.2 Table of contents for the 27 group AMPX master library

			Nuclide ID
hydrogen	endf/b-iv mat 1269/thrm1002	updated 10/12/89	1001
deuterium	endf/b-iv mat 1120	updated 10/12/89	1002
helium-4	endf/b-iv mat 1270	updated 10/12/89	2004
li-6	1271 218 gp 1/e*sig 040375(5)		3006
li-7	1272 218 gp 1/e*sig 040375(5)		3007
beryllium-9	endf/b-iv mat 1289/thrm1064	updated 10/12/89	4009
b-10	1273 218ngp 042375 p-3 293k		5010
boron-11	endf/b-iv mat 1160	updated 10/12/89	5011
carbon-12	endf/b-iv mat 1274/thrm1065	updated 10/12/89	6012
nitrogen-14	endf/b-iv mat 1275	updated 10/12/89	7014
oxygen-16	endf/b-iv mat 1276	updated 10/12/89	8016
fluorine	endf/b-iv mat 1277	updated 10/12/89	9019
sodium-23	endf/b-iv mat 1156	updated 10/12/89	11023
mg	1280 218 gp 1/e*sig 040375(5)		12000
al-27	1193 218 gp 040375(5)		13027
silicon	endf/b-iv mat 1194	updated 10/12/89	14000
p-31	7019 218ngp wt 1/est 042375 p3 293k		15031
sulfur	lendl mat 7020	updated 9/07/89	16000
chlorine	(mat 1149 from version iv) using 1/sigt weighting		17000
potassium	endf/b-iv mat 1150	updated 10/12/89	19000
calcium	endf/b-iv mat 1195	updated 9/07/89	20000
titanium	endf/b-iv mat 1286	updated 10/12/89	22000
v	1196 218 gp 1/e*sig 040375(5)		23051
cr	1191 218ngp wt 1/e p-3 293k sigp=5+4 re(042375)		24000
cr	1191 wt ss-304(1/est) p-3 293k sp=5+4(42375)'		24304
cr	1191 wt inconl(1/est) p-3 293k sp=5+4(42375)'		24404
manganese-55	endf/b-iv mat 1197	updated 10/12/89	25055
iron	endf/b-iv mat 1192	updated 10/12/89	26000
fe	1192 wt ss-304(1/est) p-3 293k sp=5+4(42375)'		26304
fe	1192 wt inconl(1/est) p-3 293k sp=5+4(42375)'		26404
cobalt-59	endf/b-iv mat 1199	updated 10/12/89	27059
ni	1190 218ngp wt 1/e p-3 293k sigp=5+4 re(042375)		28000
ni	1190 wt ss-304(1/est) p-3 293k sp=5+4(42375)'		28304
ni	1190 wt inconl(1/est) p-3 293k sp=5+4(42375)'		28404
copper	endf/b-iv mat 1295	updated 10/12/89	29000
bromine-79	endf/b-iv mat 108	updated 10/12/89	35079
bromine-81	endf/b-iv mat 112	updated 10/12/89	35081
zirconium	endf/b-iv mat 7141	updated 10/12/89	40000
zircalloy	endf/b-iv mat 1284	updated 10/12/89	40302
niobium-93	endf/b-iv mat 1189	updated 10/12/89	41093
mo	(1287) sigp=5+4 newxlacs 218ngp f-1/e-m p-3 293k		42000
silver-107	endf/b-iv mat 1138	updated 10/12/89	47107
silver-109	endf/b-iv mat 1139	updated 10/12/89	47109
cd	1281 wt 1/est 218ngp p-3 293k re(042375)		48000
indium-113	endf/b-iv mat 445	updated 10/12/89	49113
indium-115	endf/b-iv mat 449	updated 10/12/89	49115
sn	7039 wt 1/est 218ngp p-3 293k re(042375)		50000
xenon-135	endf/b-iv mat 1294	updated 10/12/89	54135
cesium-133	endf/b-iv mat 1141	updated 10/12/89	55133
ba-138	7040 218ngp wt 1/est 042375 p3 293k		56138
gd	(1030) sig0=1.+5p3 293k f-1/e-m vb 61479		64000

Table 2.2 Table of contents for the 27 group AMPX master library (continued)

			Nuclide ID
dyprosium-164	endf/b-iv mat 1031	updated 10/12/89	66164
lutetium-175	endf/b-iv mat 1032	updated 10/12/89	71175
lutetium-176	endf/b-iv mat 1033	updated 10/12/89	71176
hf(nat)	1034 218ngp wt 1/e p-3 sigp=5+4 293k re(042375)		72000
tantalum-181	endf/b-iv mat 1285	updated 10/12/89	73181
tungsten-182	endf/b-iv mat 1128	updated 10/12/89	74182
tungsten-183	endf/b-iv mat 1129	updated 10/12/89	74183
tungsten-184	endf/b-iv mat 1130	updated 10/12/89	74184
tungsten-186	endf/b-iv mat 1131	updated 10/12/89	74186
rhenium-185	endf/b-iv mat 1083	updated 10/12/89	75185
rhenium-187	endf/b-iv mat 1084	updated 10/12/89	75187
gold-197	endf/b-iv mat 1283	updated 10/12/89	79197
pb	1288 218ngp 042375 p-3 293k		82000
thorium-232	endf/b-iv mat 1296	updated 10/12/89	90232
pa-233	1297 218 gp wt f-1/e-m 090376 p3 293k		91233
u-233	1260 sigp=5+4 newxlacs 218ngp p-3 293k		92233
uranium-234	endf/b-iv mat 1043	updated 10/12/89	92234
uranium-235	endf/b-iv mat 1261	updated 10/12/89	92235
u-236	1163 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)		92236
uranium-238	endf/b-iv mat 1262	updated 10/12/89	92238
neptunium-237	endf/b-iv mat 1263	updated 10/12/89	93237
pu-238	1050 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)		94238
plutonium-239	endf/b-iv mat 1264	updated 10/12/89	94239
plutonium-240	endf/b-iv mat 1265	updated 10/12/89	94240
plutonium-241	endf/b-iv mat 1266	updated 10/12/89	94241
plutonium-242	endf/b-iv mat 1161	updated 10/12/89	94242
am-241	1056 sigp=5+4 newxlacs 218ngp p-3 293k		95241
am-243	1057 218 gp wt f-1/e-m 090376 p3 293k		95243
curium-244	endf/b-iv mat 1162	updated 10/12/89	96244

Table 2.3 SCALE neutron energy group structure of the 27 group cross section library

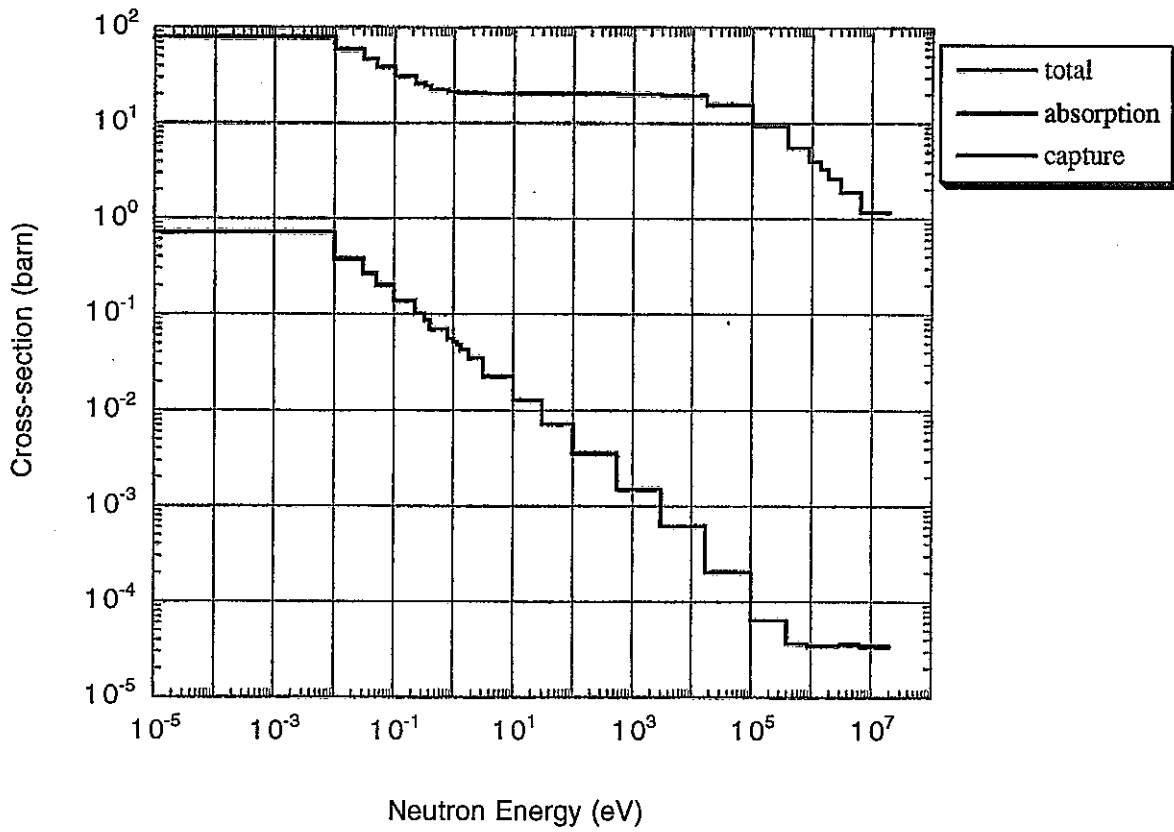
Grp.No.	upper energy (eV)	Grp.No.	upper energy (eV)
1	2.000E+7	16	1.770E+0
2	6.434E+6	17	1.300E+0
3	3.000E+6	18	1.130E+0
4	1.850E+6	19	1.000E+0
5	1.400E+6	20	8.000E-1
6	9.000E+5	21	4.000E-1
7	4.000E+5	22	3.250E-1
8	1.000E+5	23	2.250E-1
9	1.700E+4	24	1.000E-1
10	3.000E+3	25	5.000E-2
11	5.500E+2	26	3.000E-2
12	1.000E+2	27	1.000E-2
13	3.000E+1	28	1.000E-5
14	1.000E+1		
15	3.050E+0		

3. References

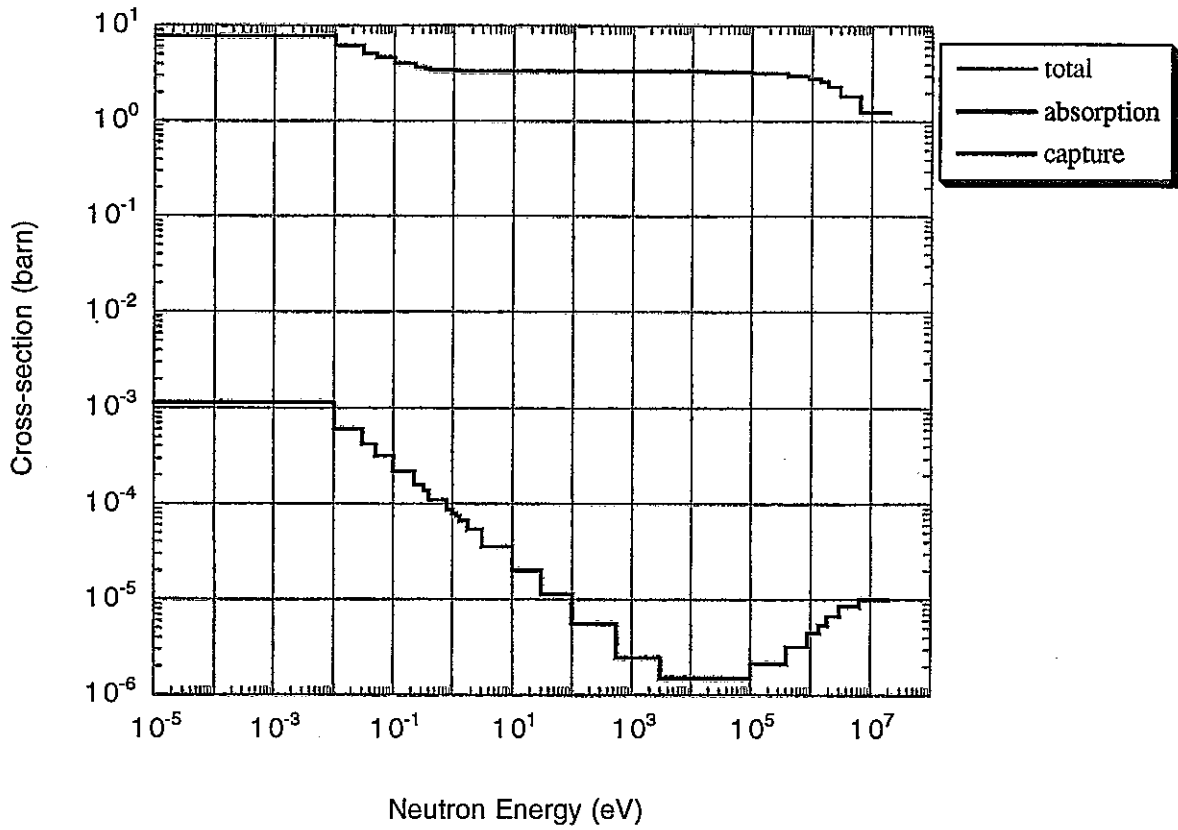
1. "SCALE 4.2 A Modular Code System for Performing Standardized Computer Analyses for Licensing Evaluation", NUREG/CR-0200 Rev.4 (ORNL/NUREG/CSD-2/R4), Vols I, II, and III (draft November 1993), available from Radiation Shielding Information Center as CCC-545
2. Norman L. Pruvost, Melvin L. Prueitt, "The Hansen-Roach Cross Sections: A Graphical Representation

Graphic Data

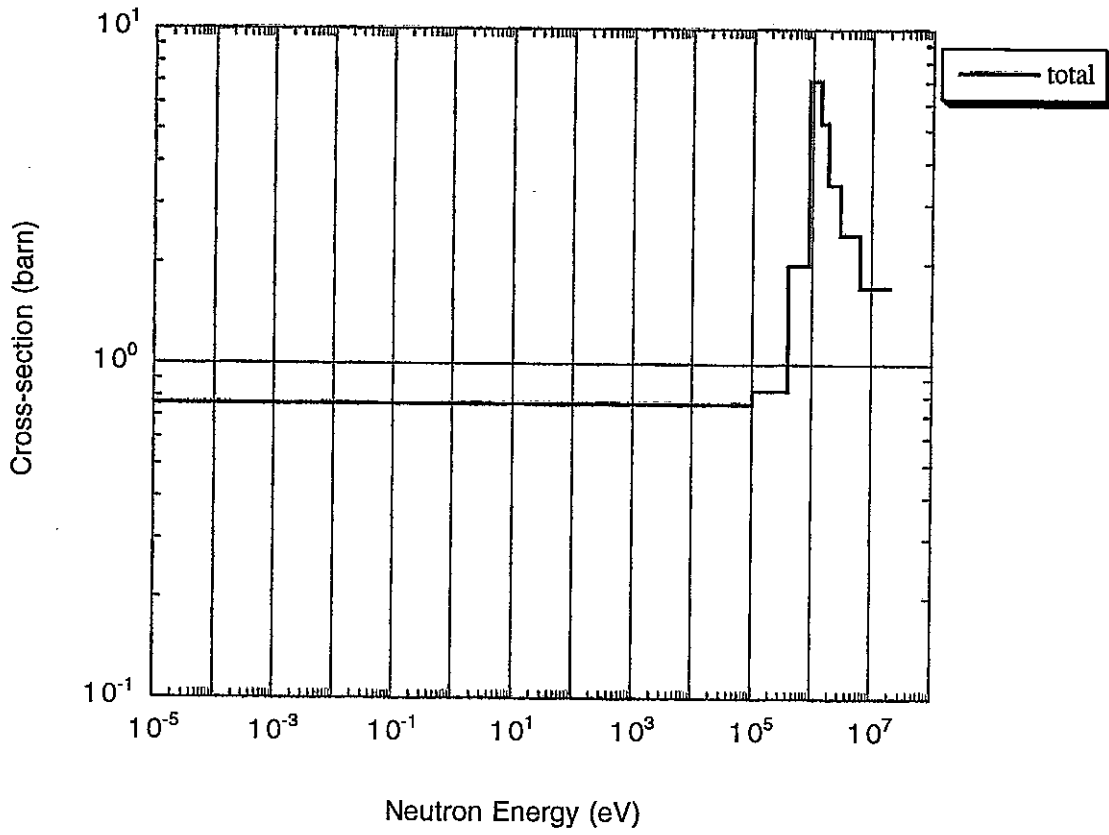
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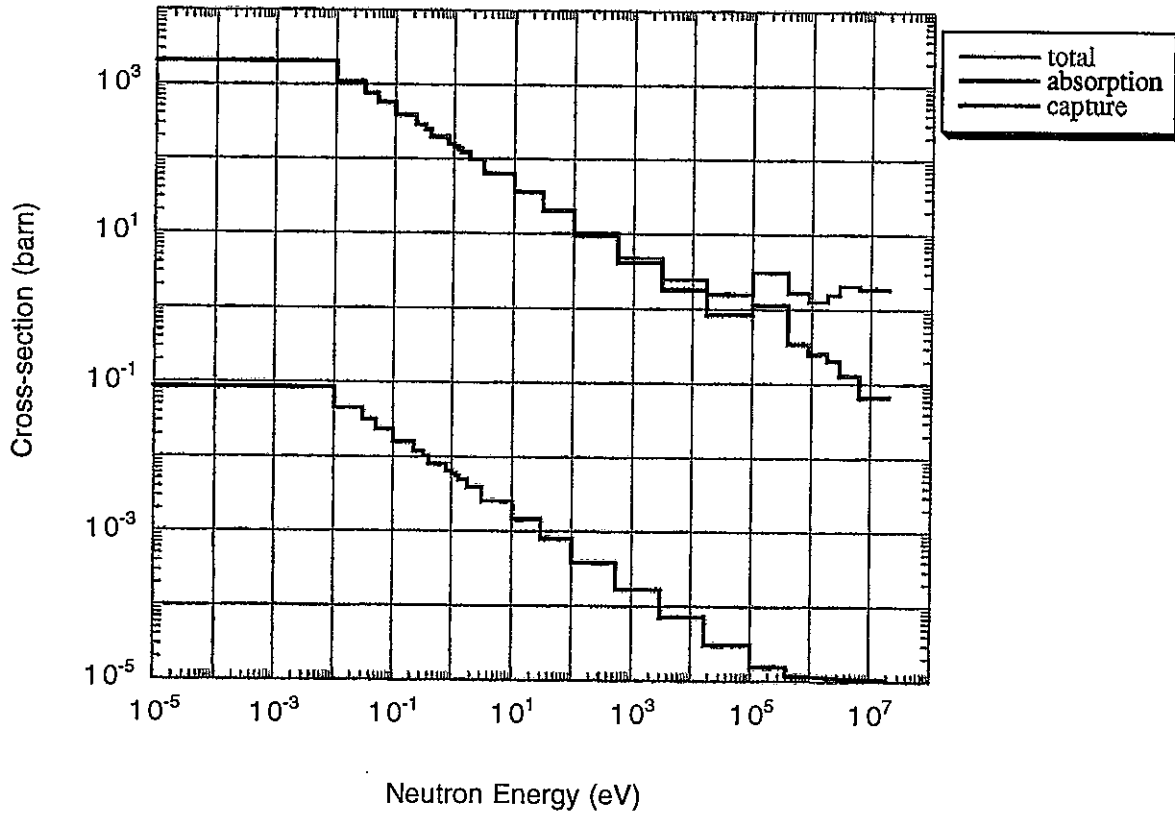
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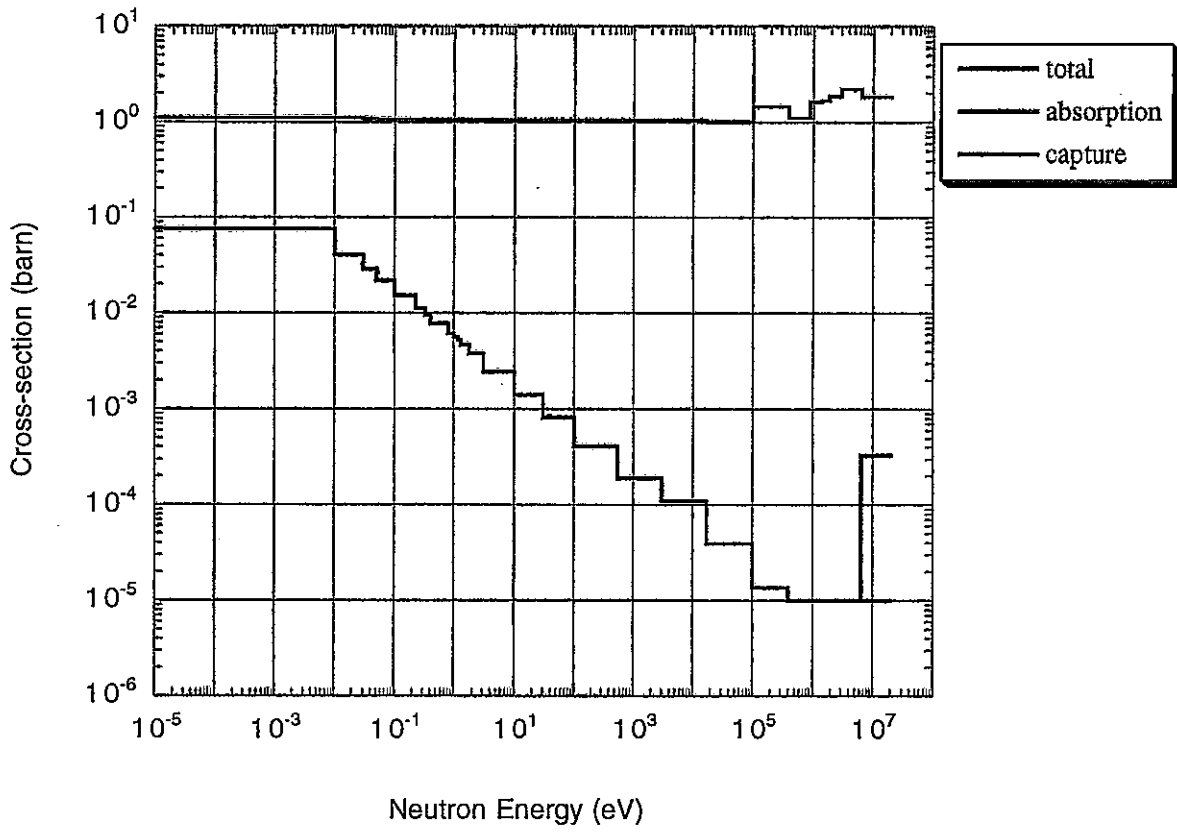
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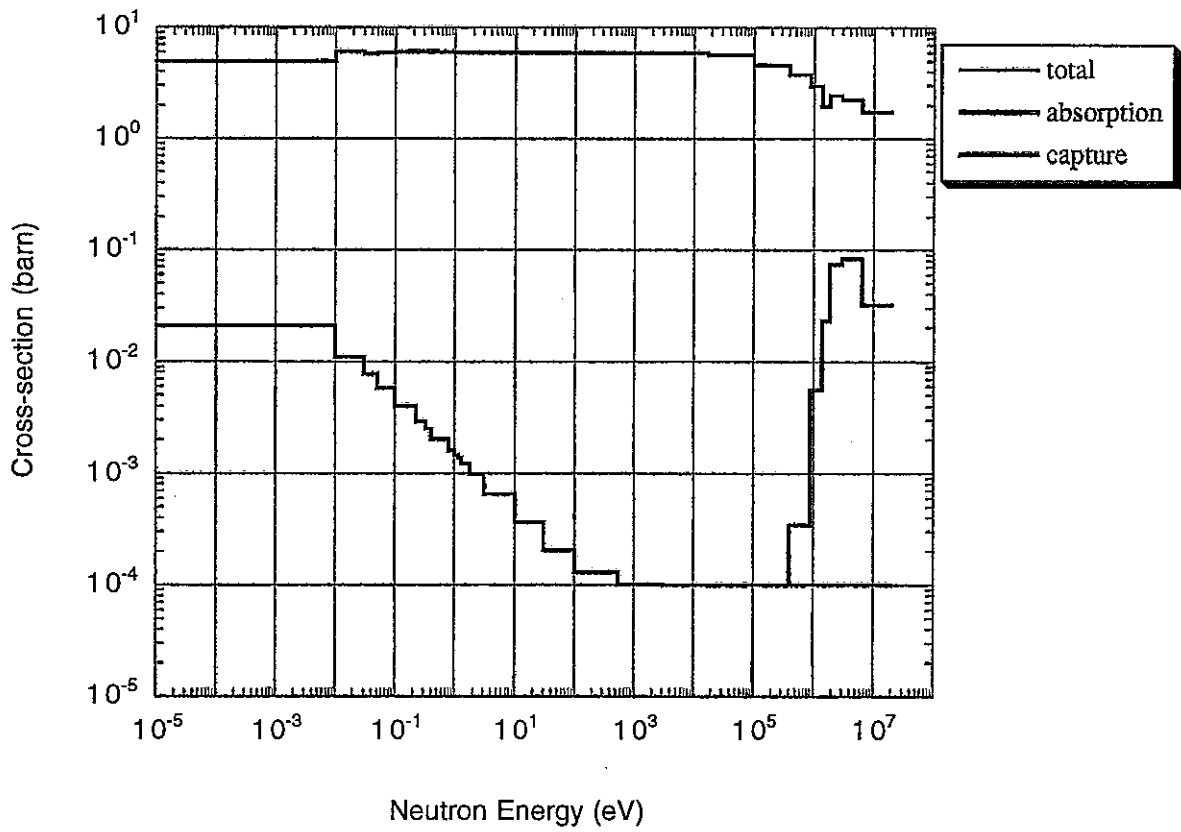
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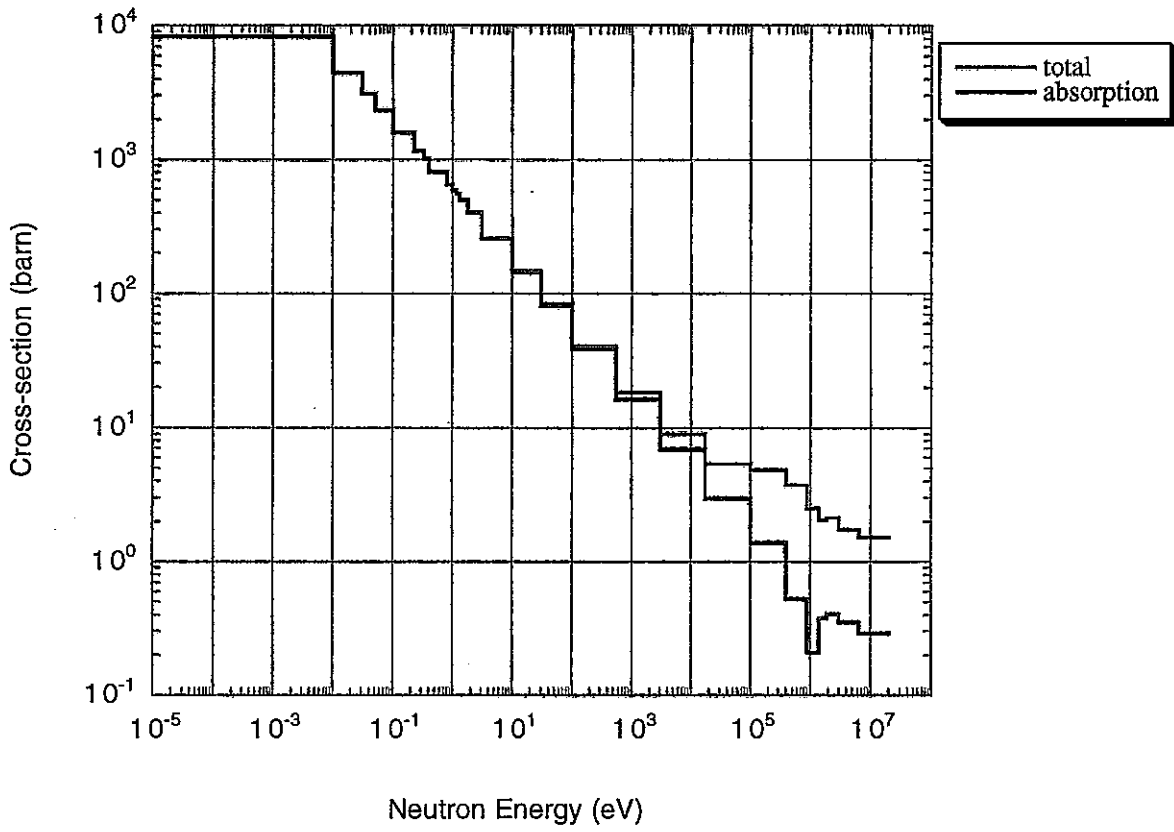
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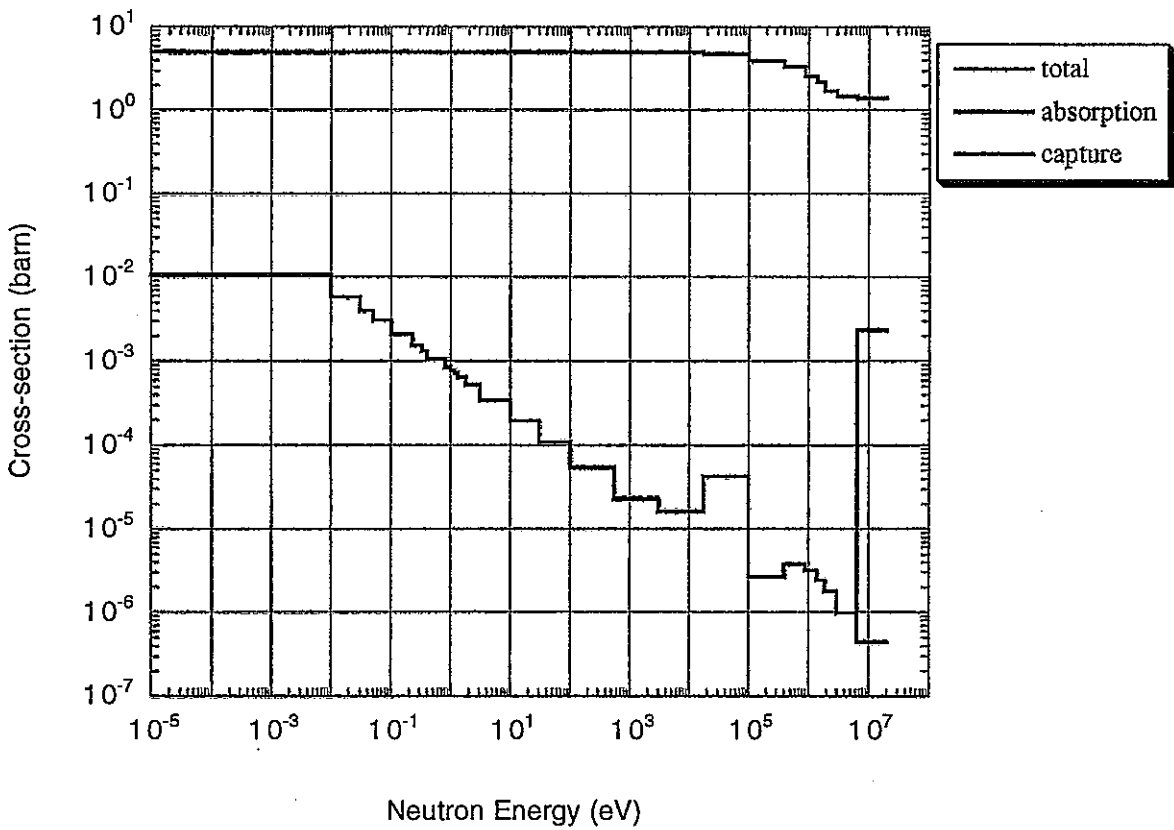
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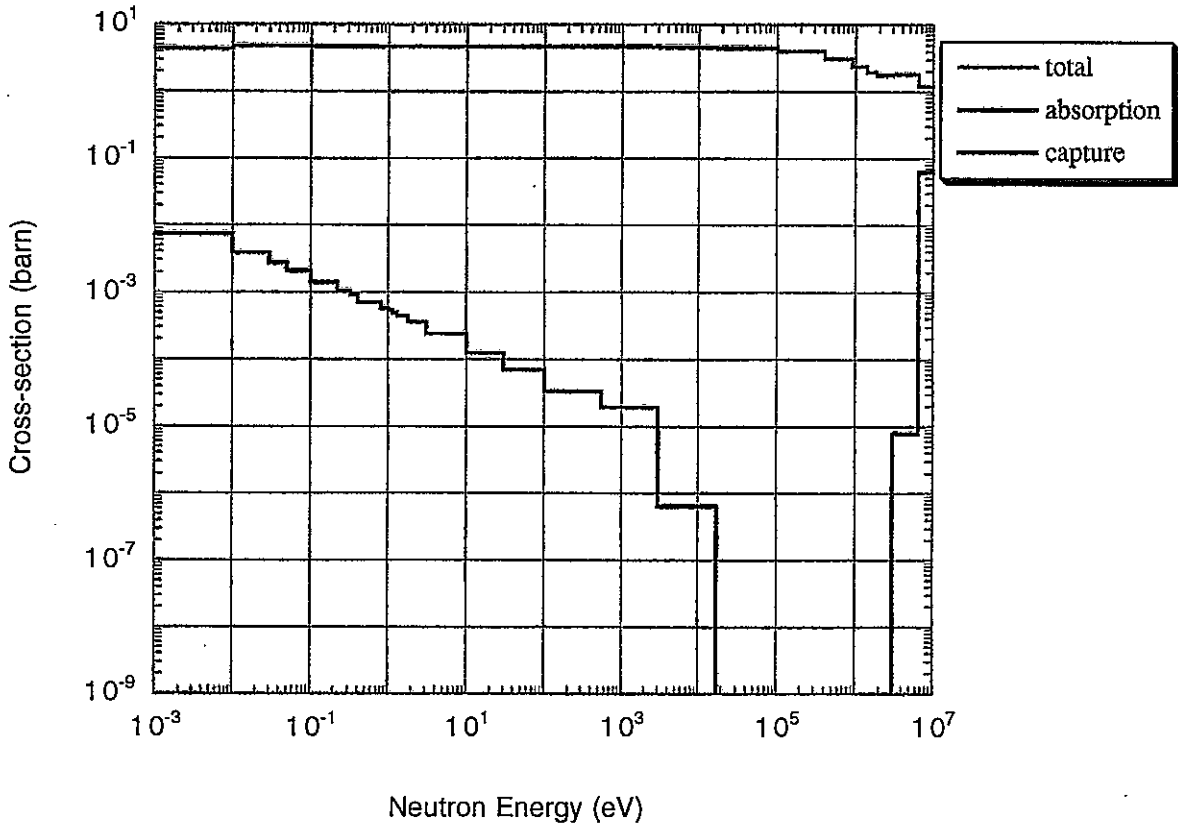
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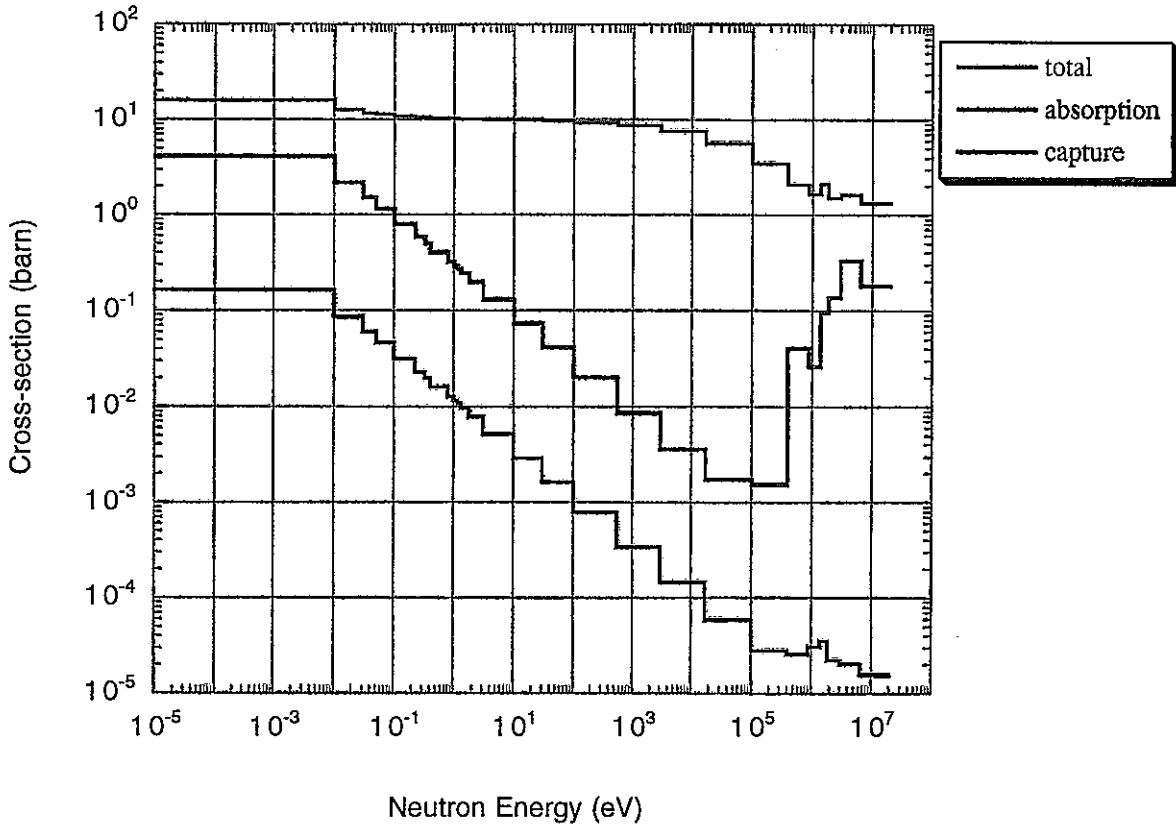
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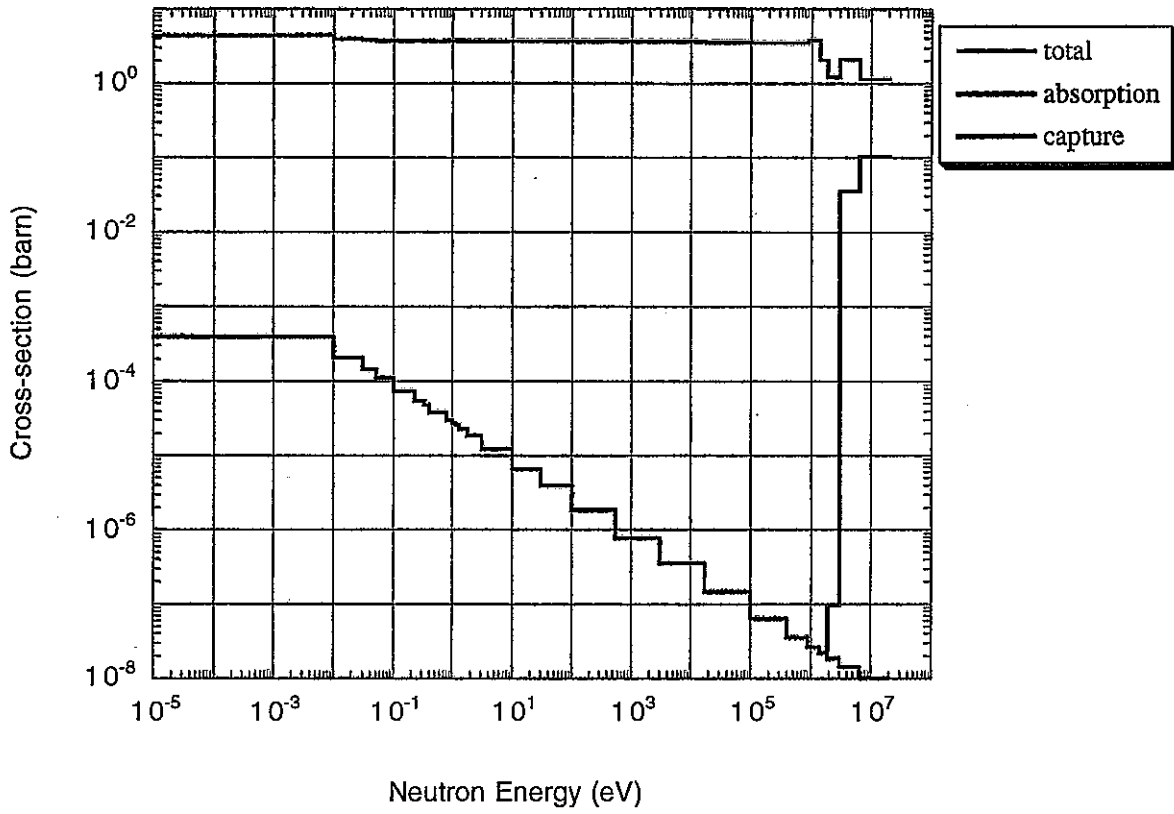
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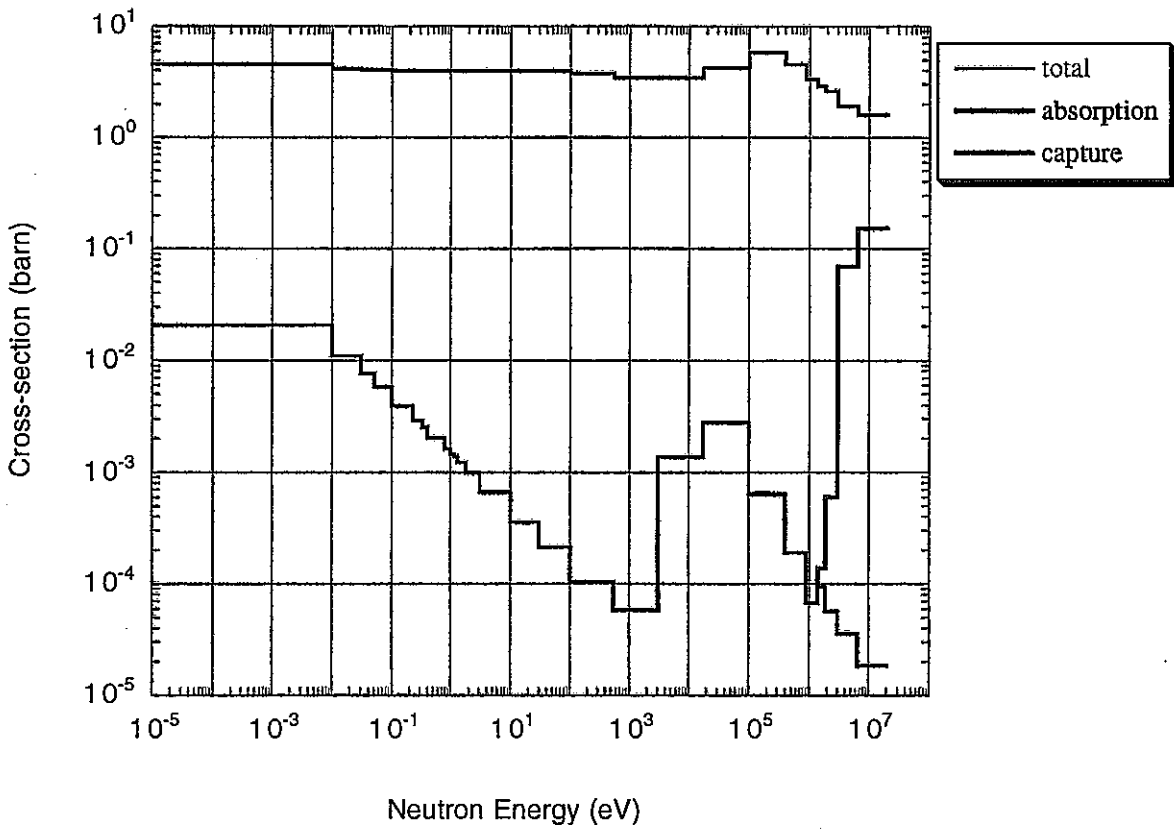
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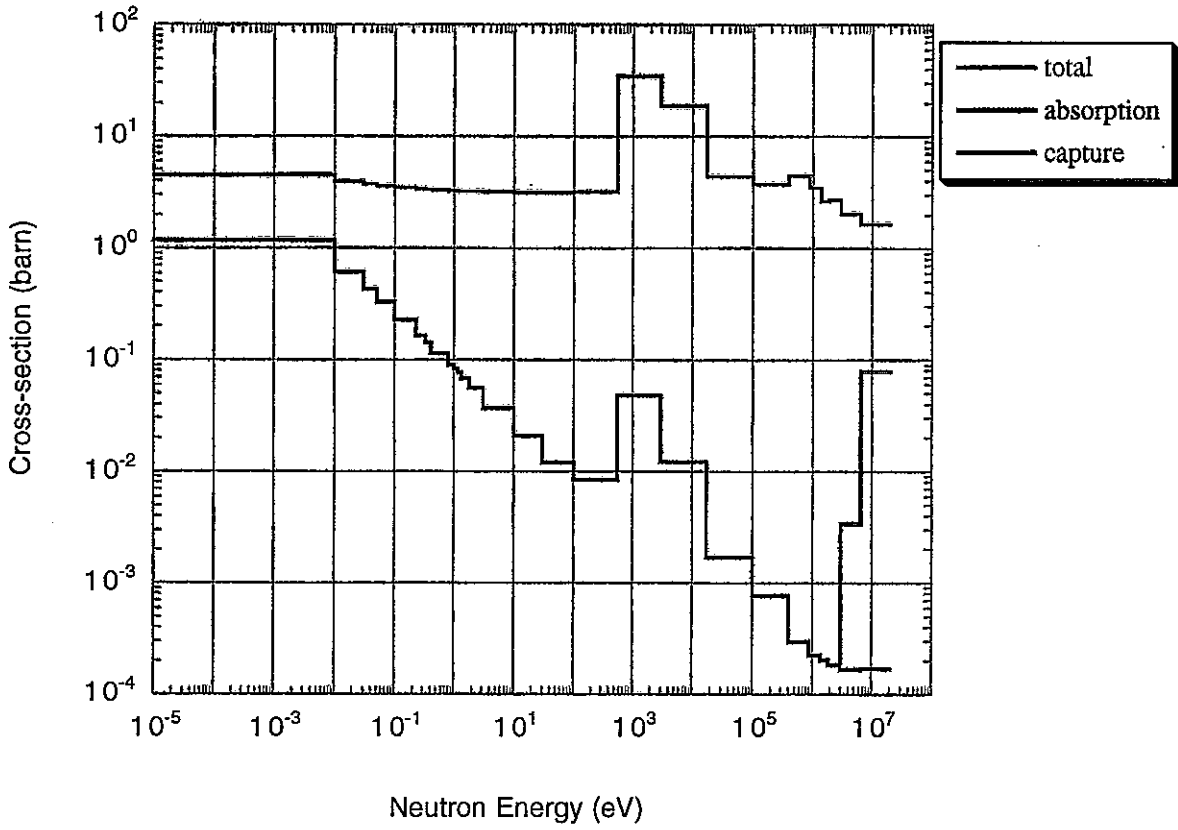
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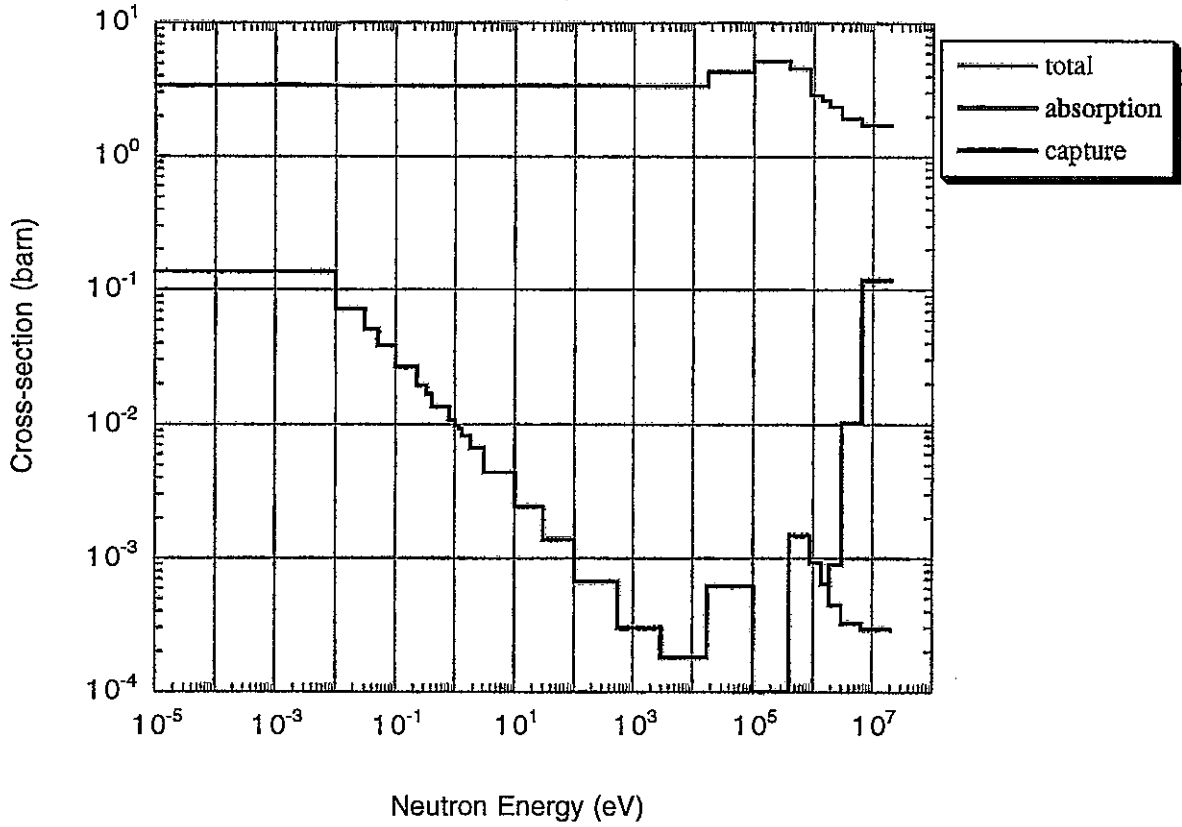
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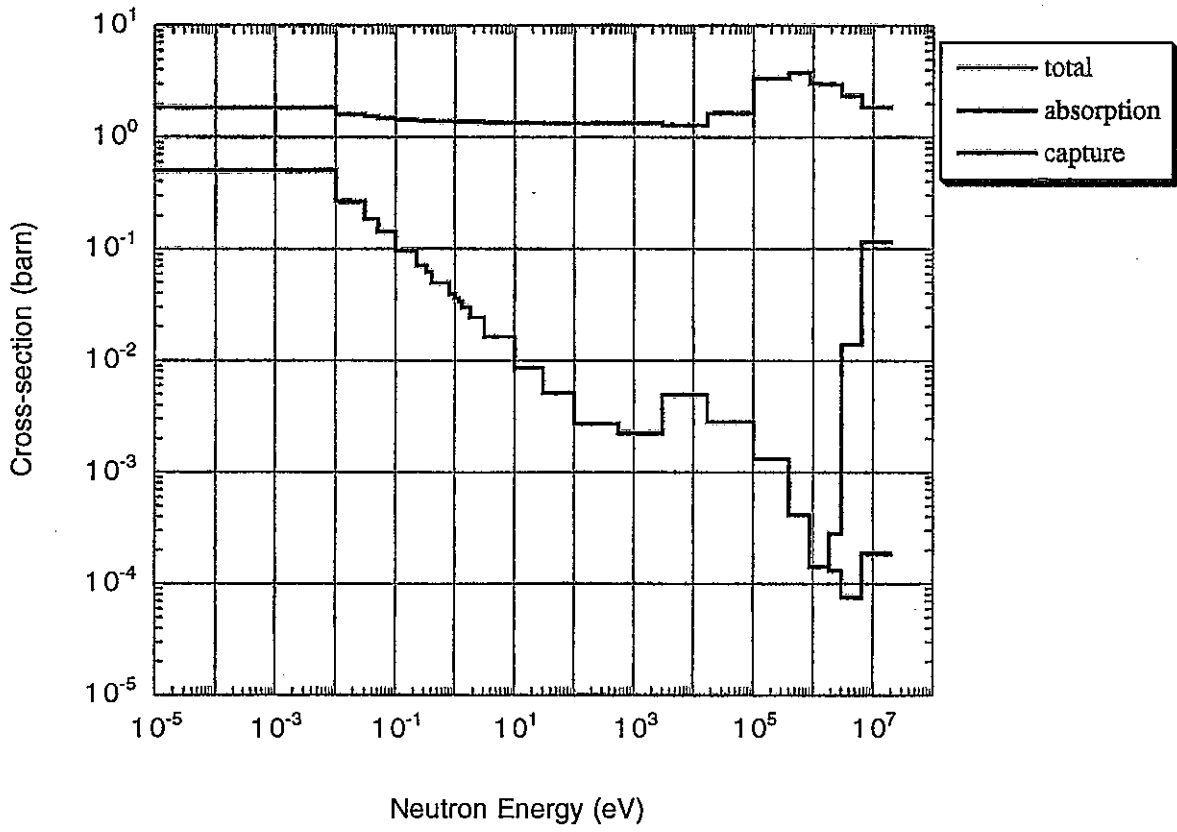
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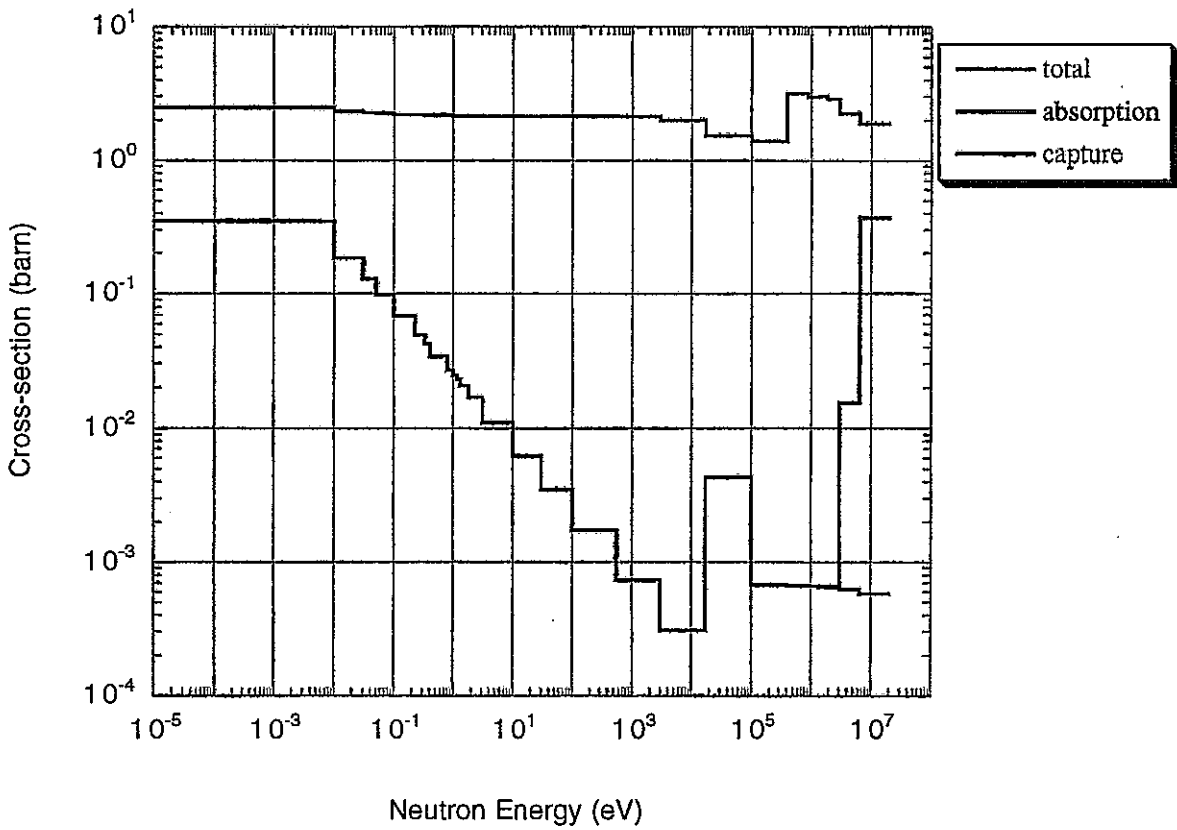
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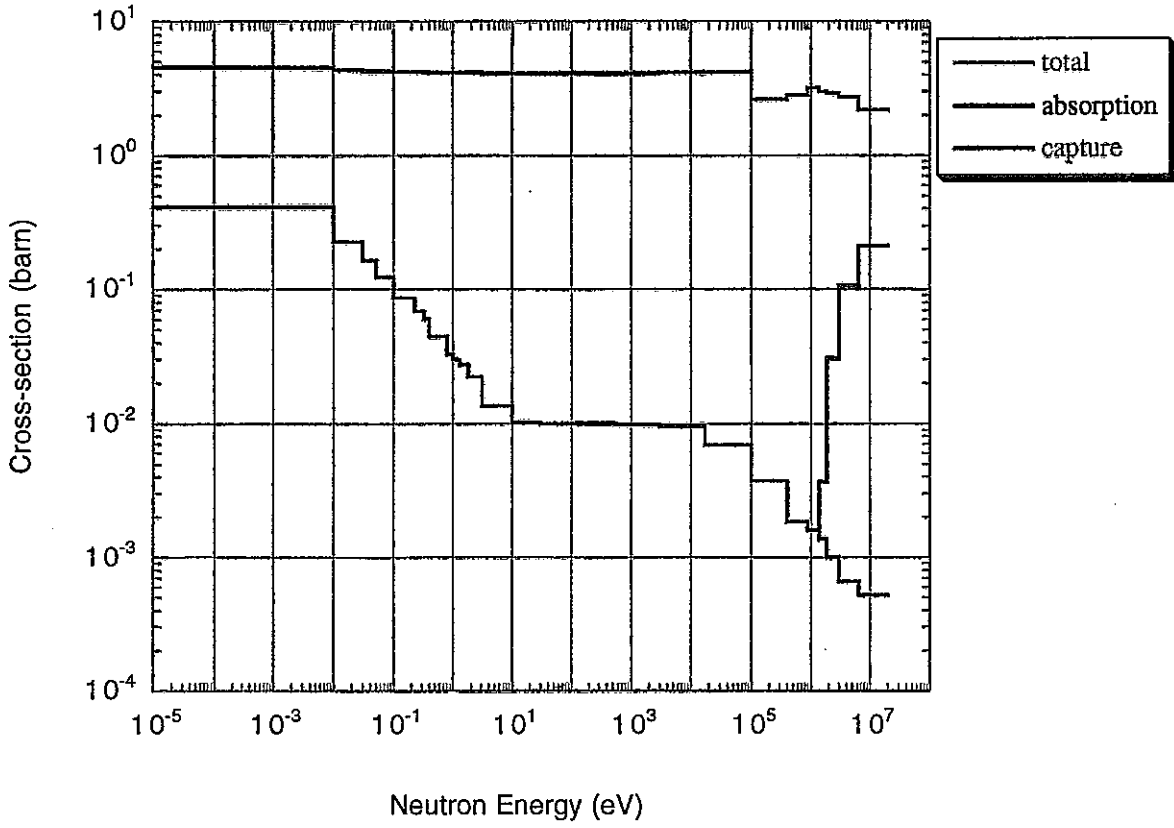
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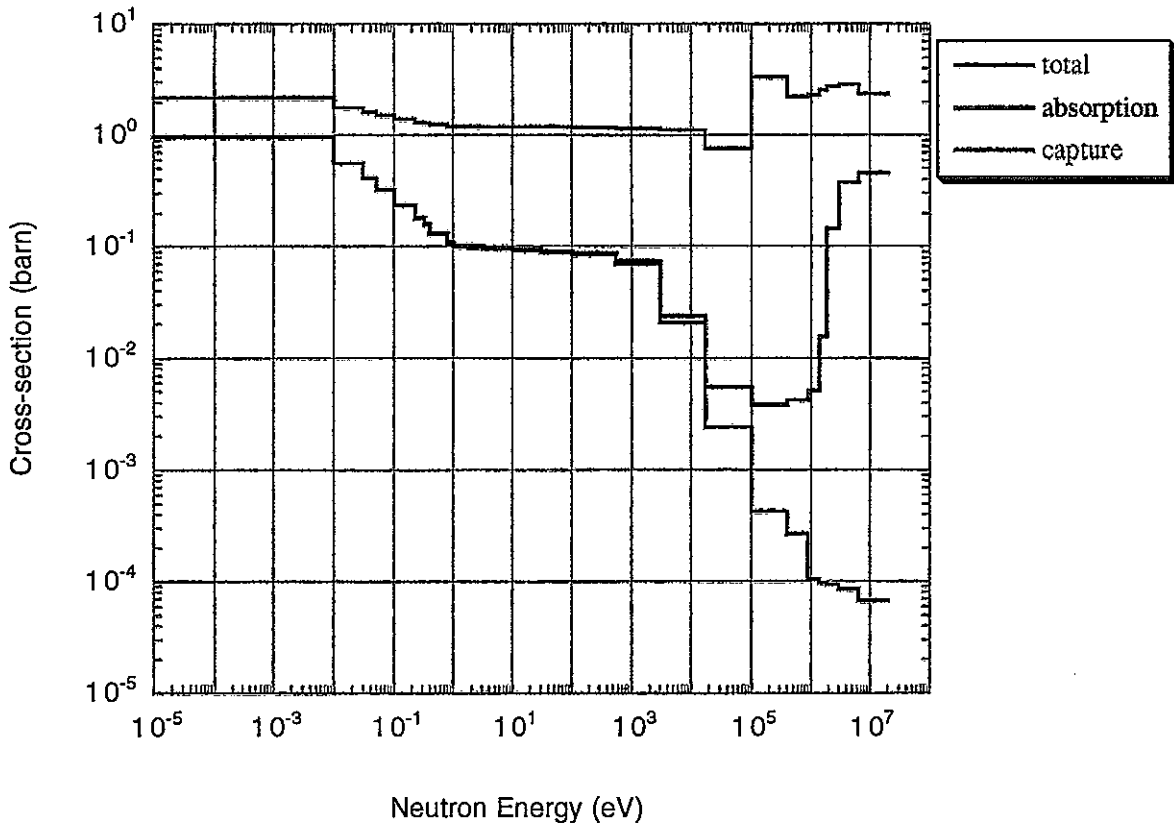
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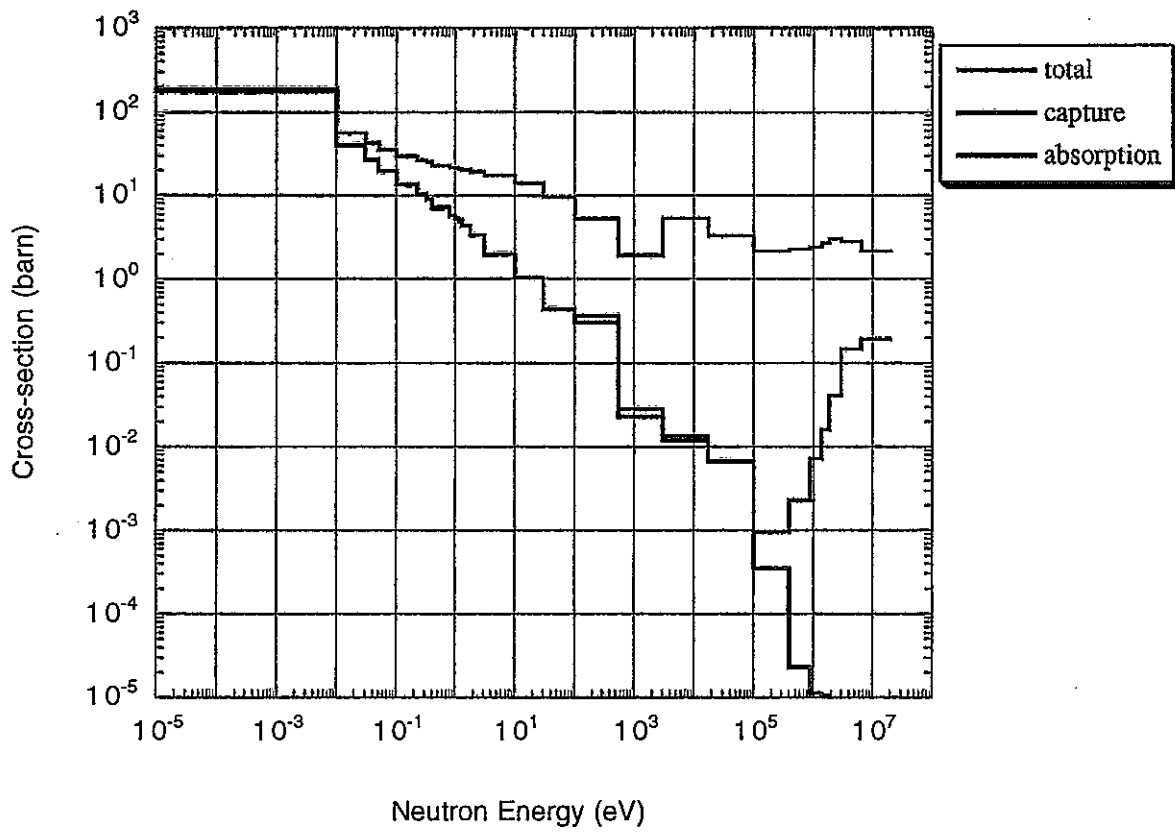
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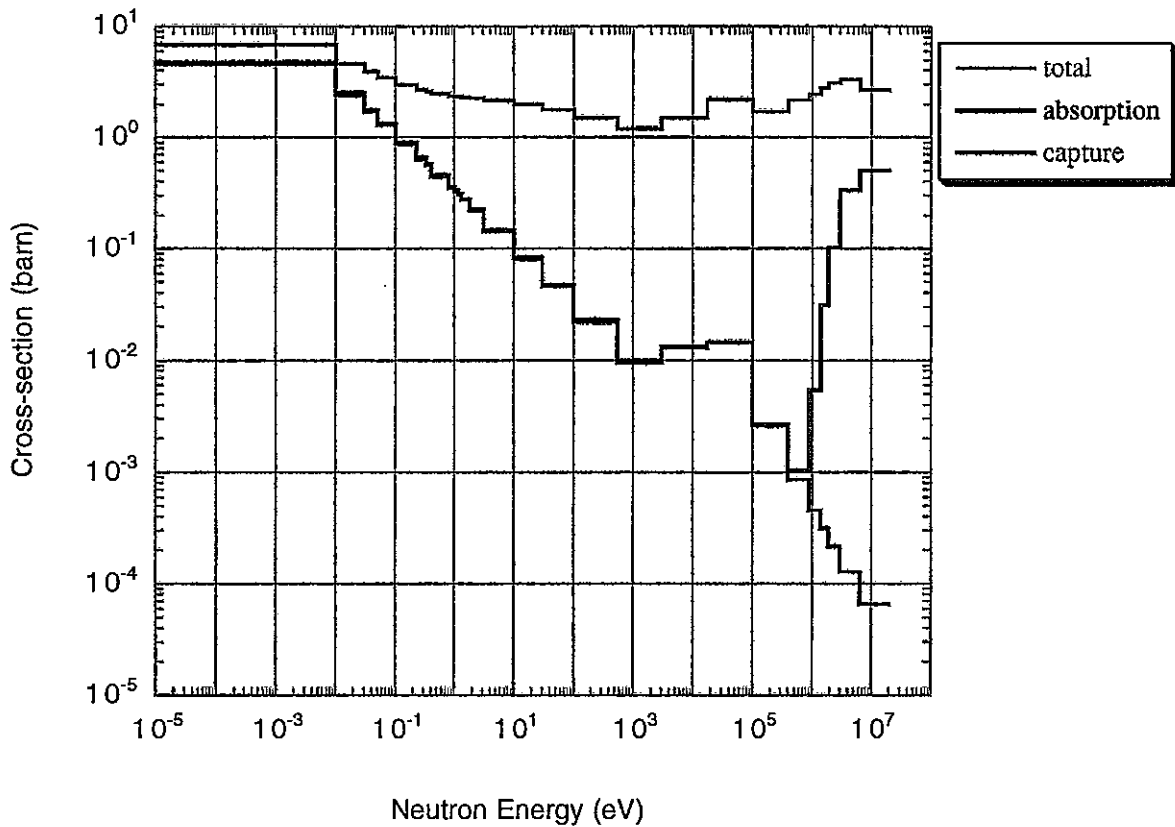
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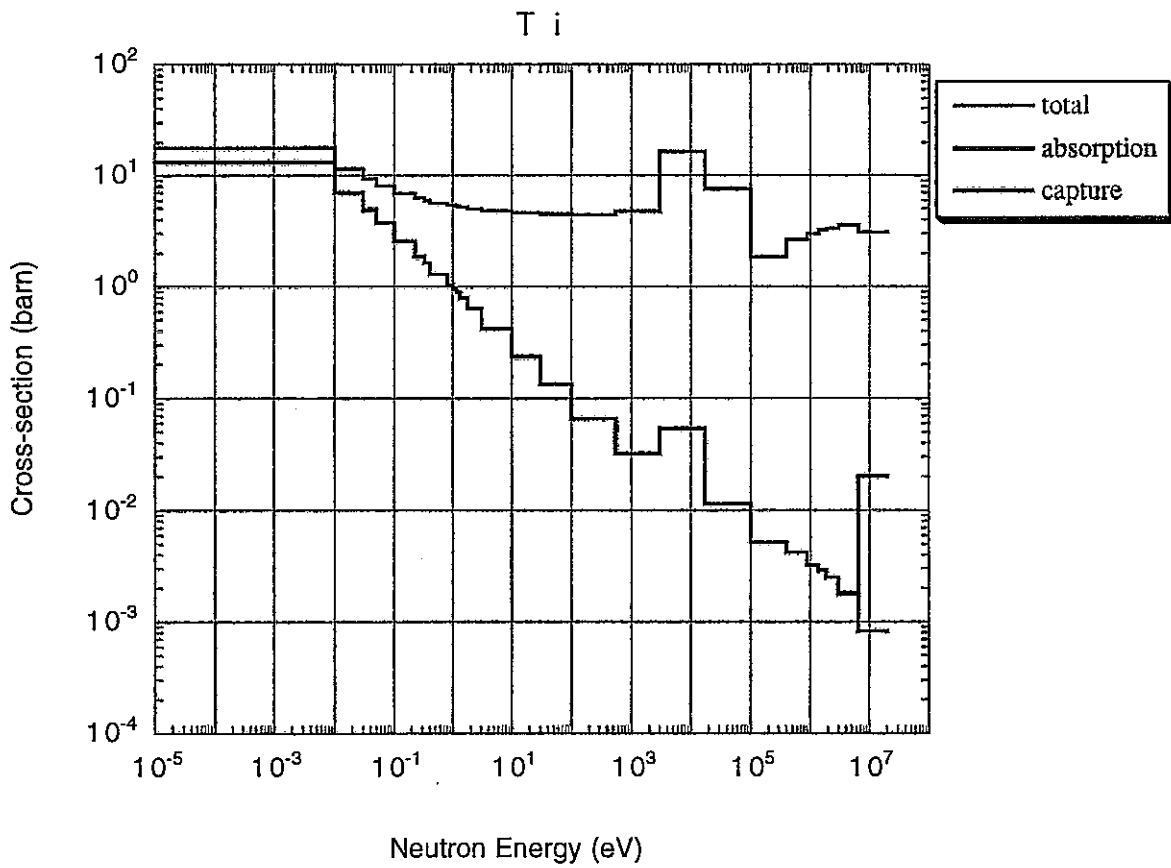
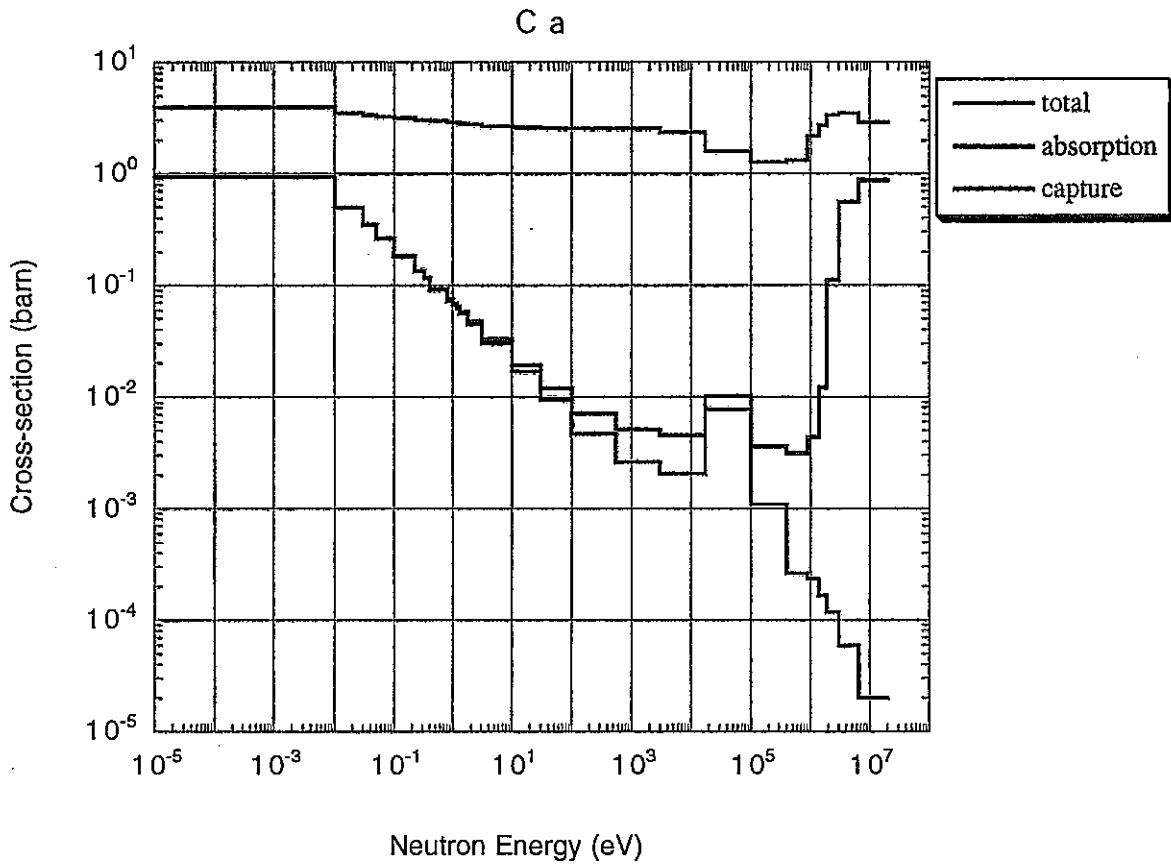


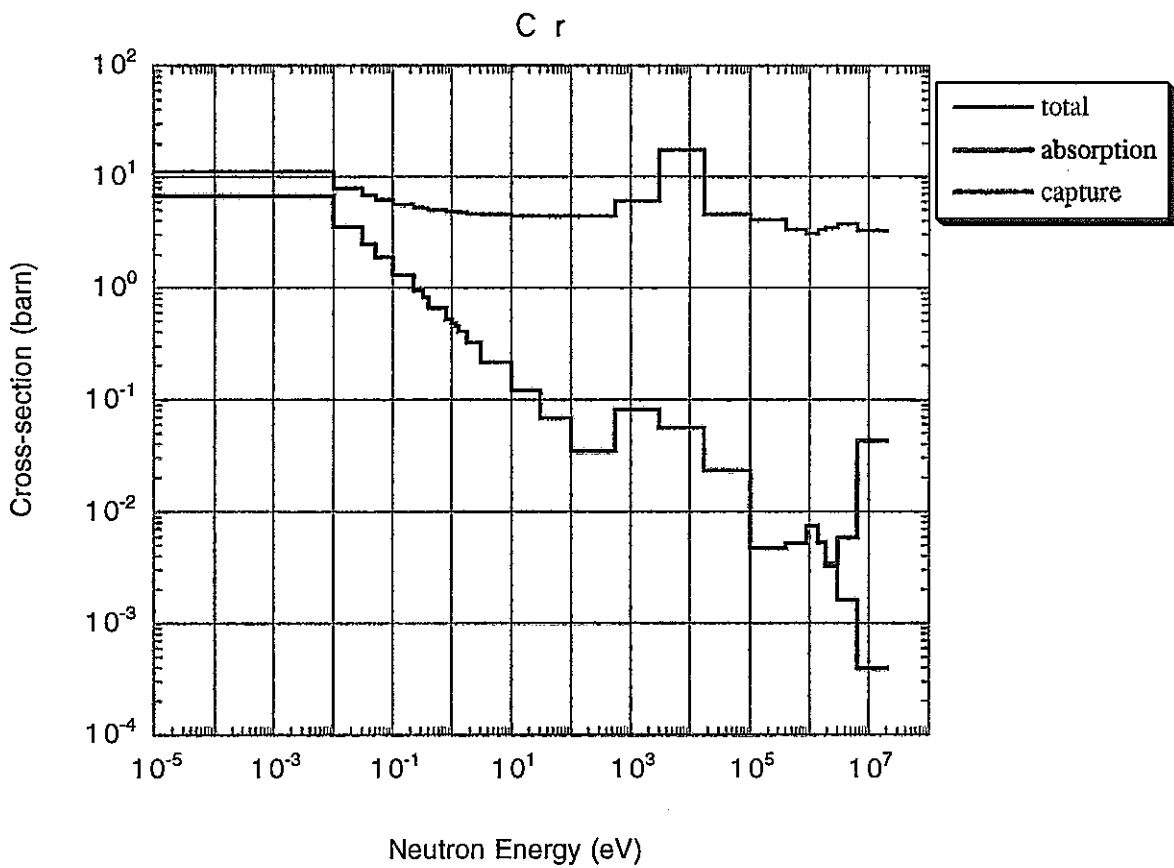
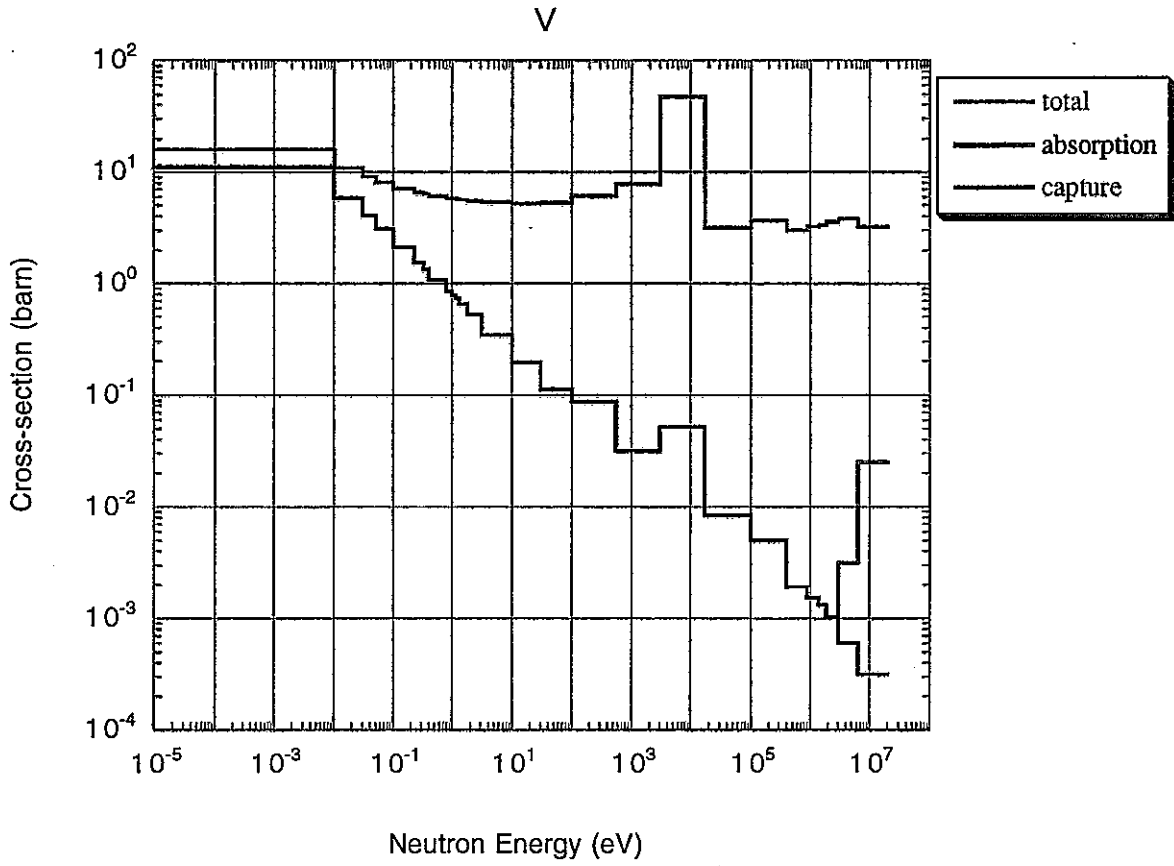
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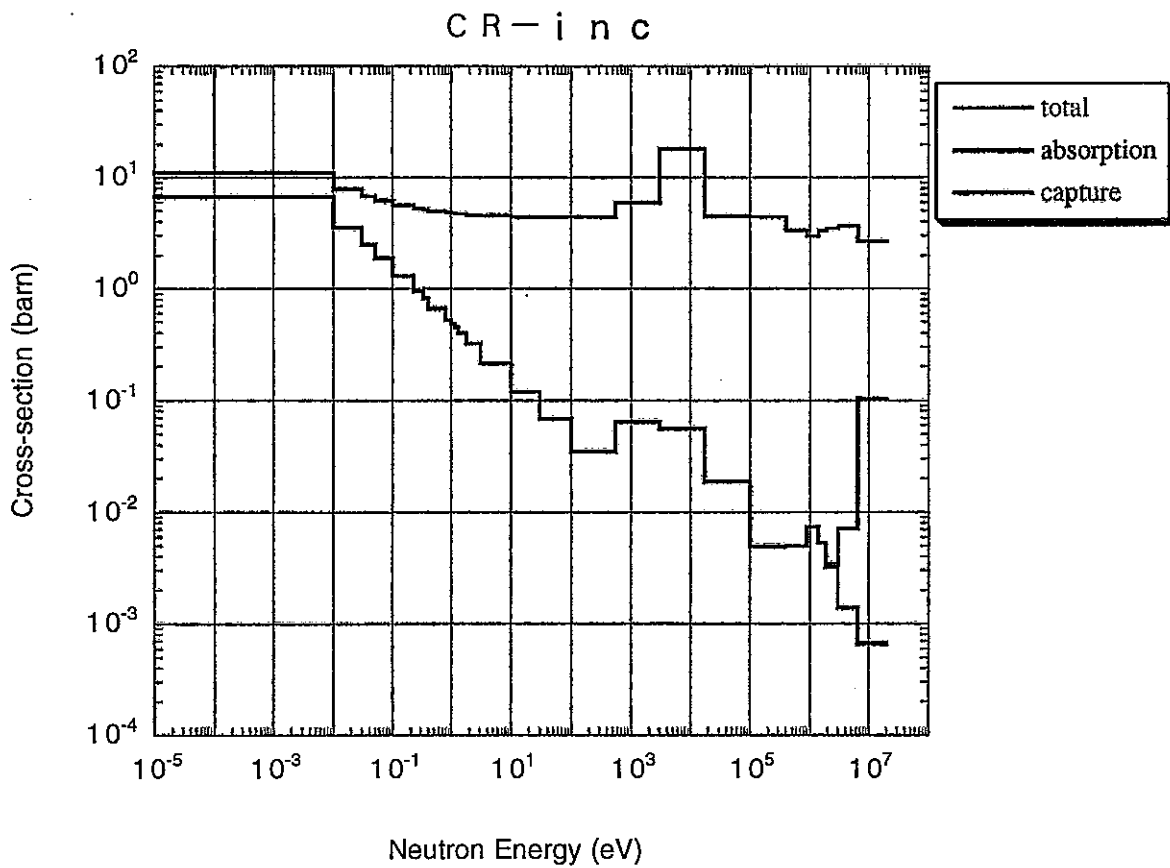
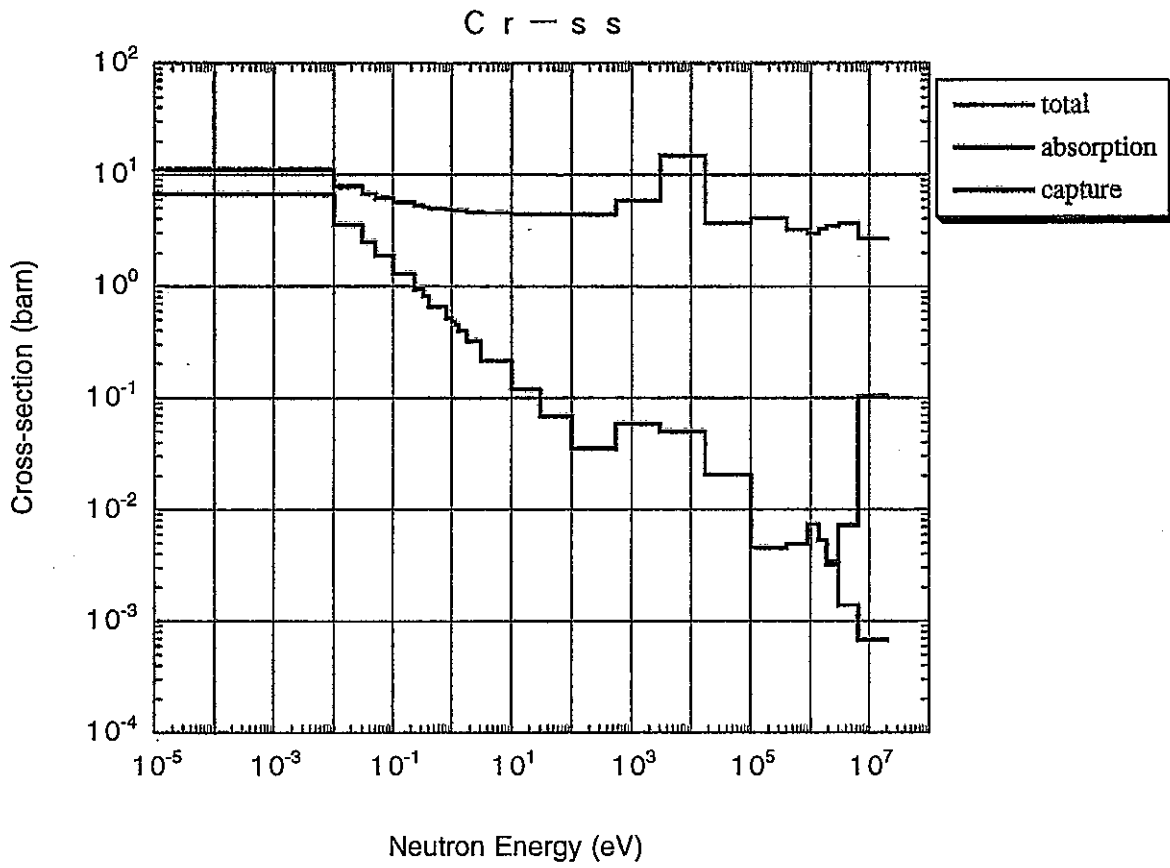


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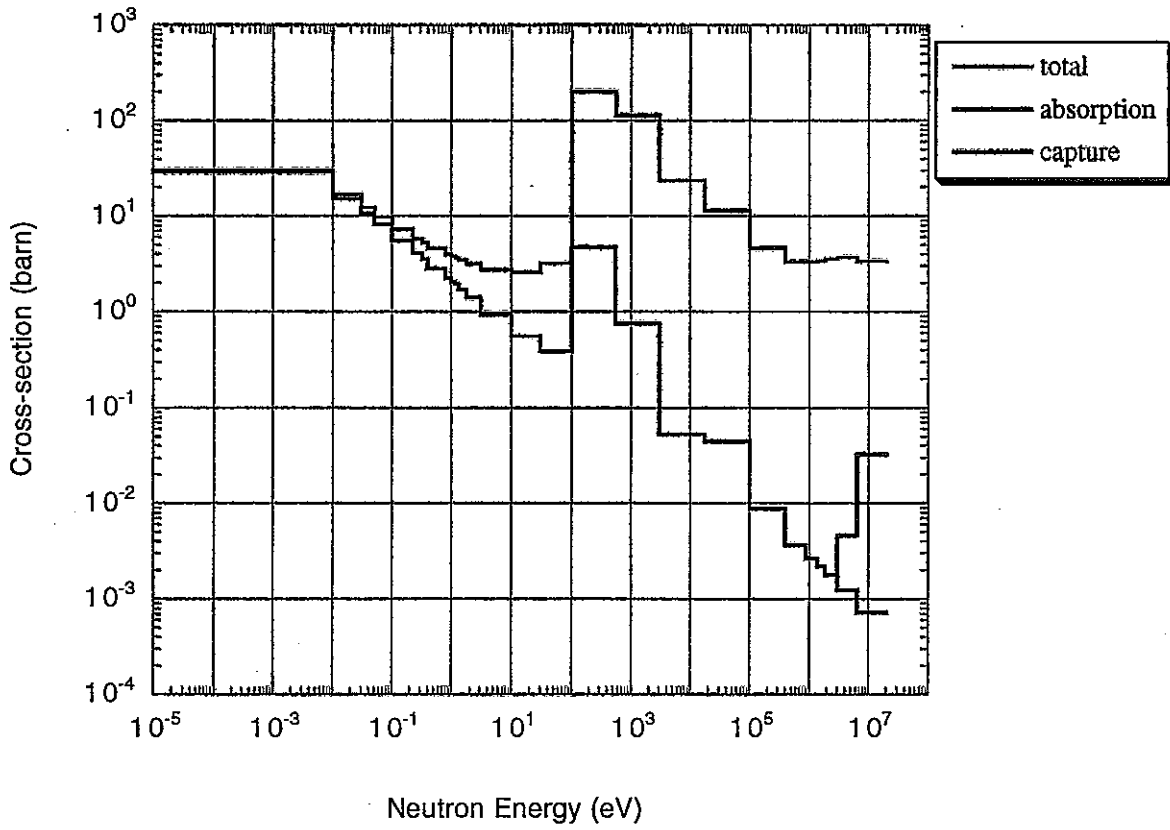




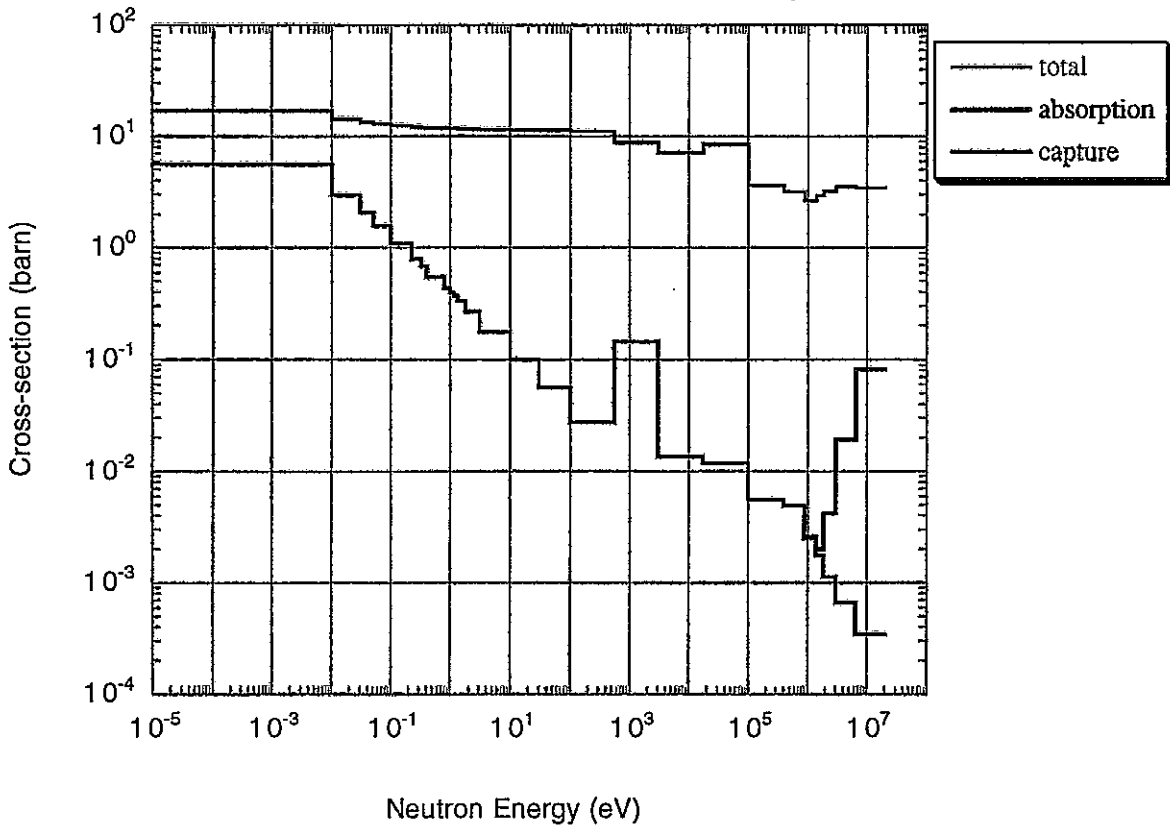


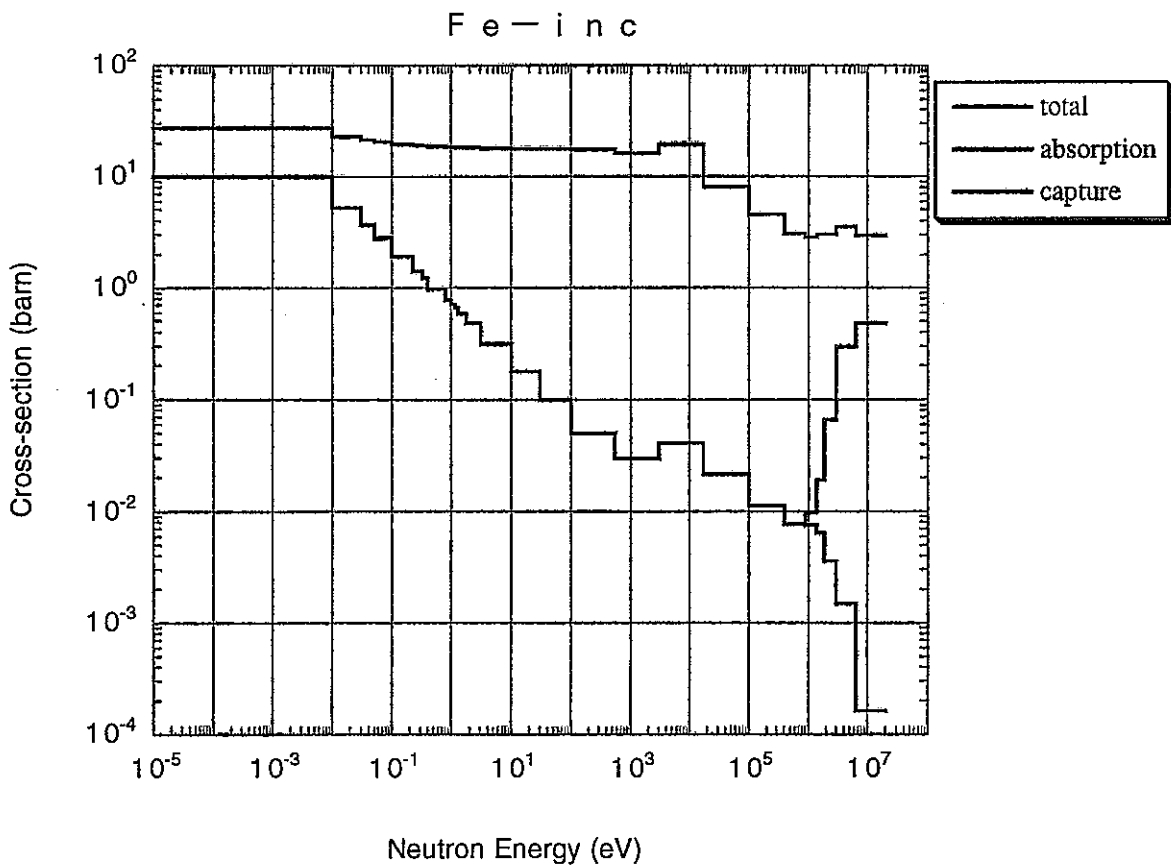
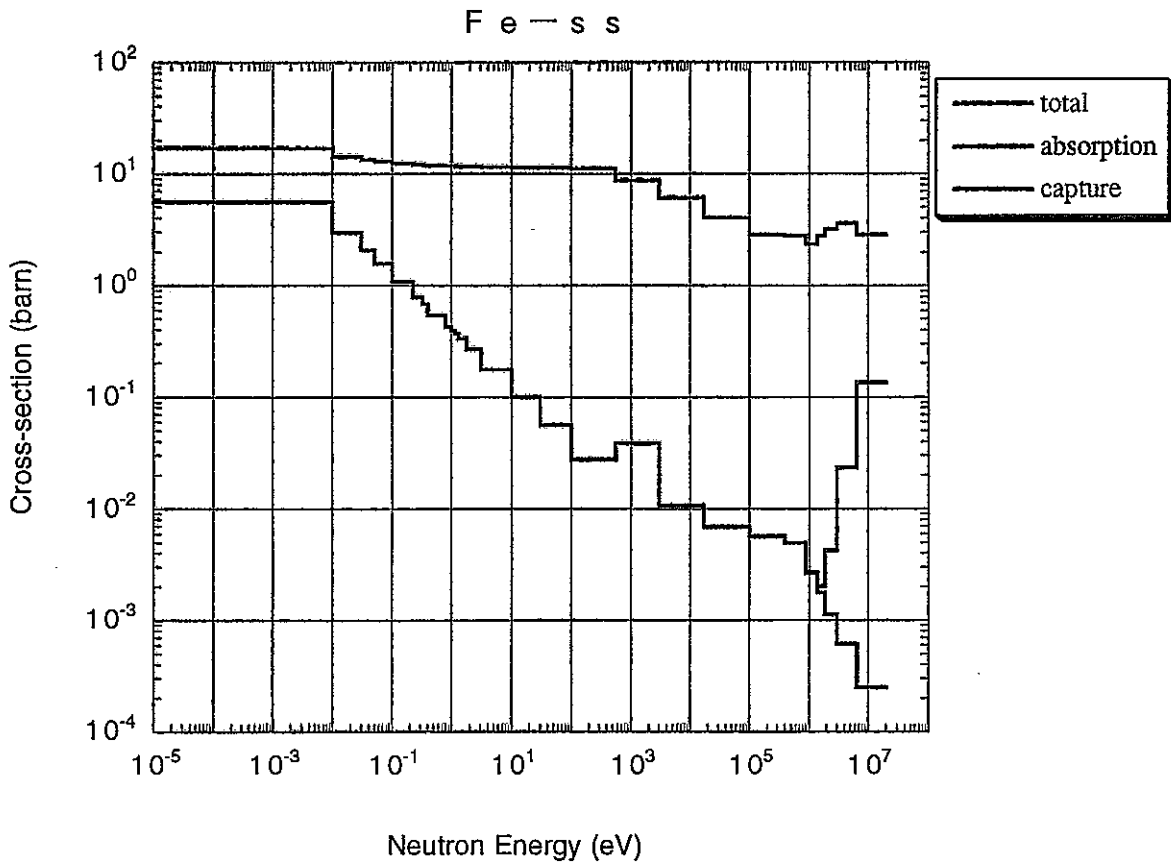


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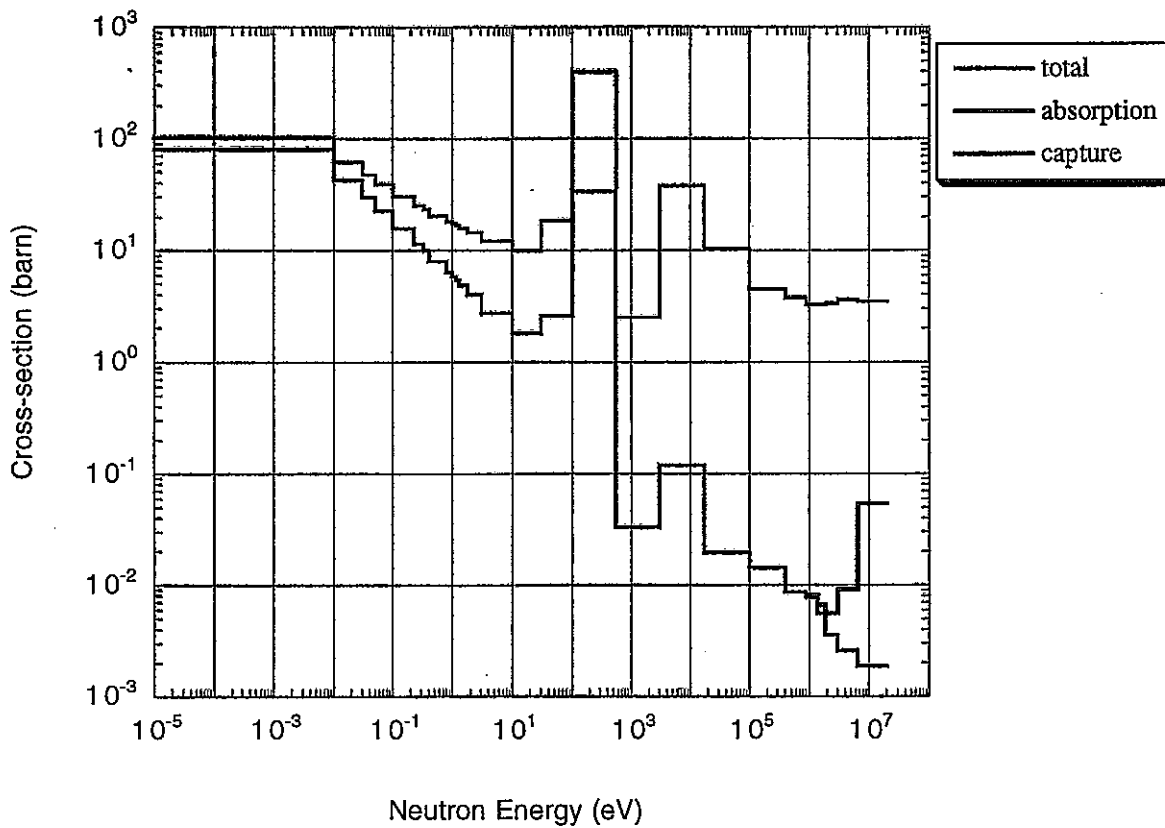


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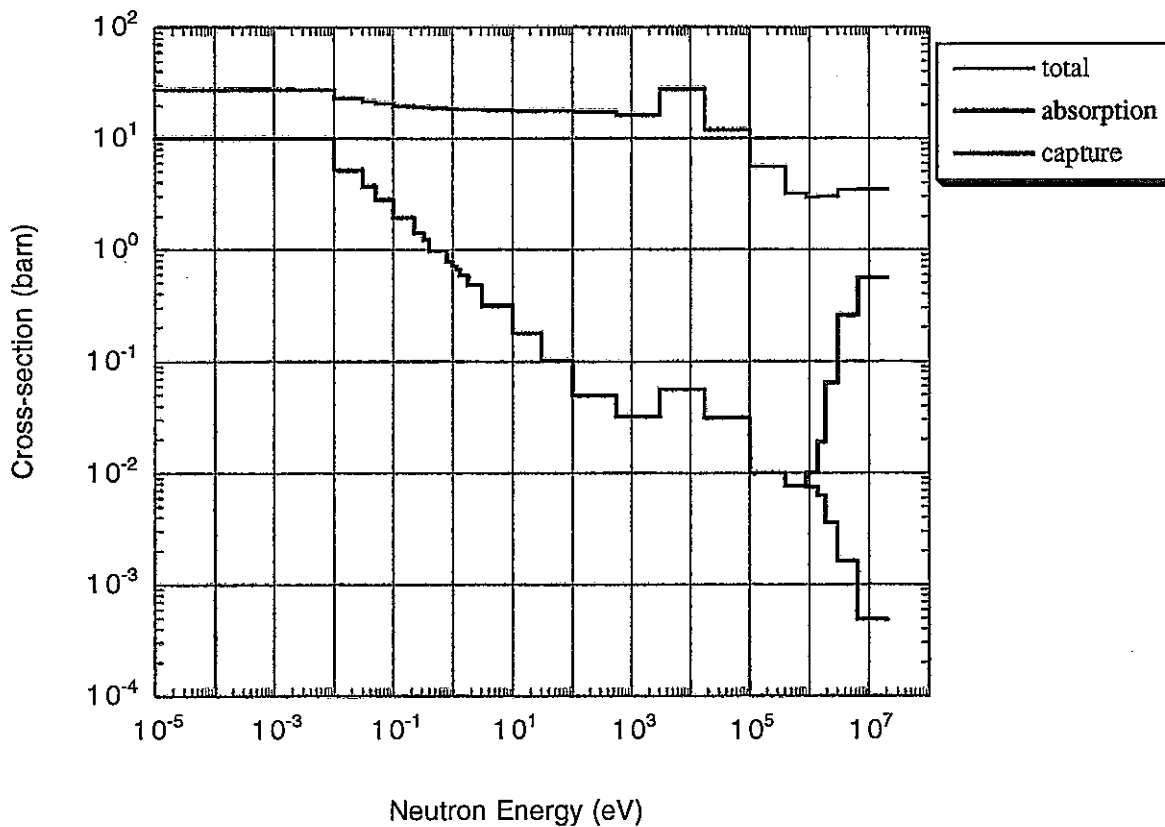


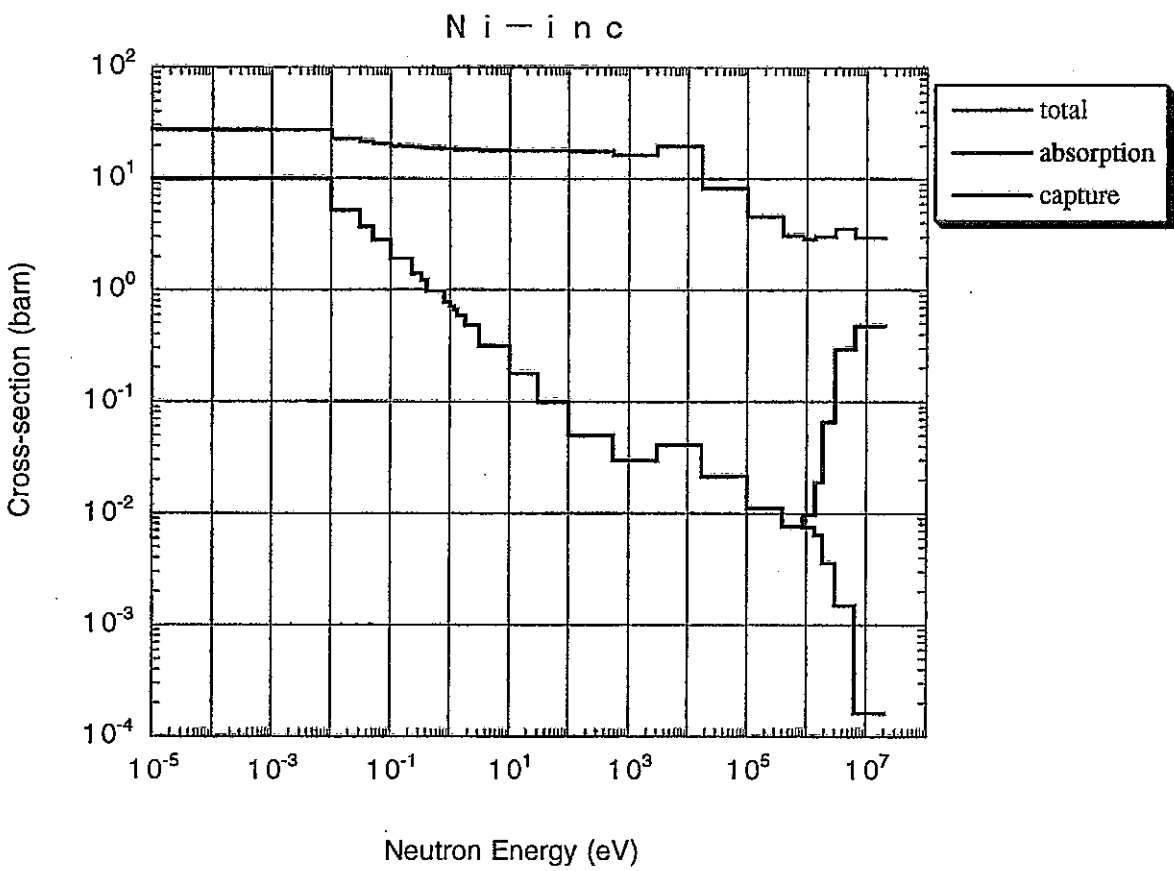
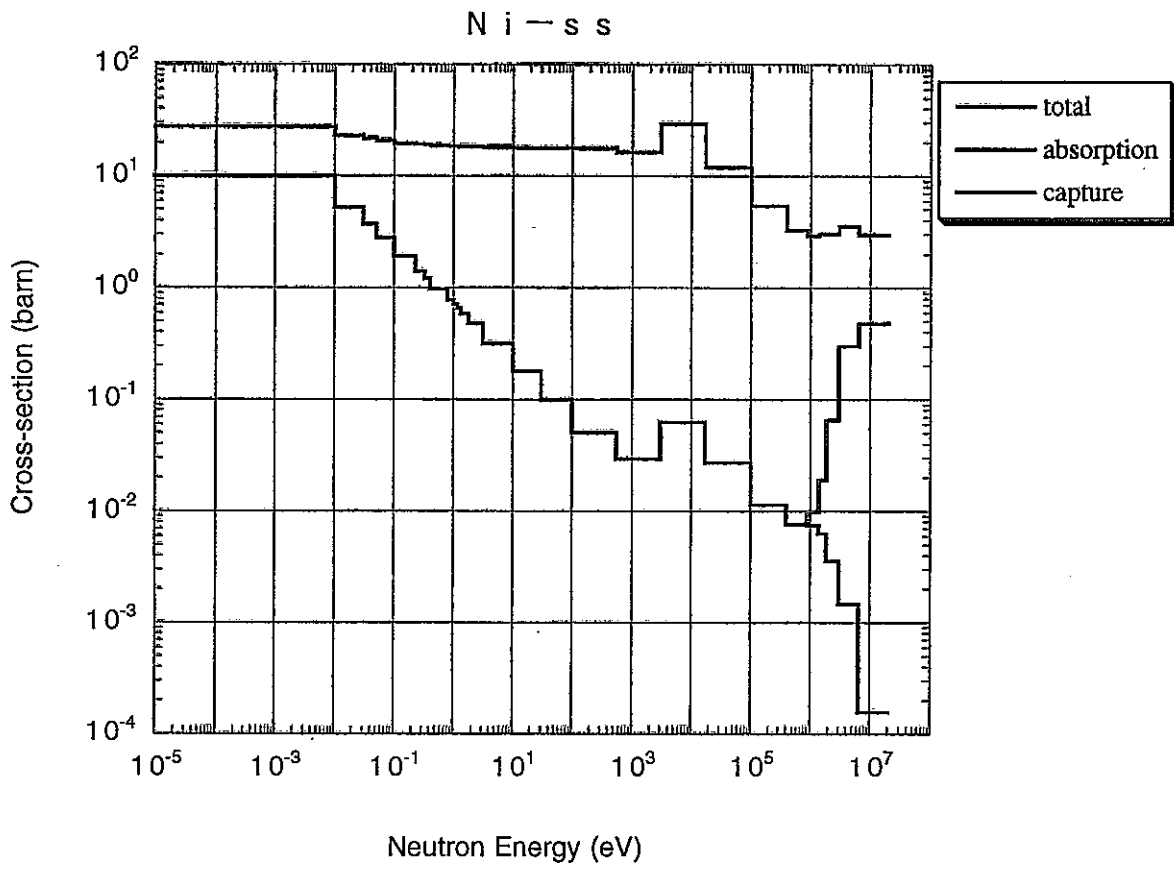


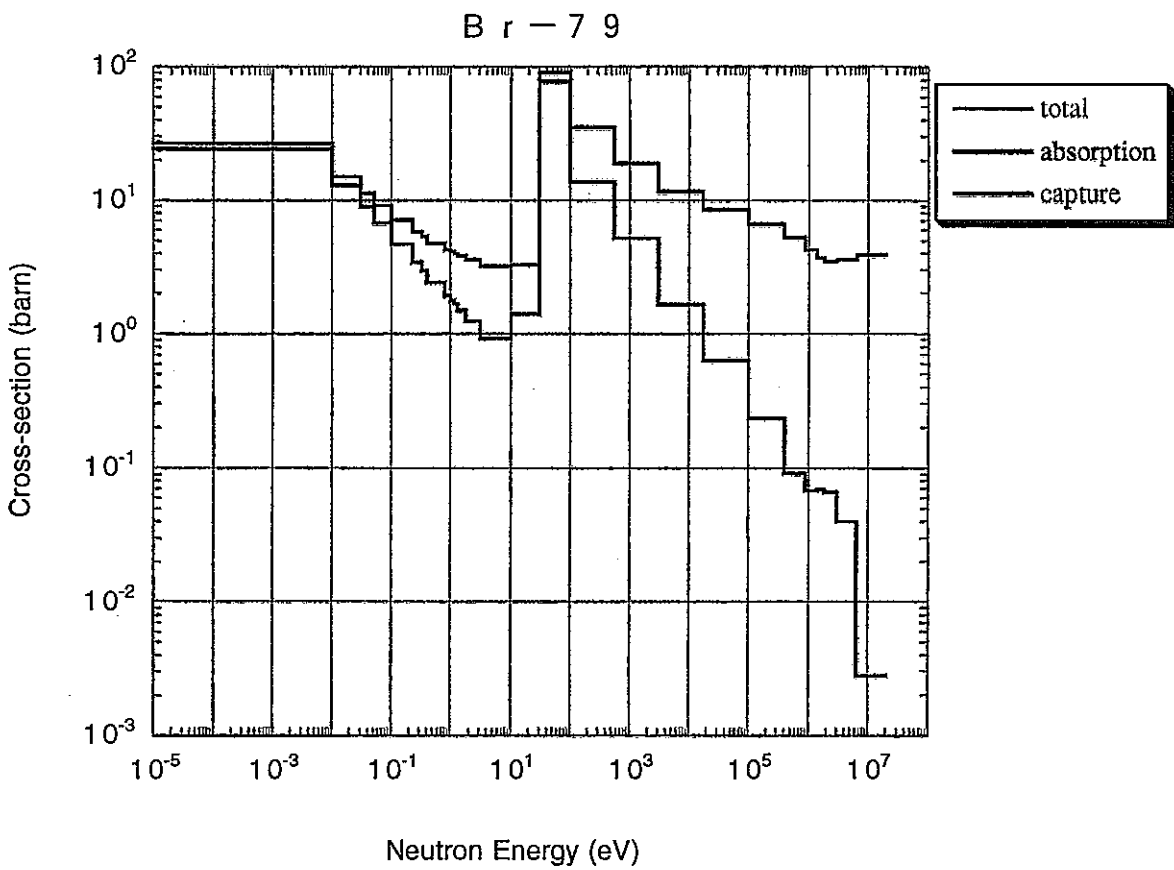
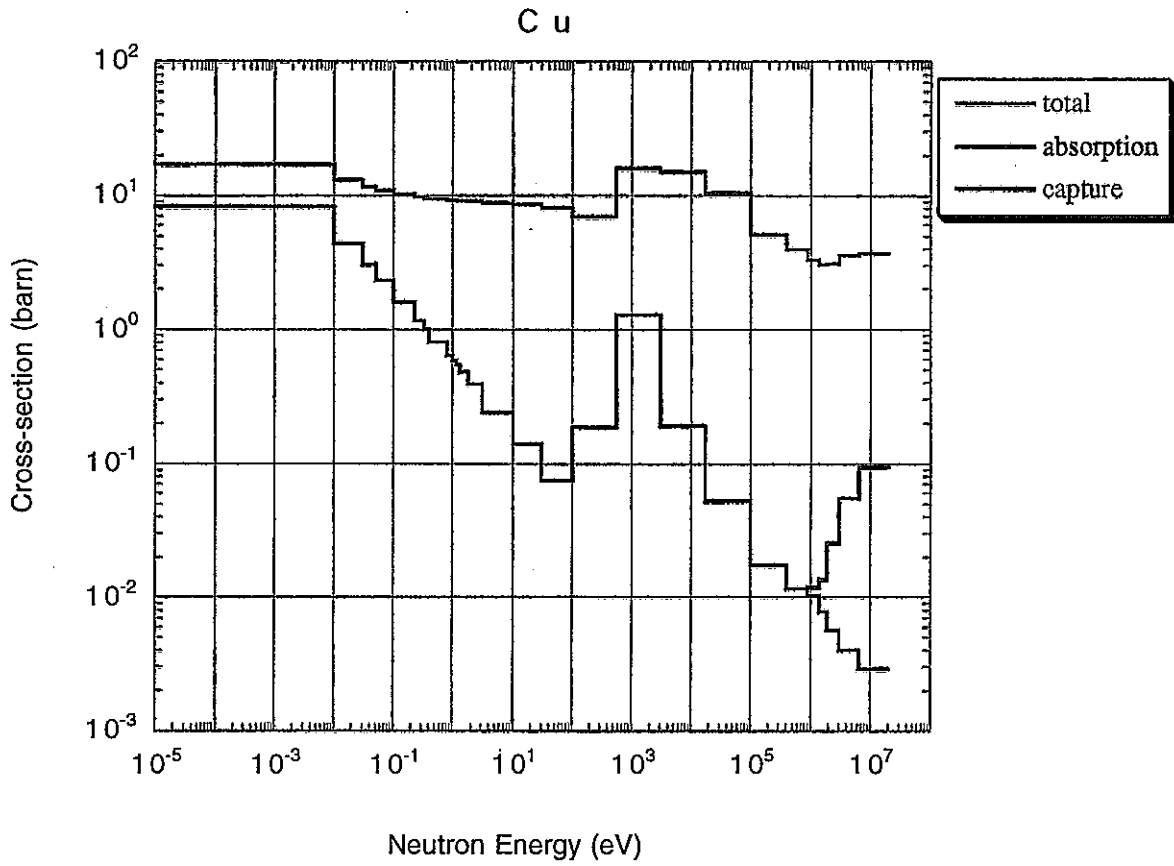
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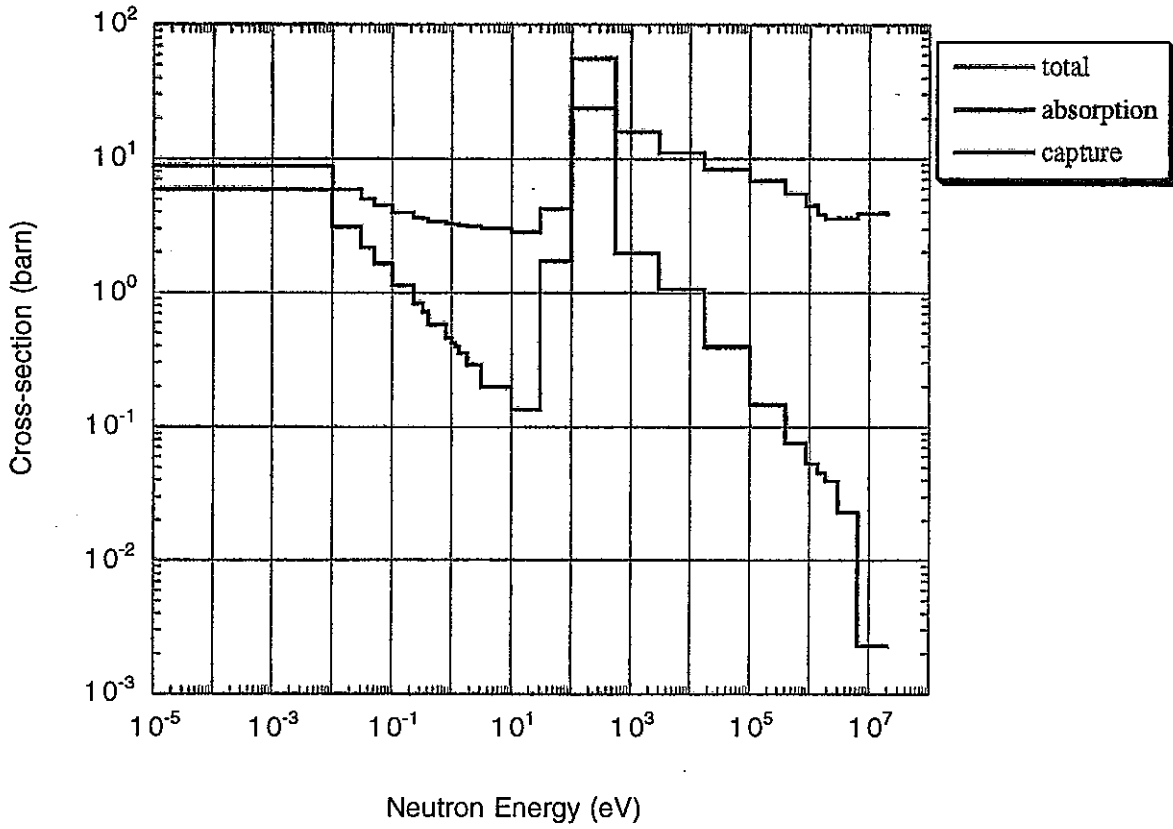
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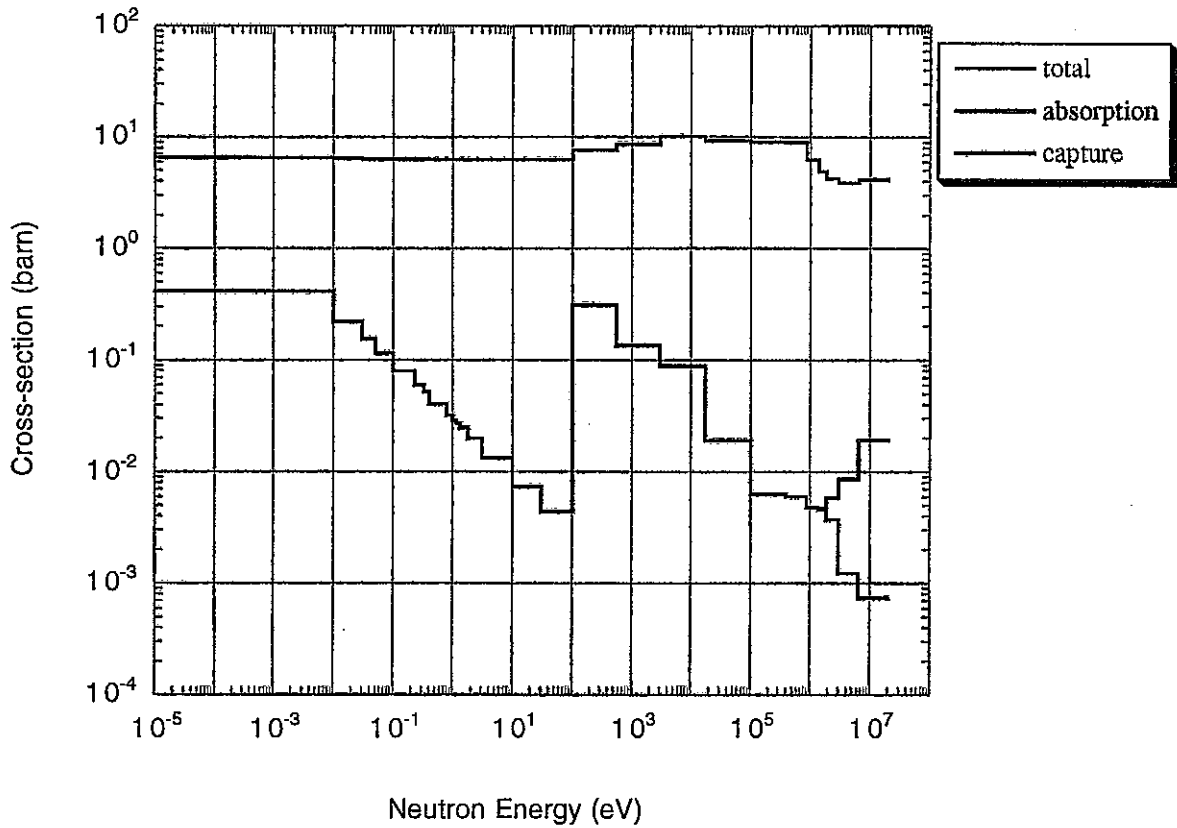




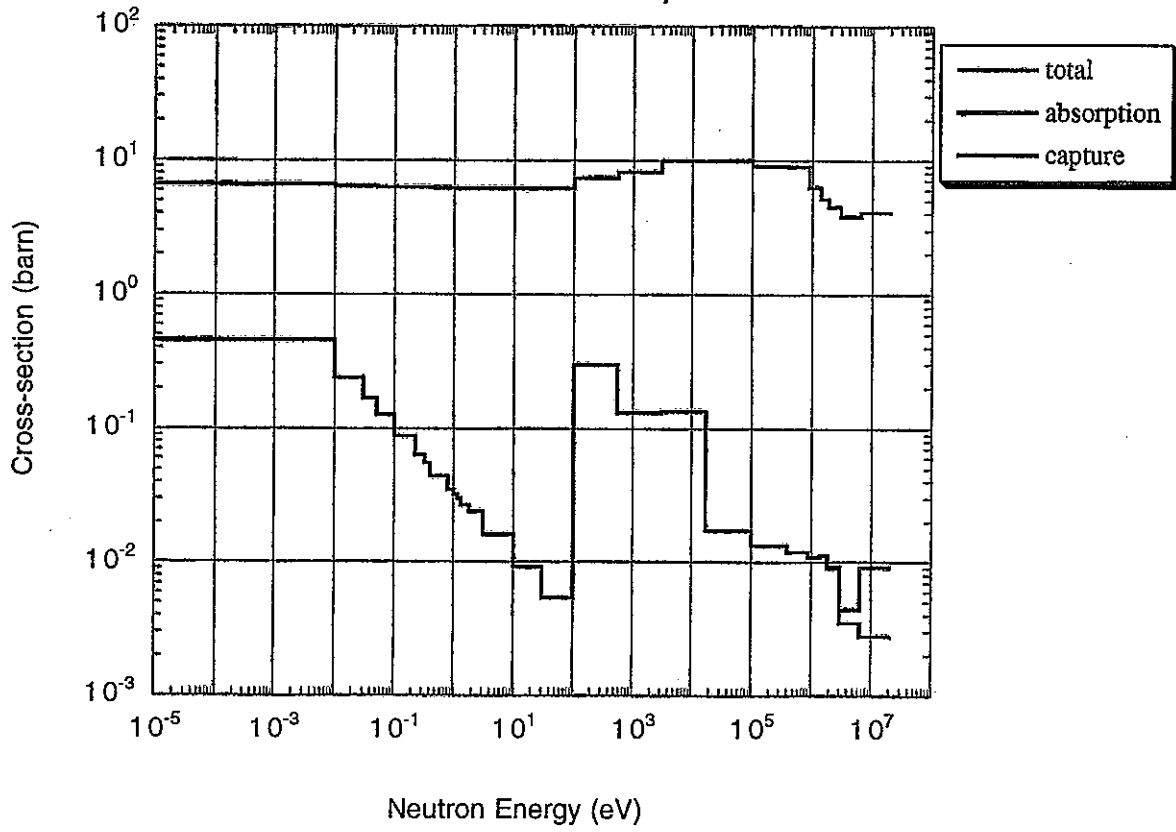
Br - 81



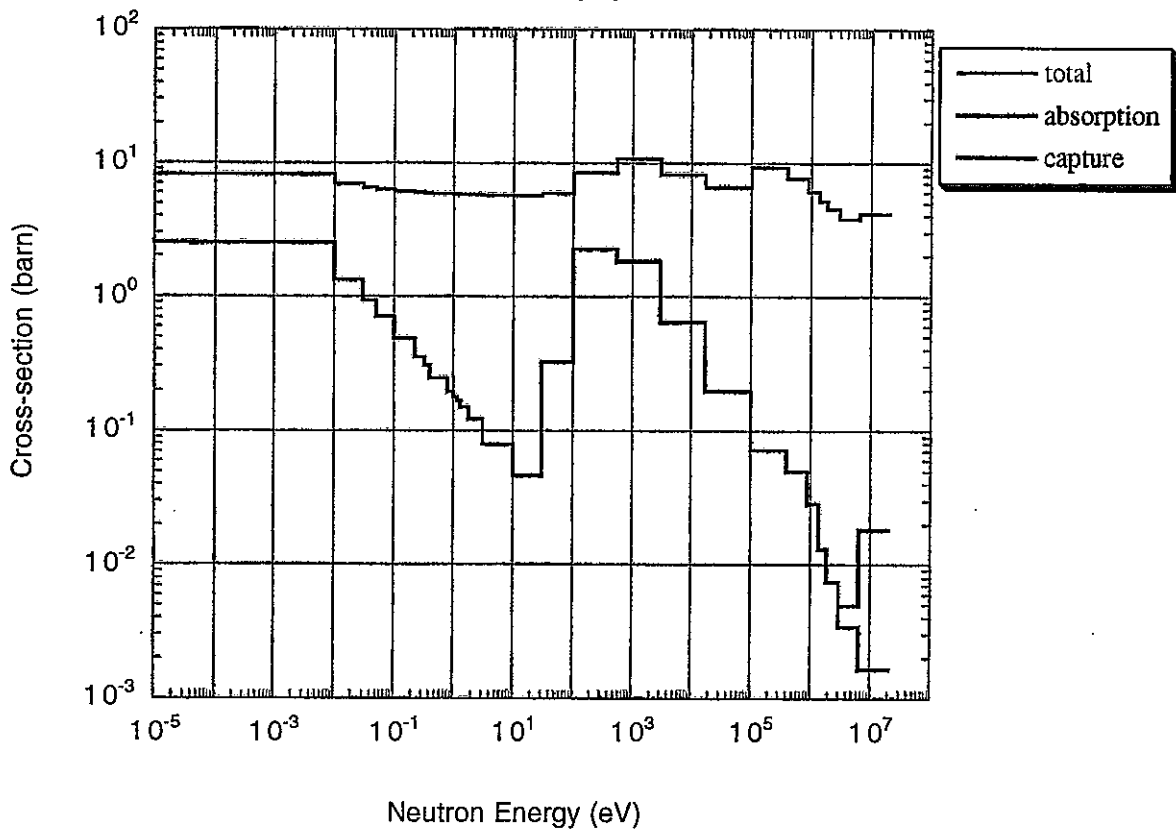
Zr



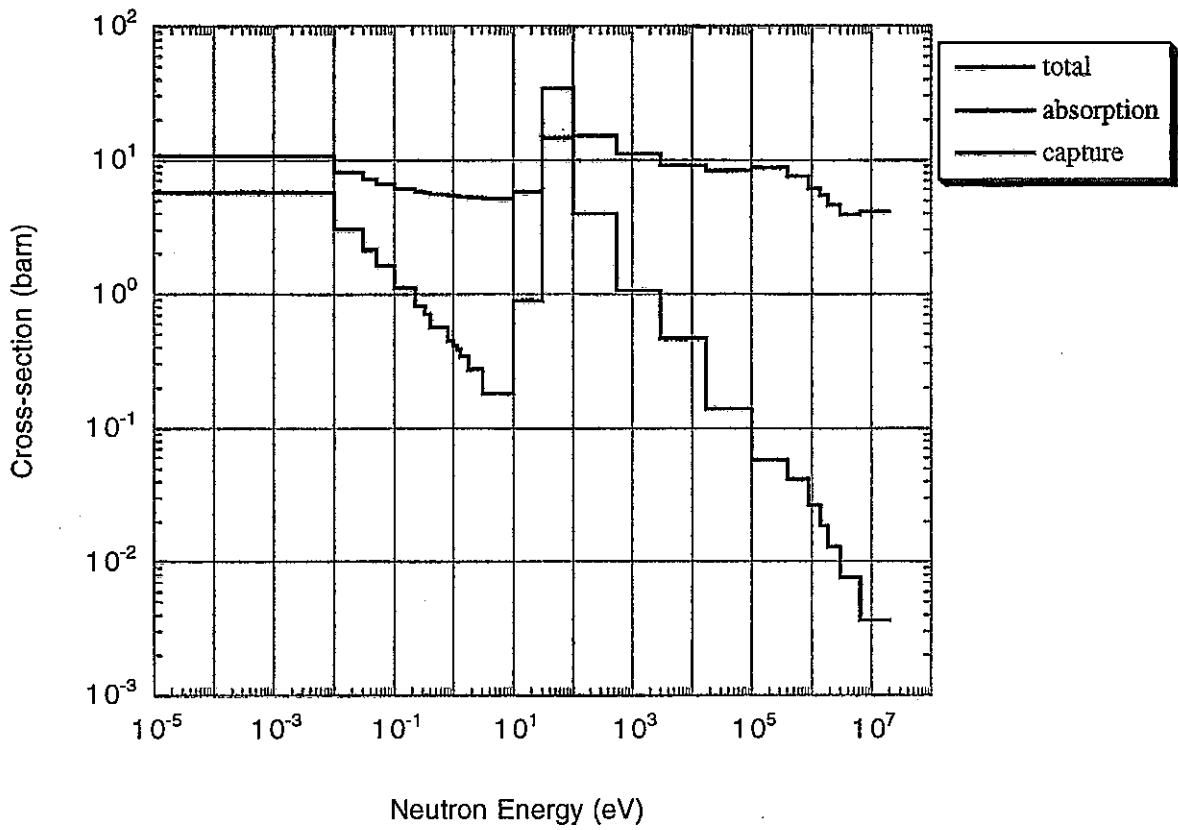
Zircaloy



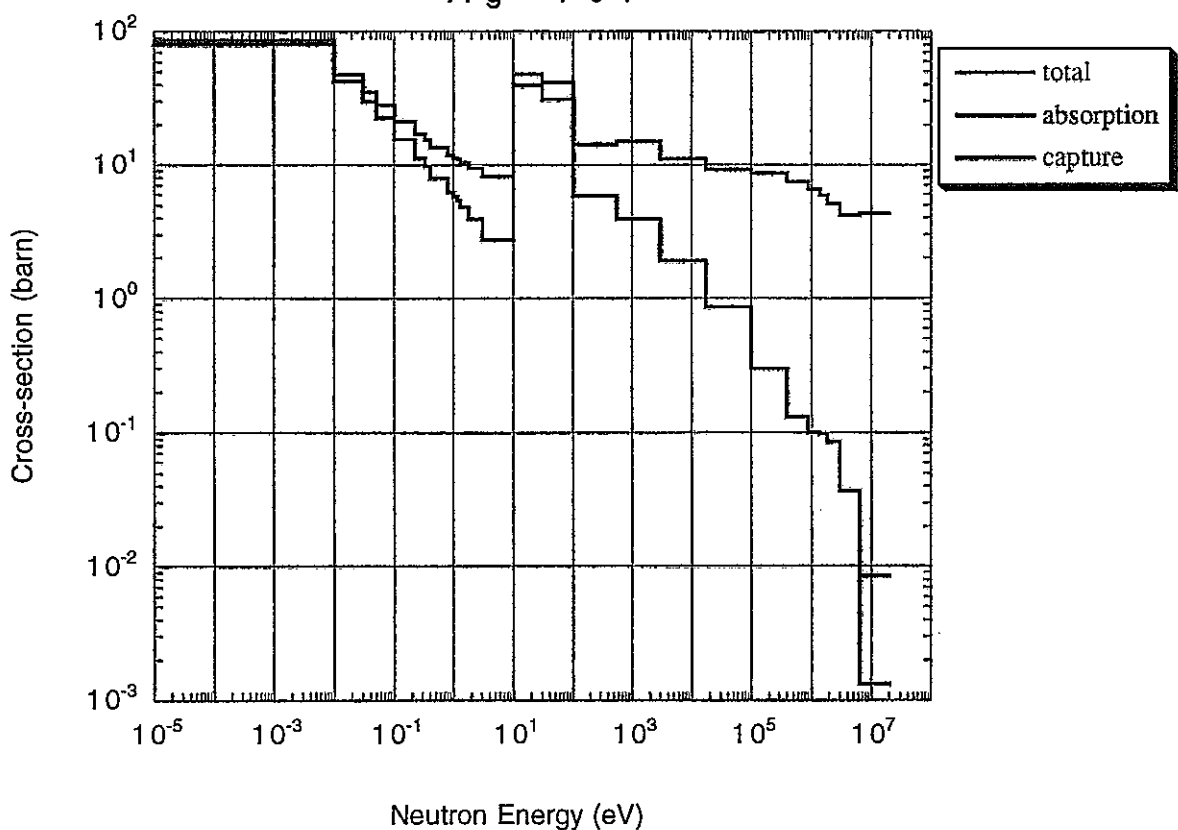
Nb - 93



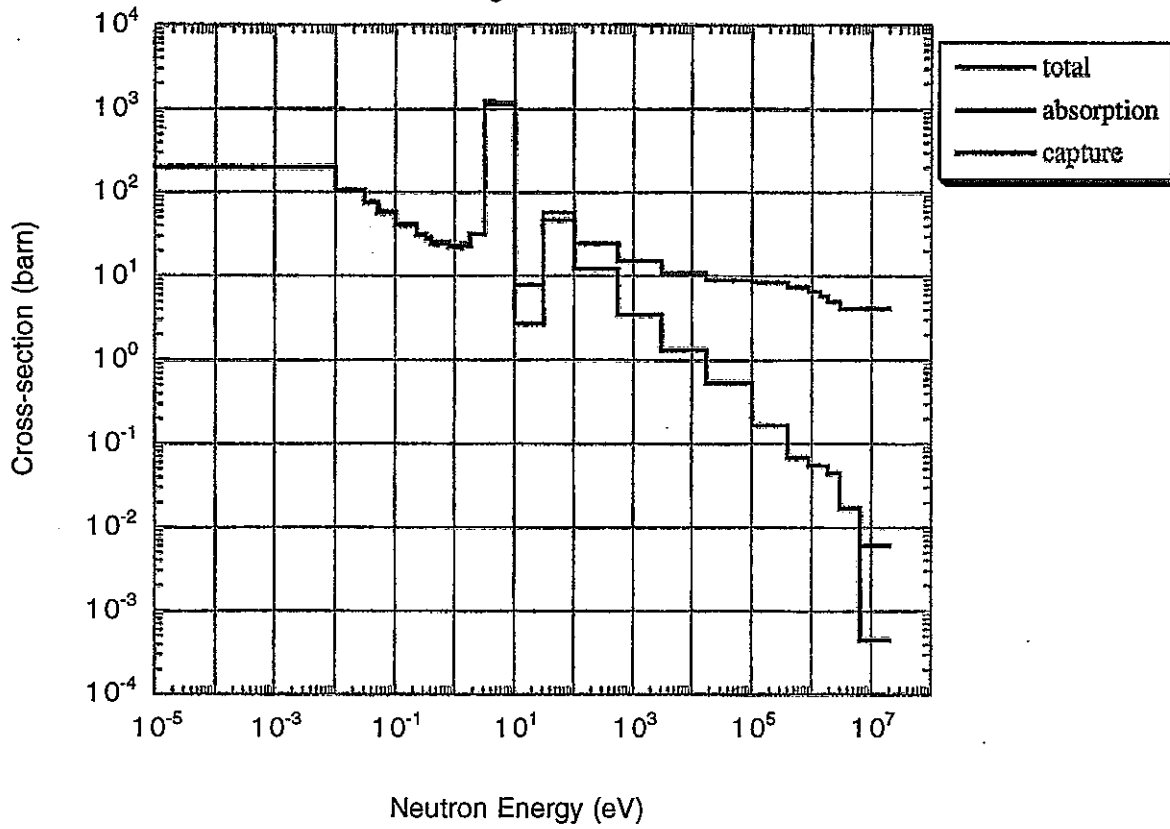
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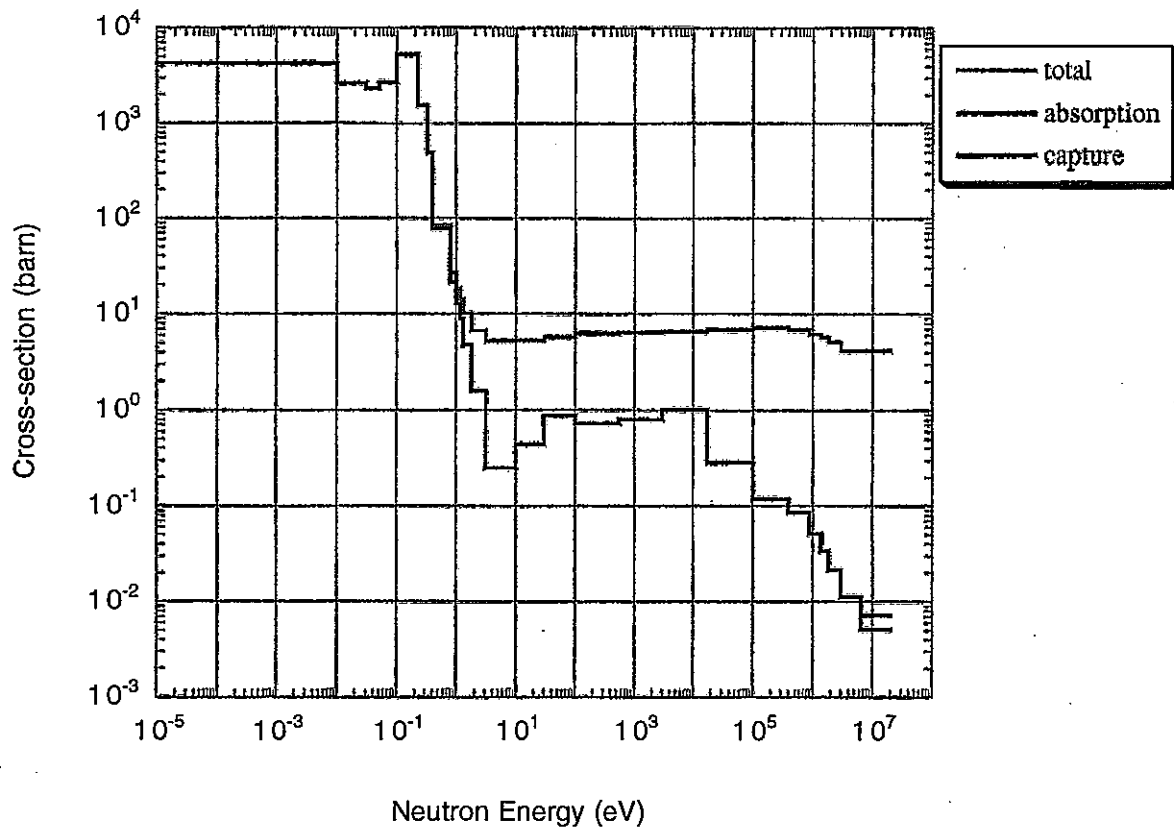
Ag - 107



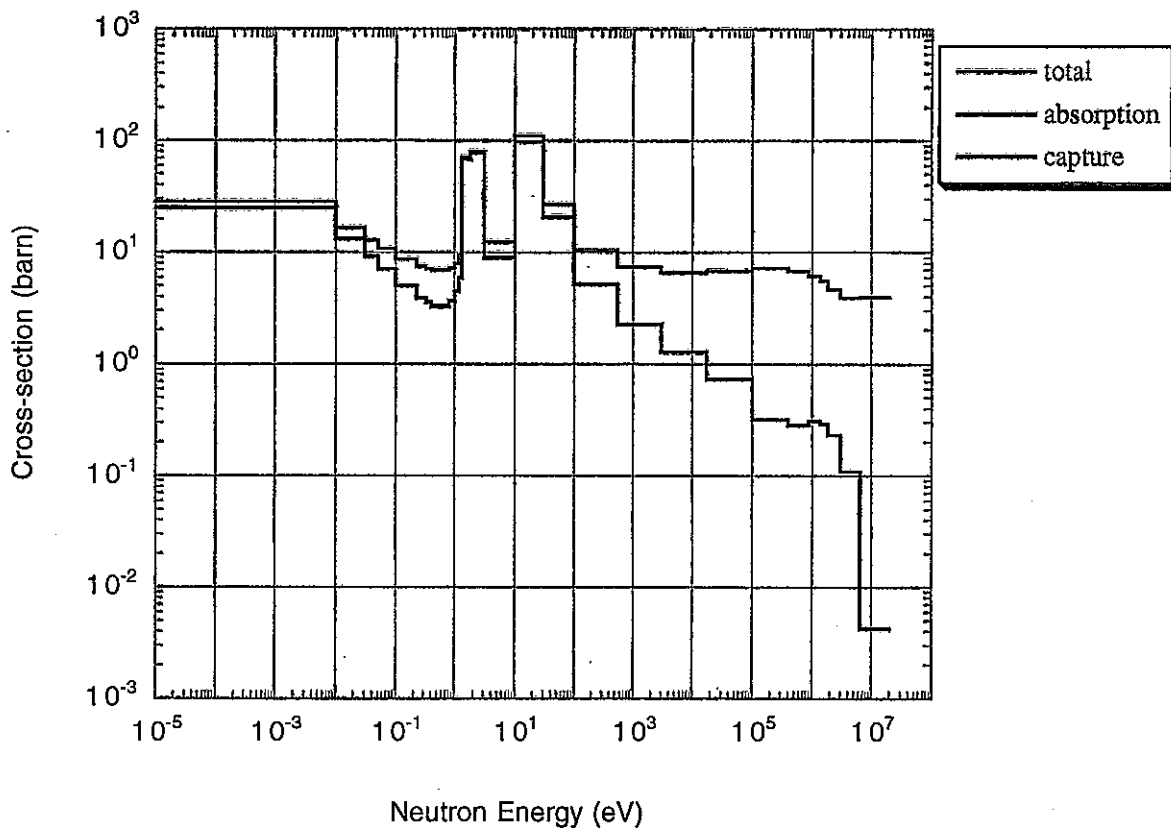
Ag - 109



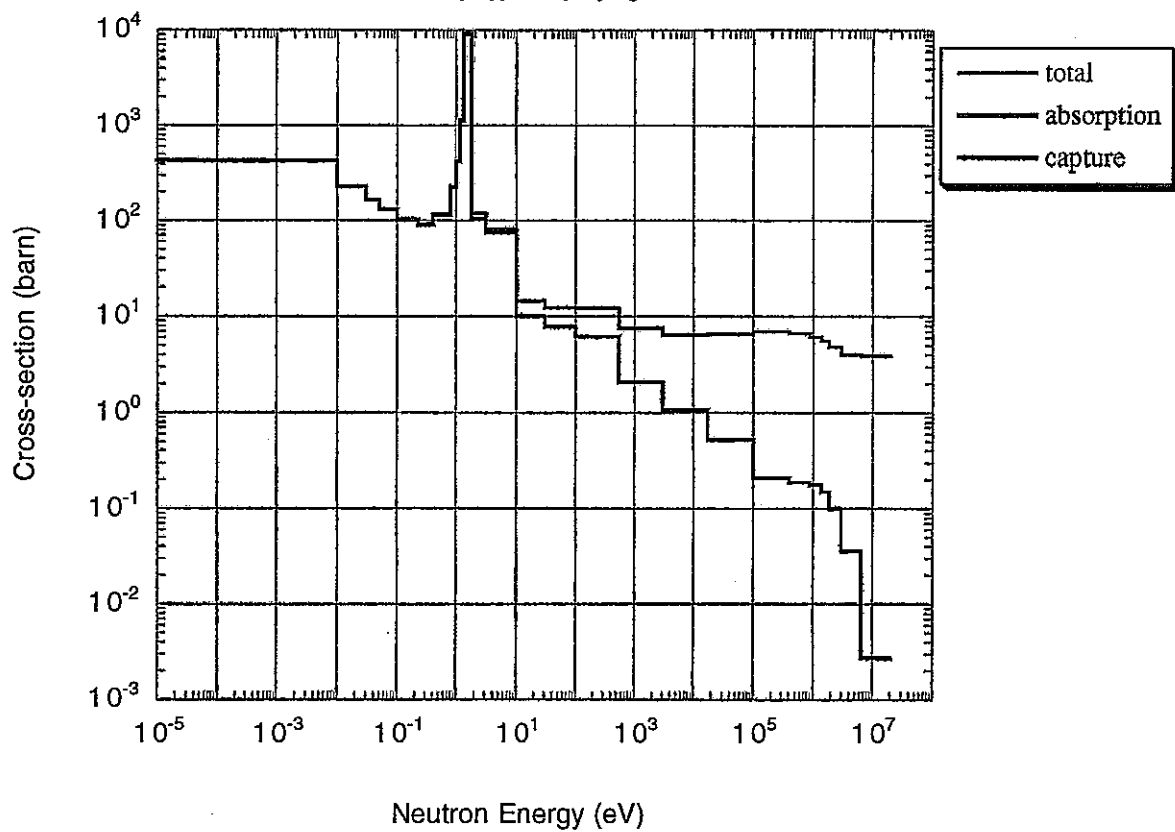
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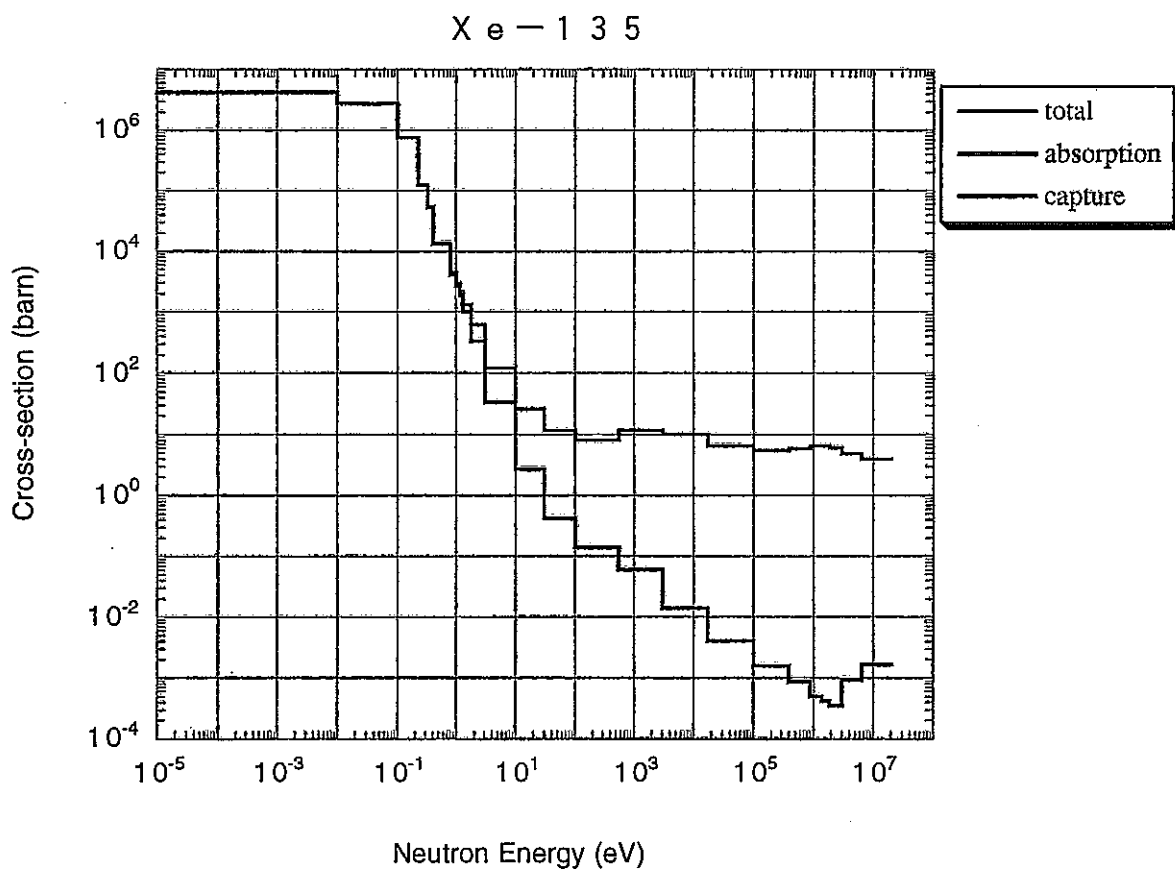
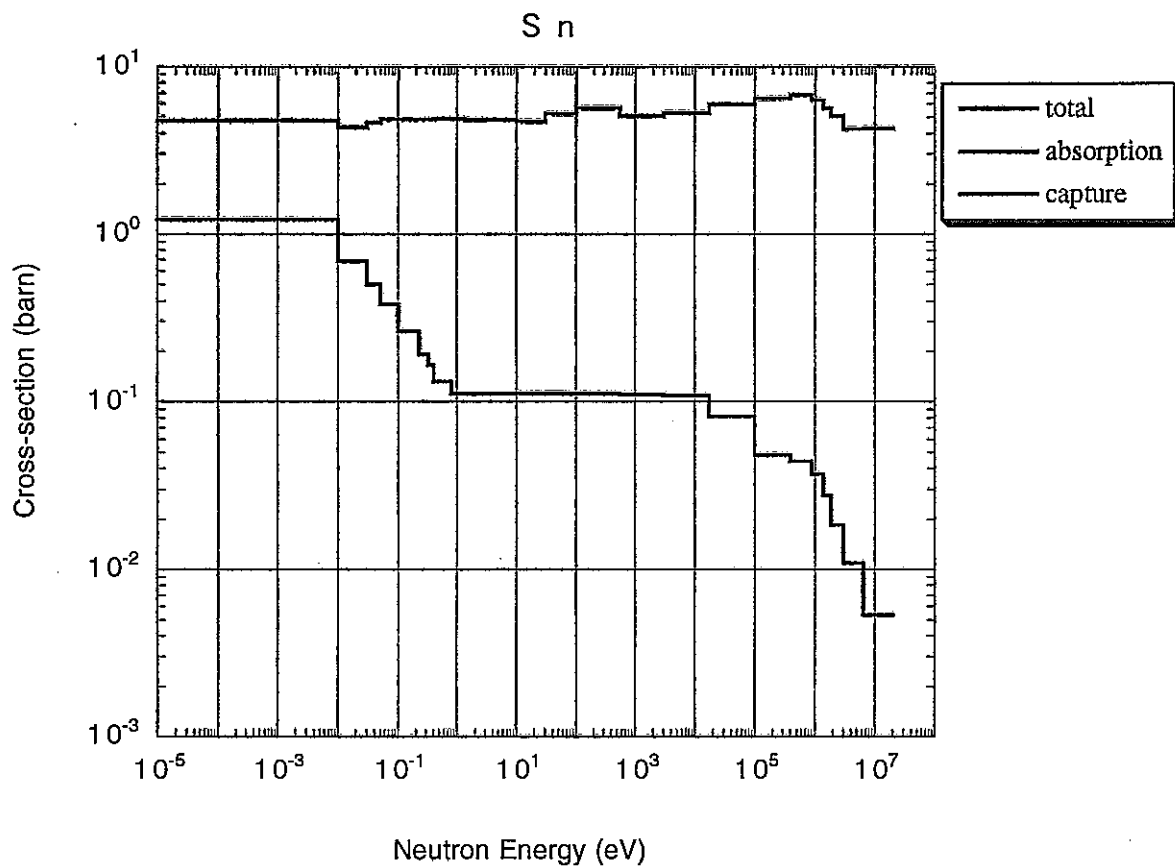


In-113

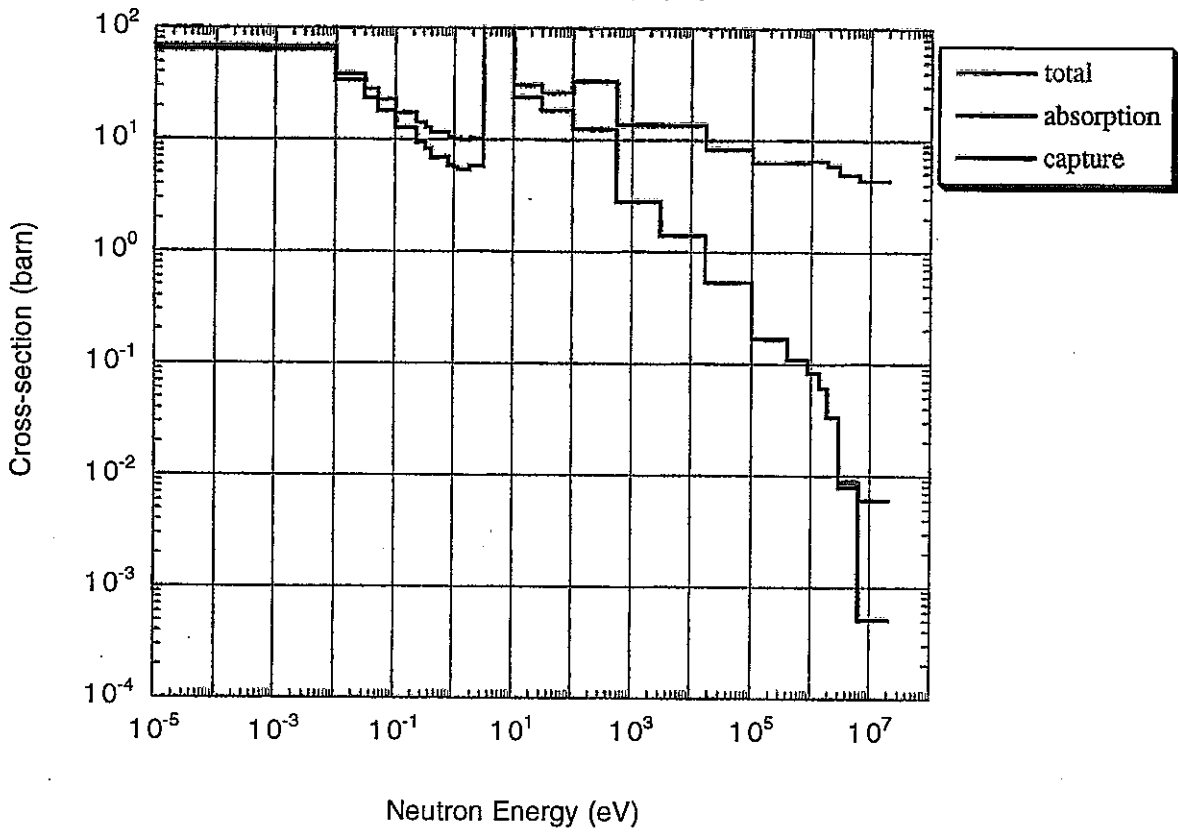


In-115

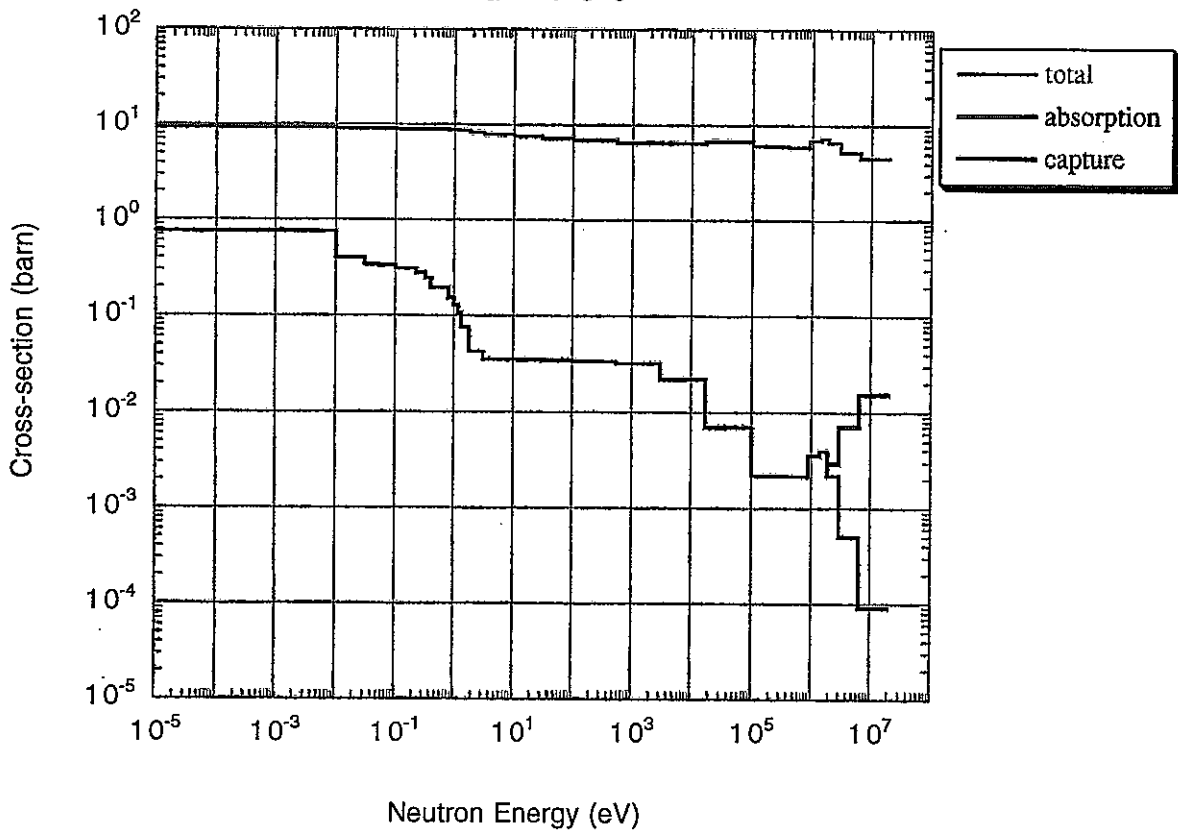




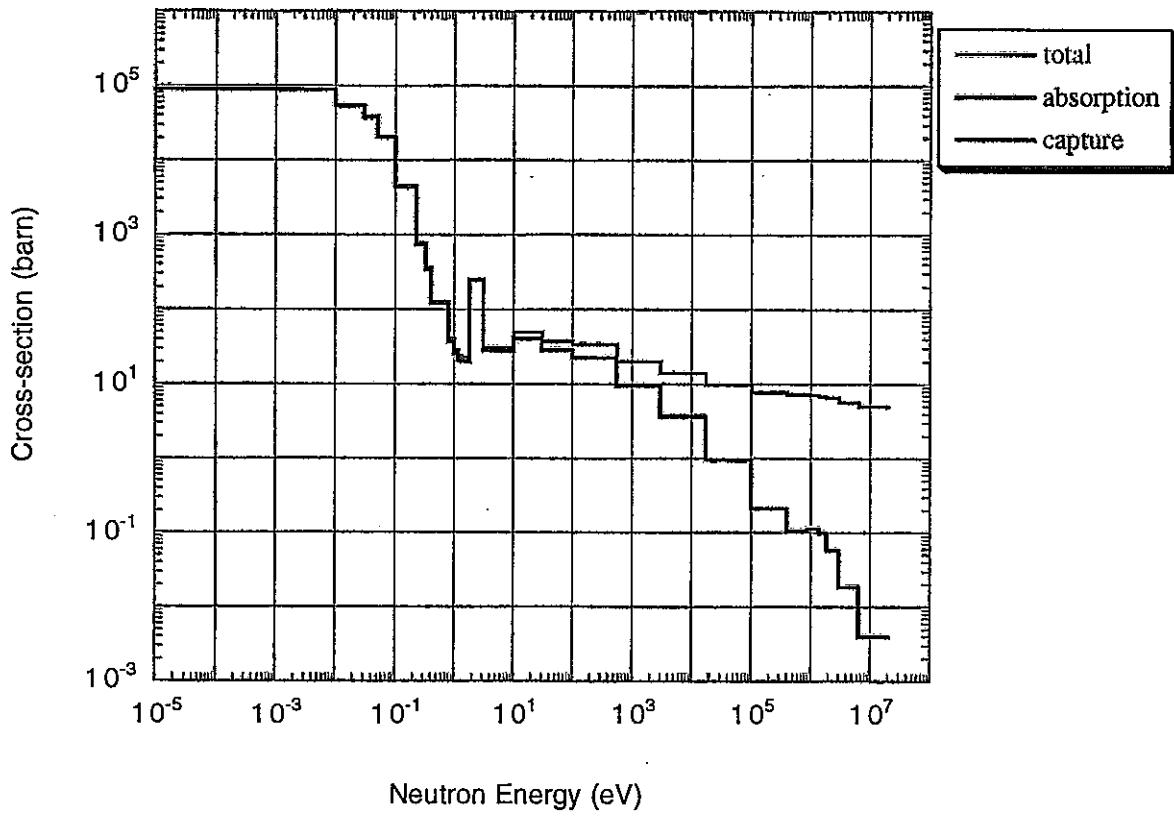
Cesium-133



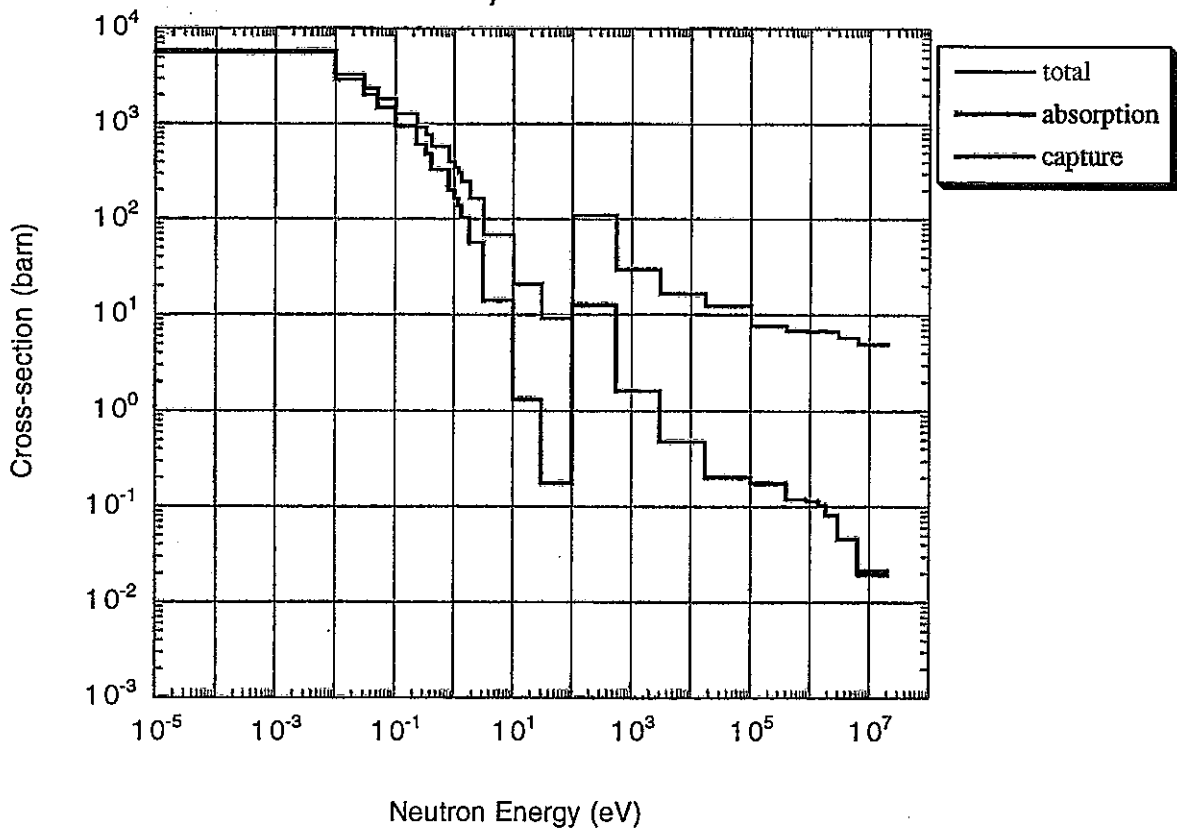
Ba-138



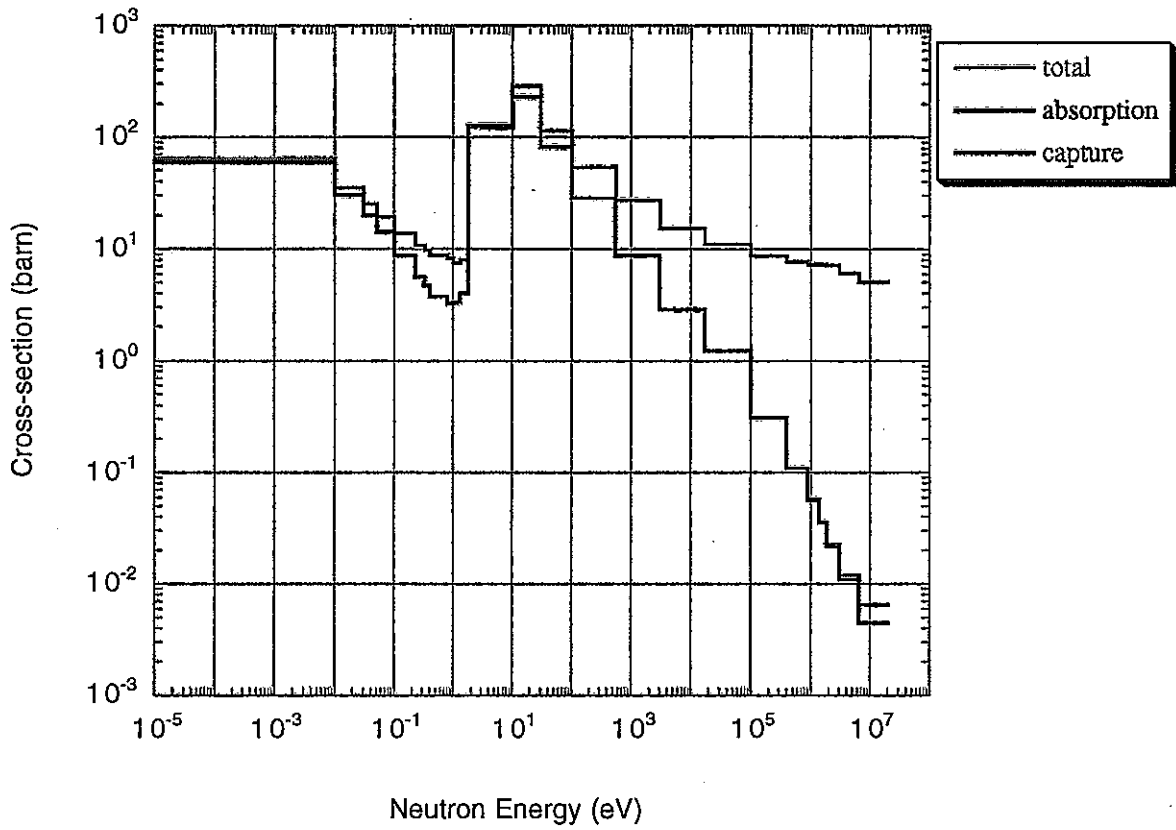
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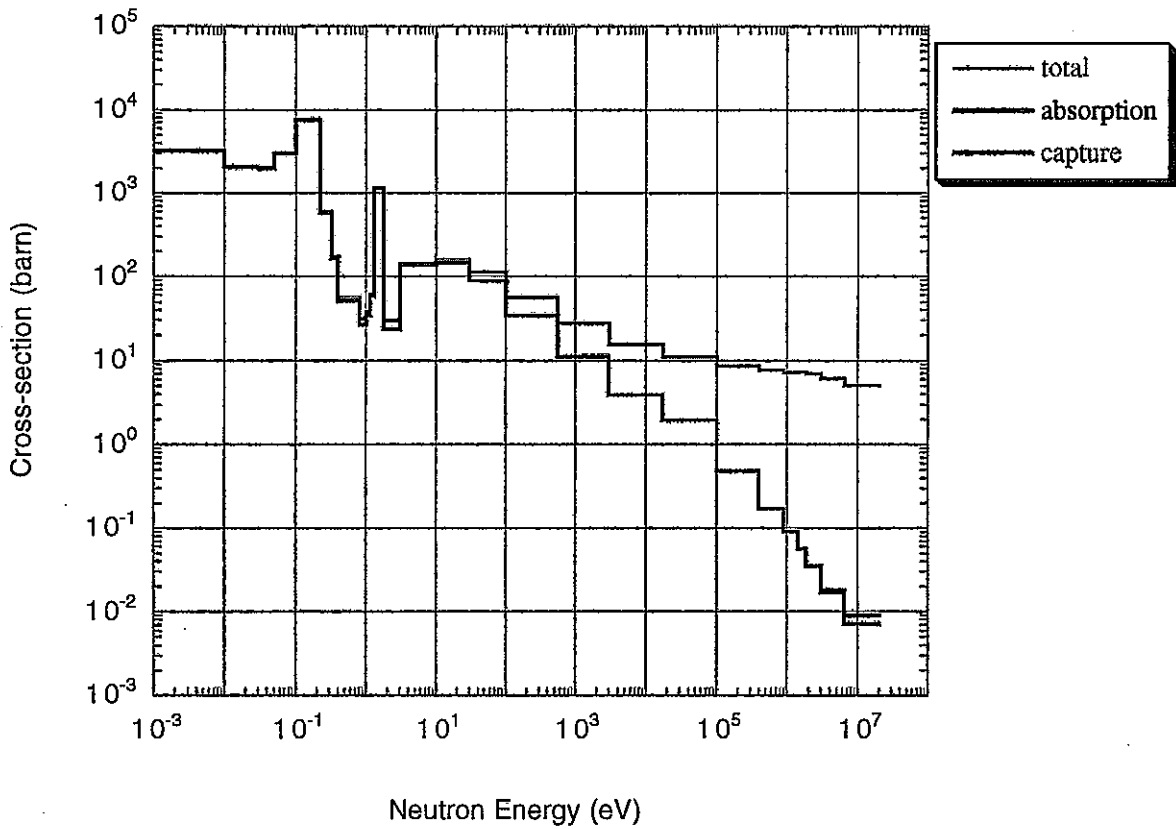
D y - 1 6 4

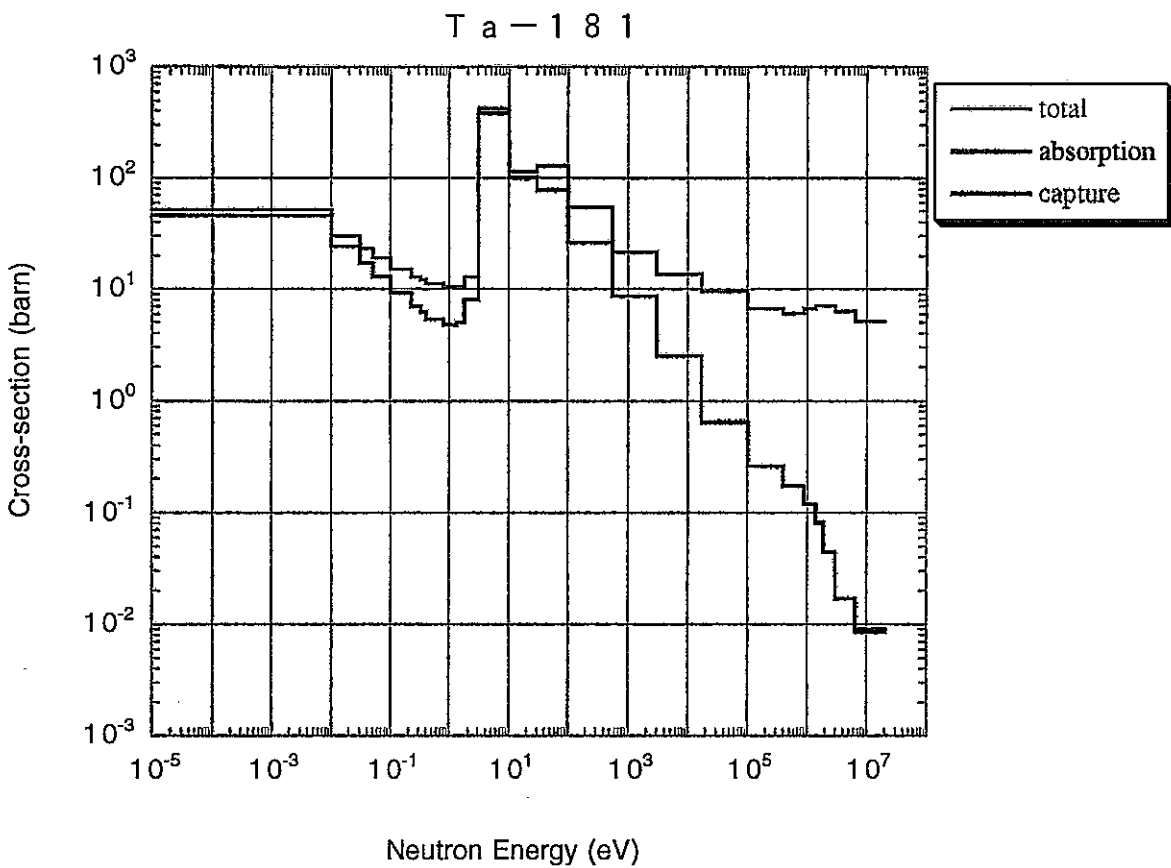
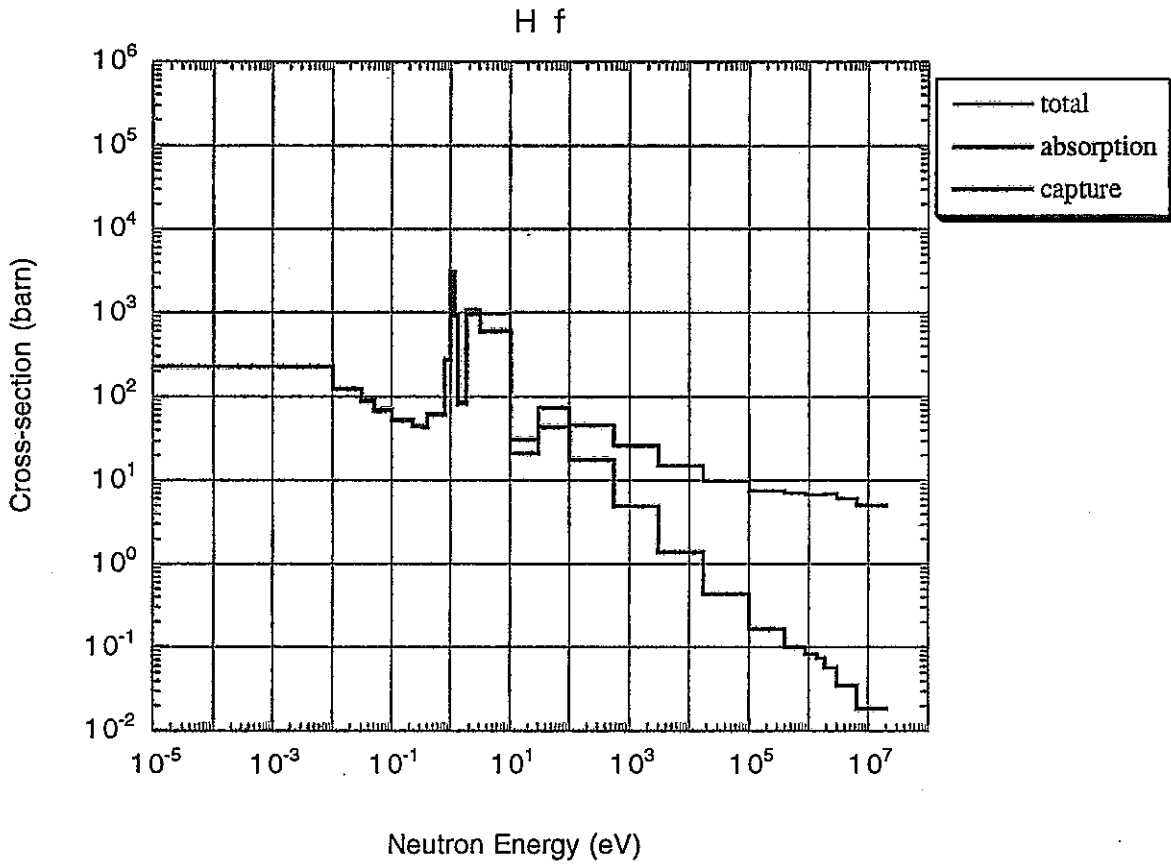


Lu-175

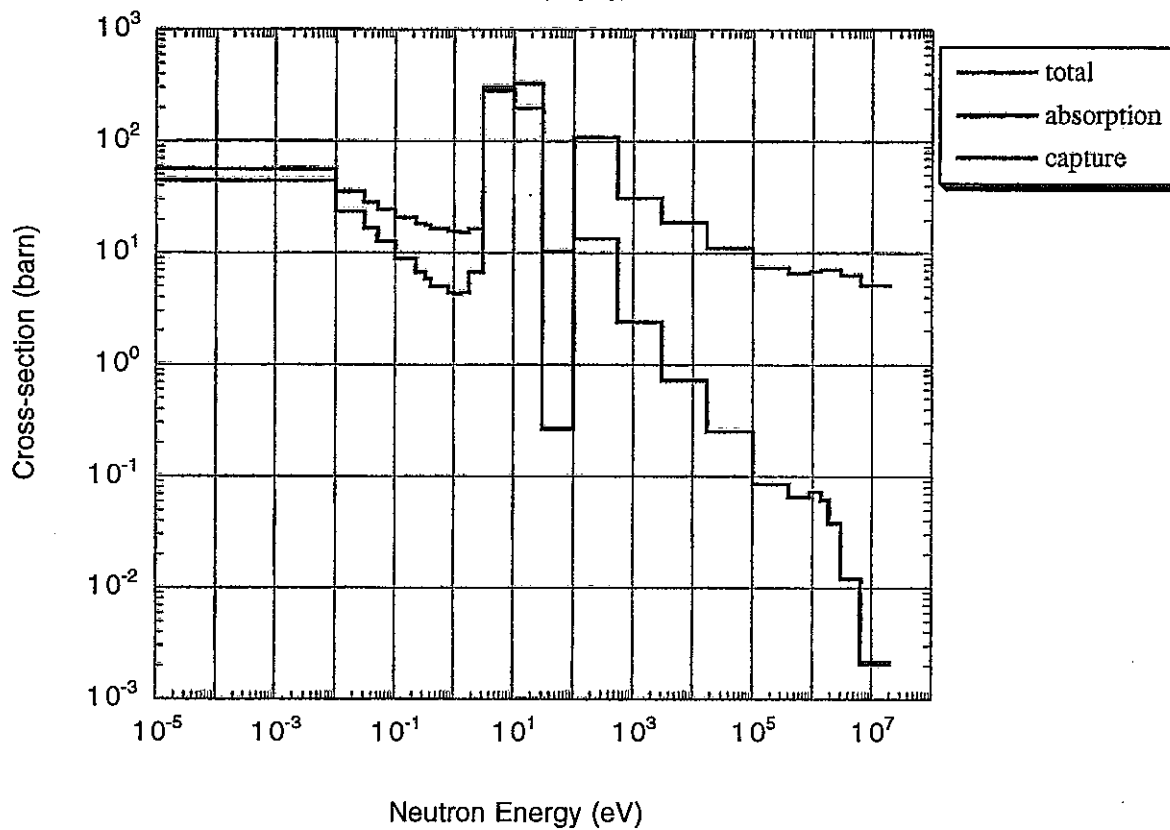


Lu-176

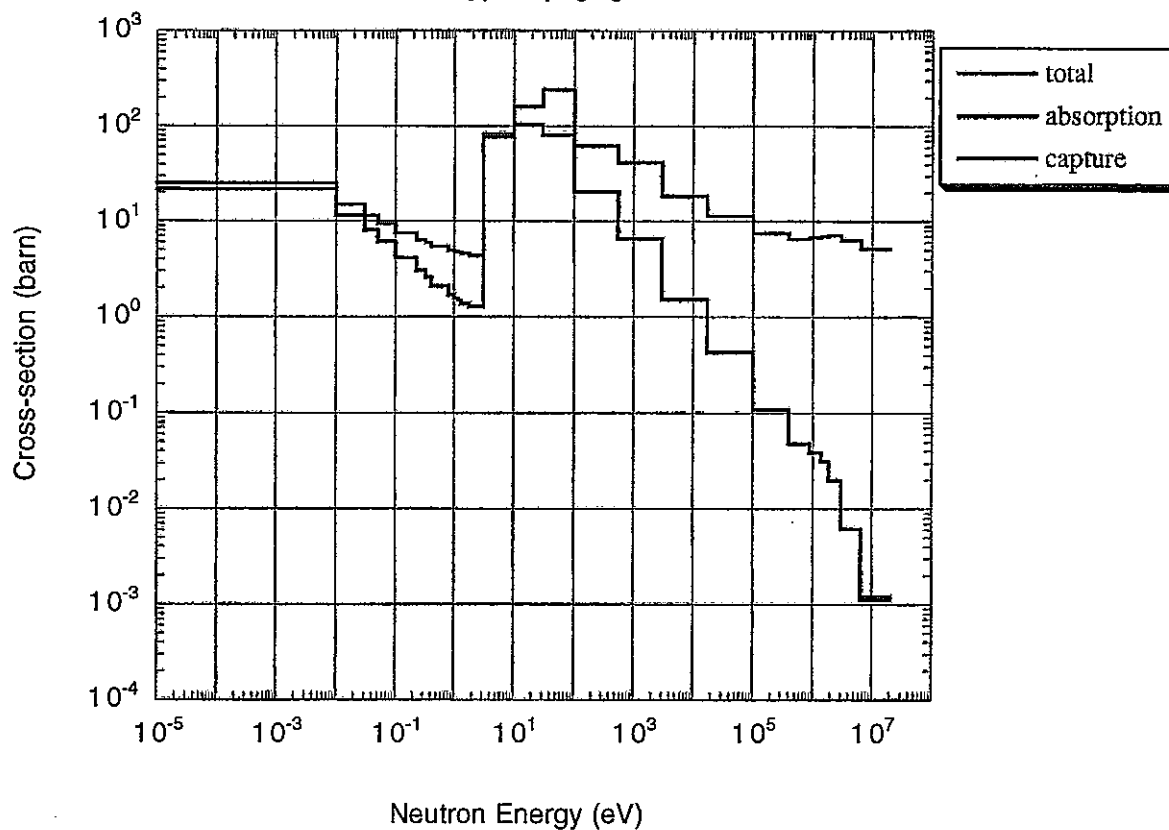




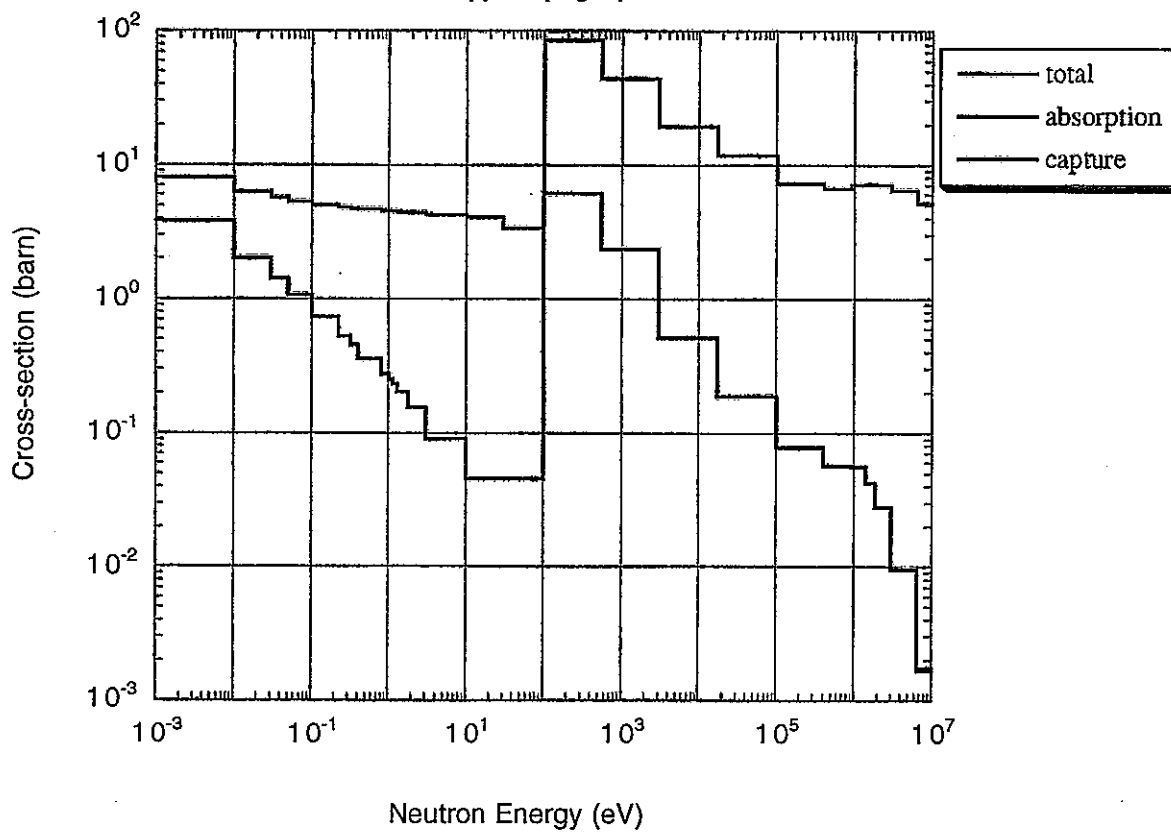
W-182



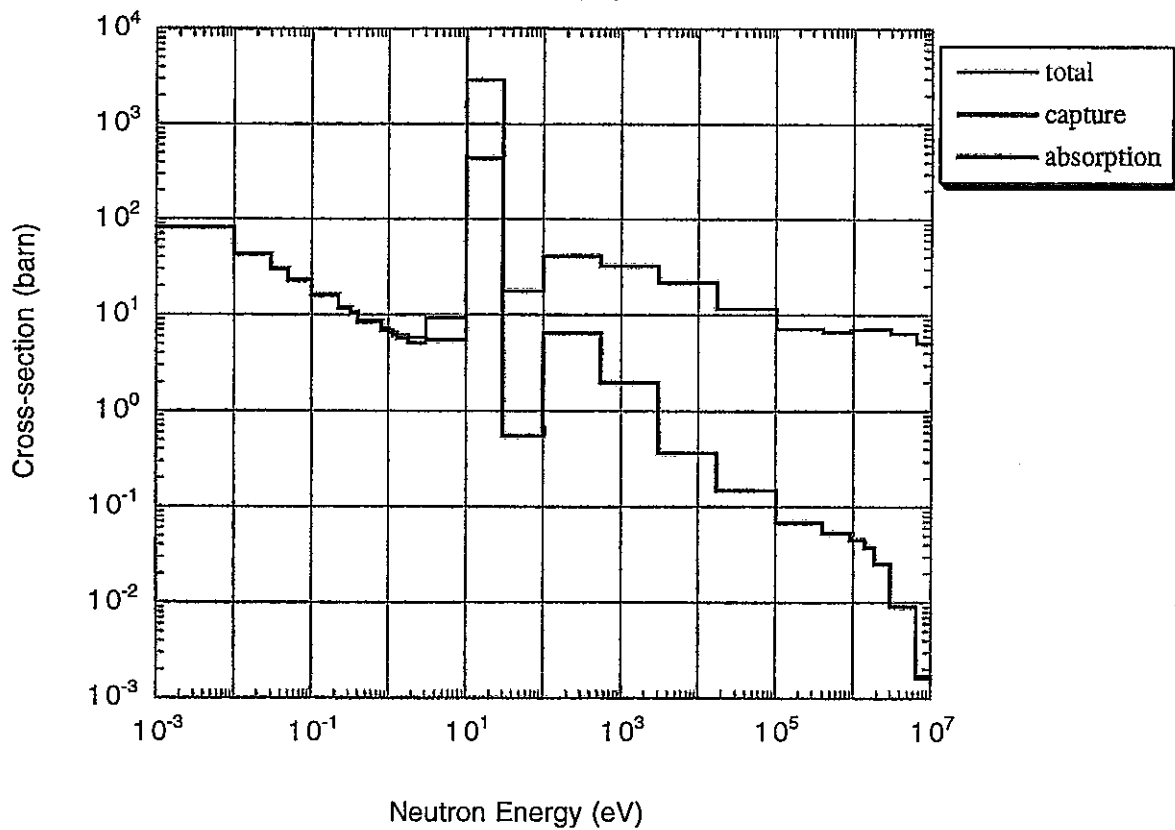
W-183



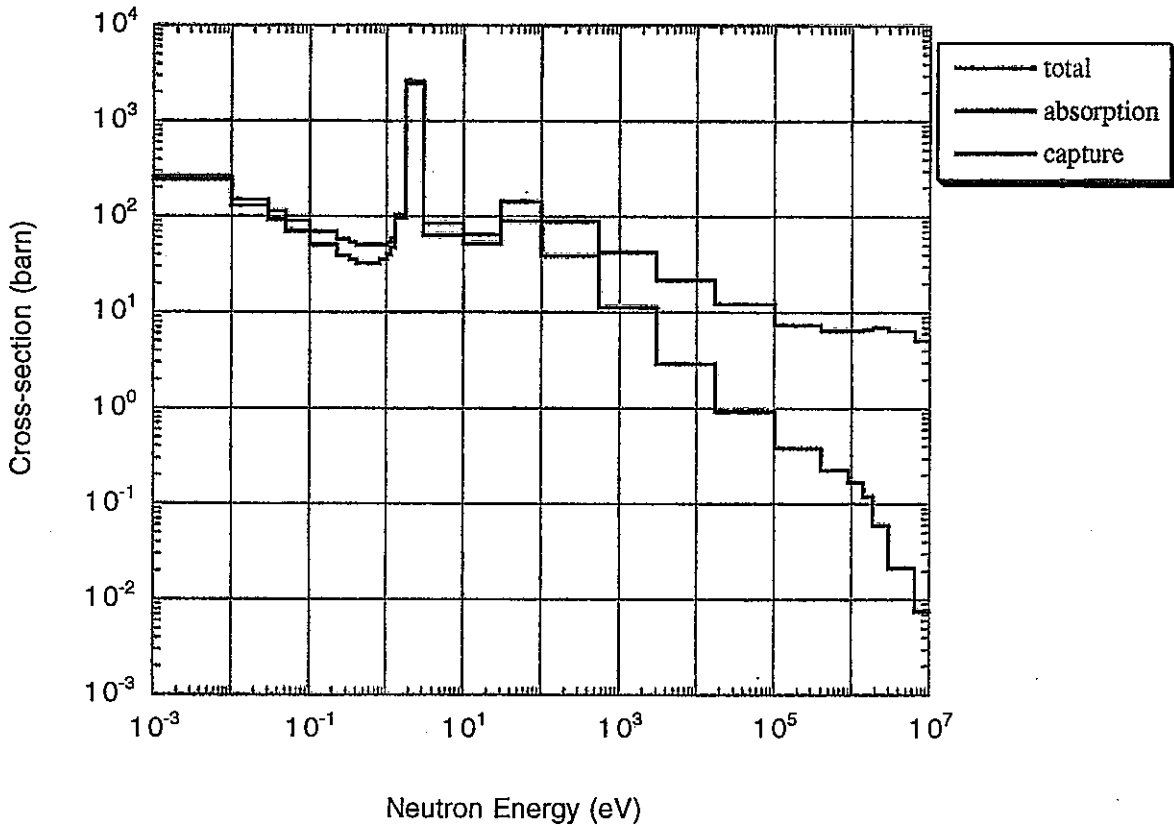
W-184



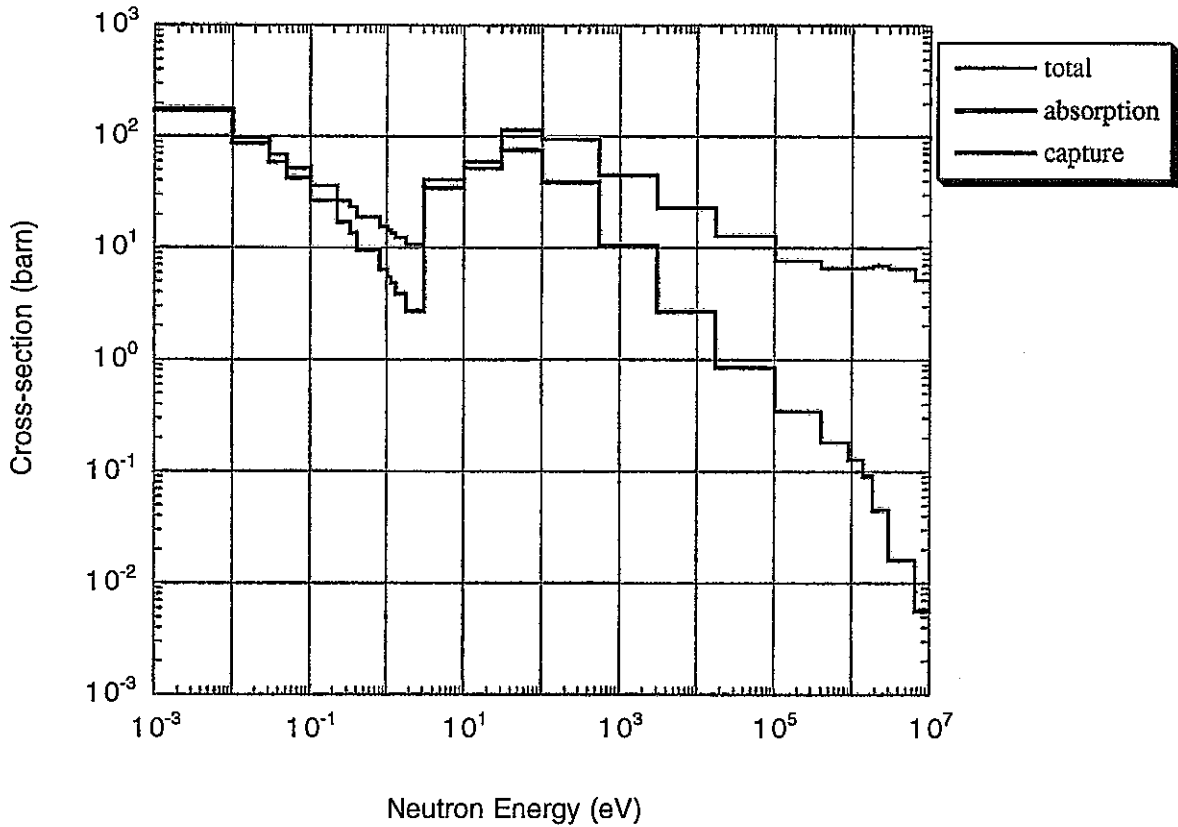
W-186



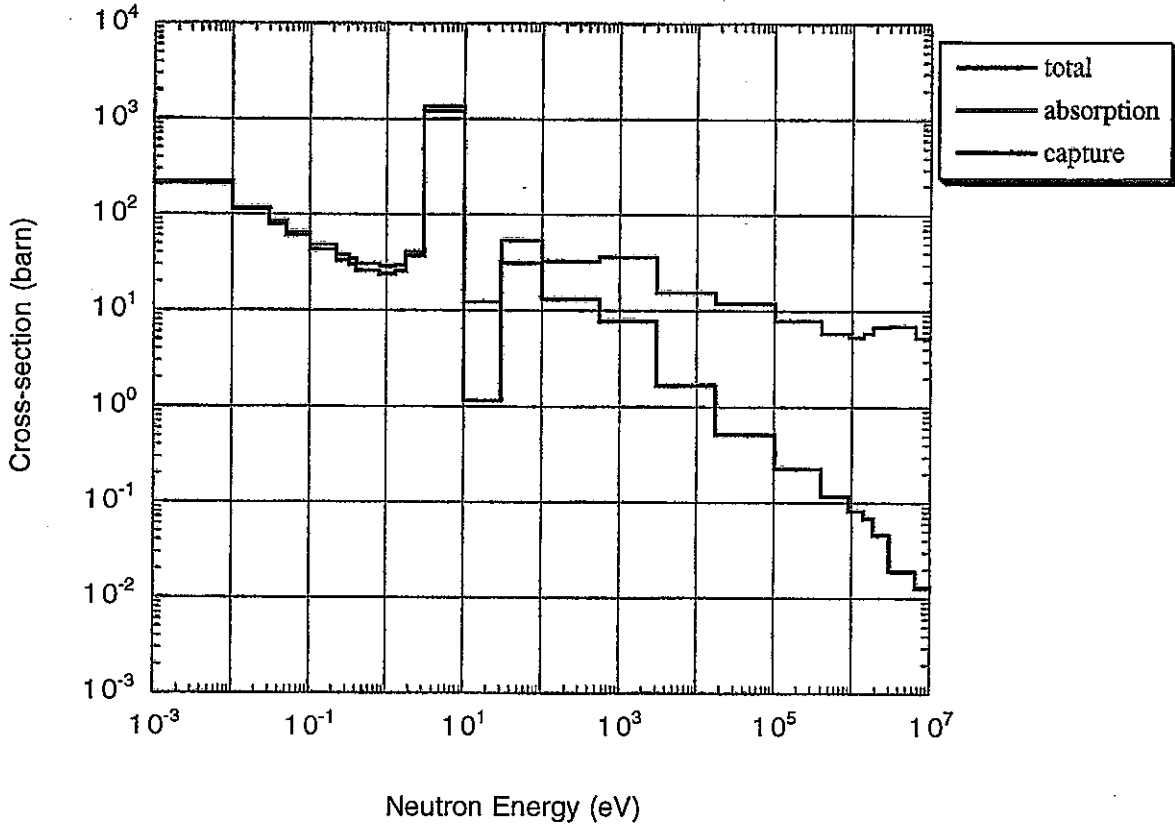
Re-185



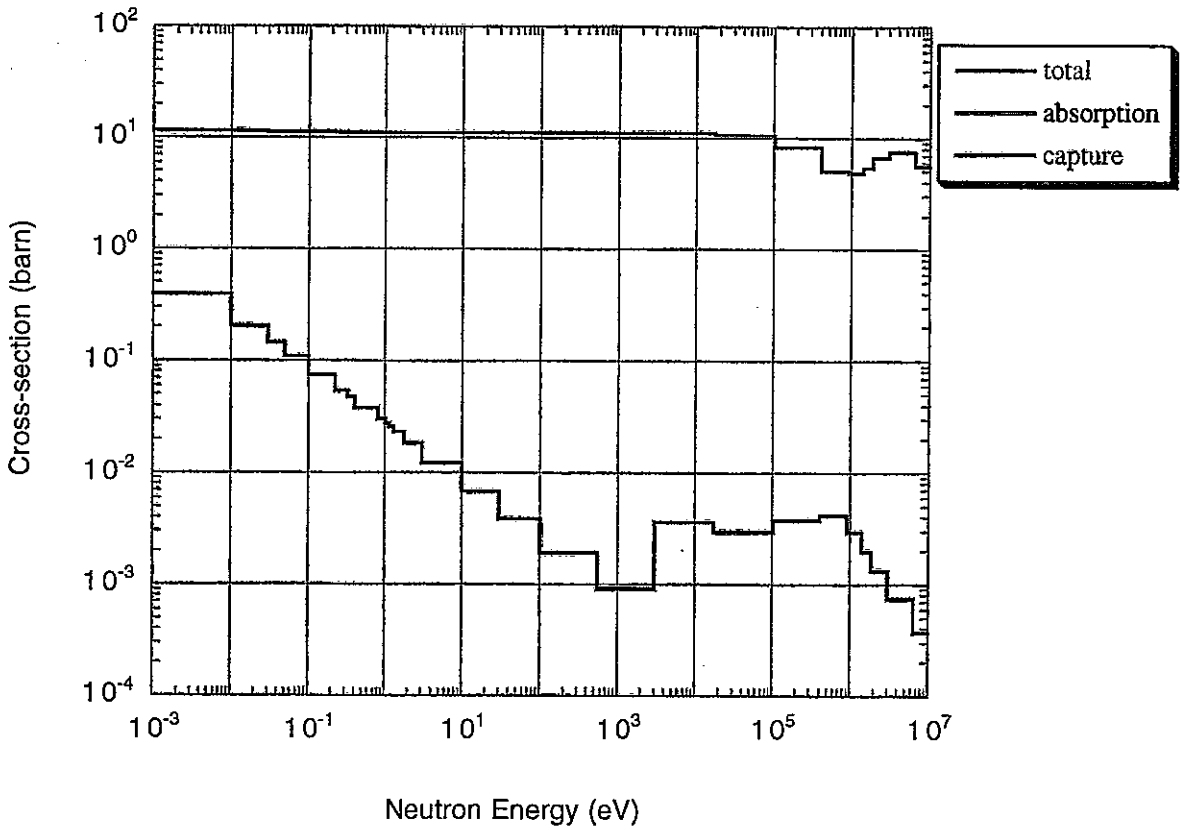
Re-187



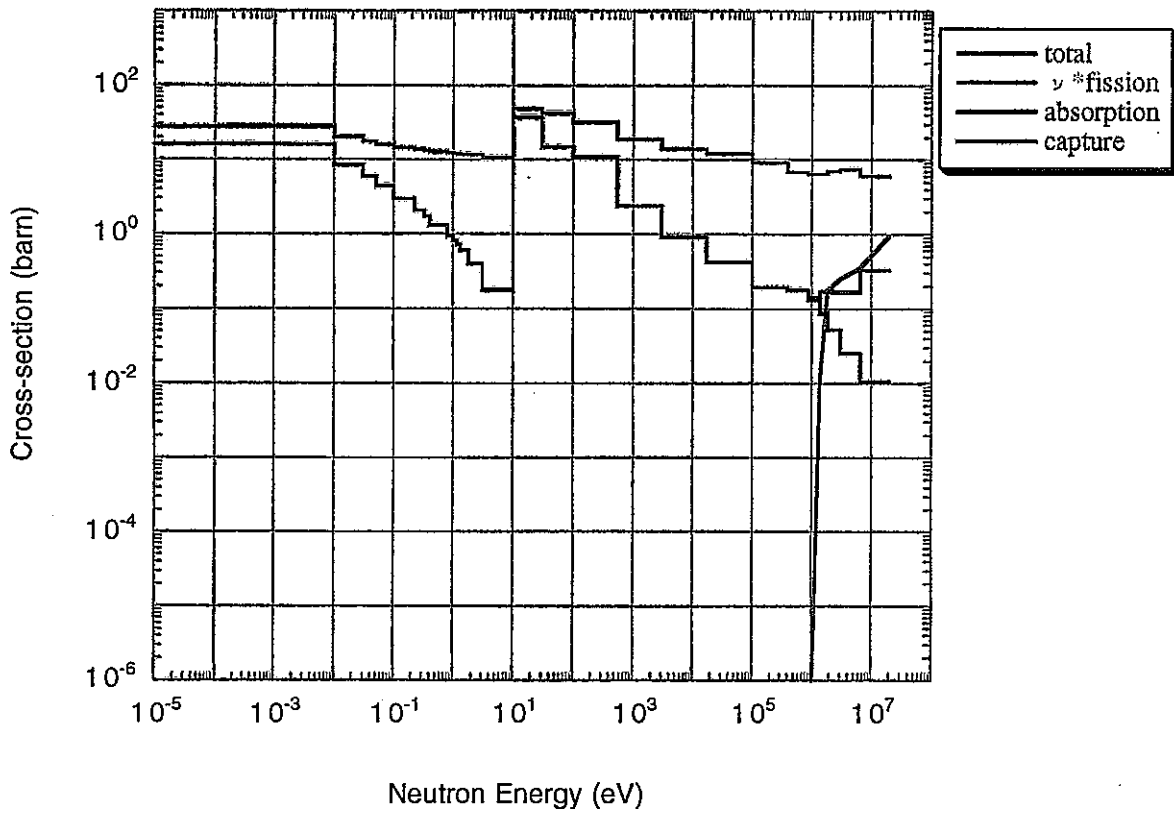
Au-197



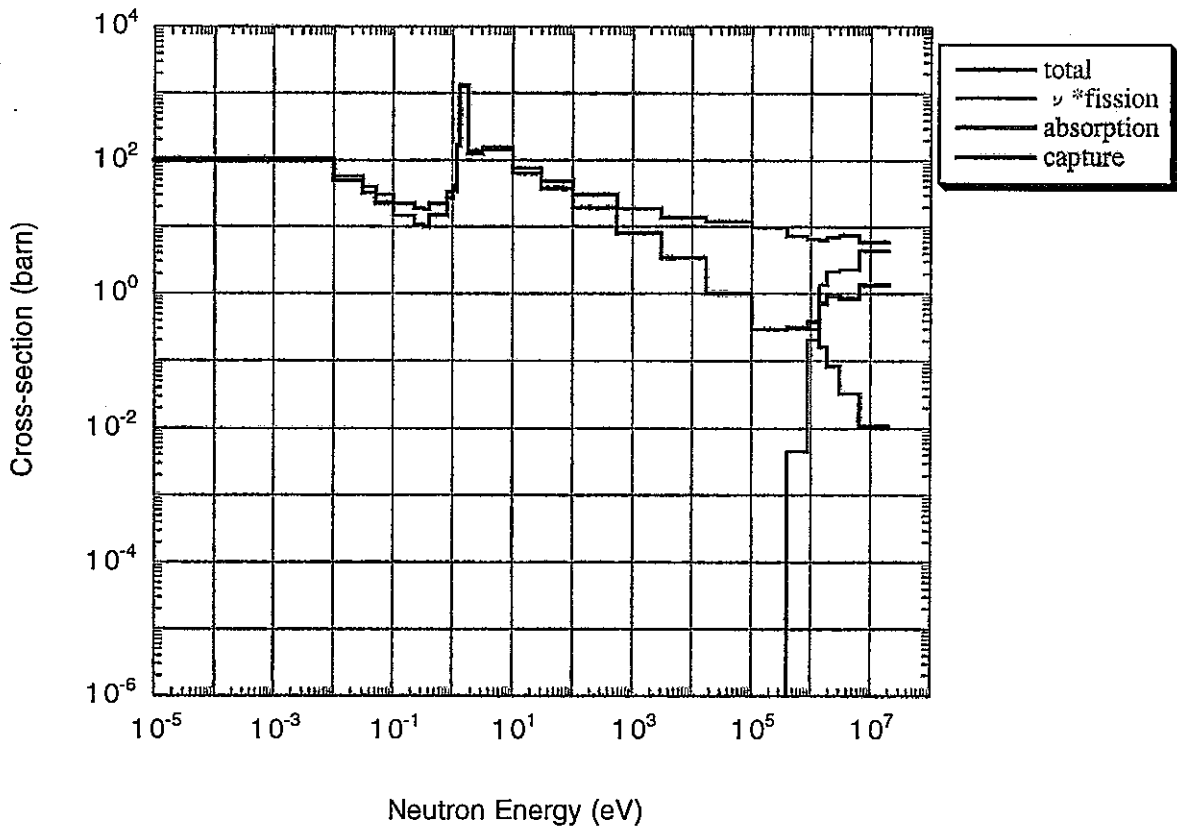
Pb



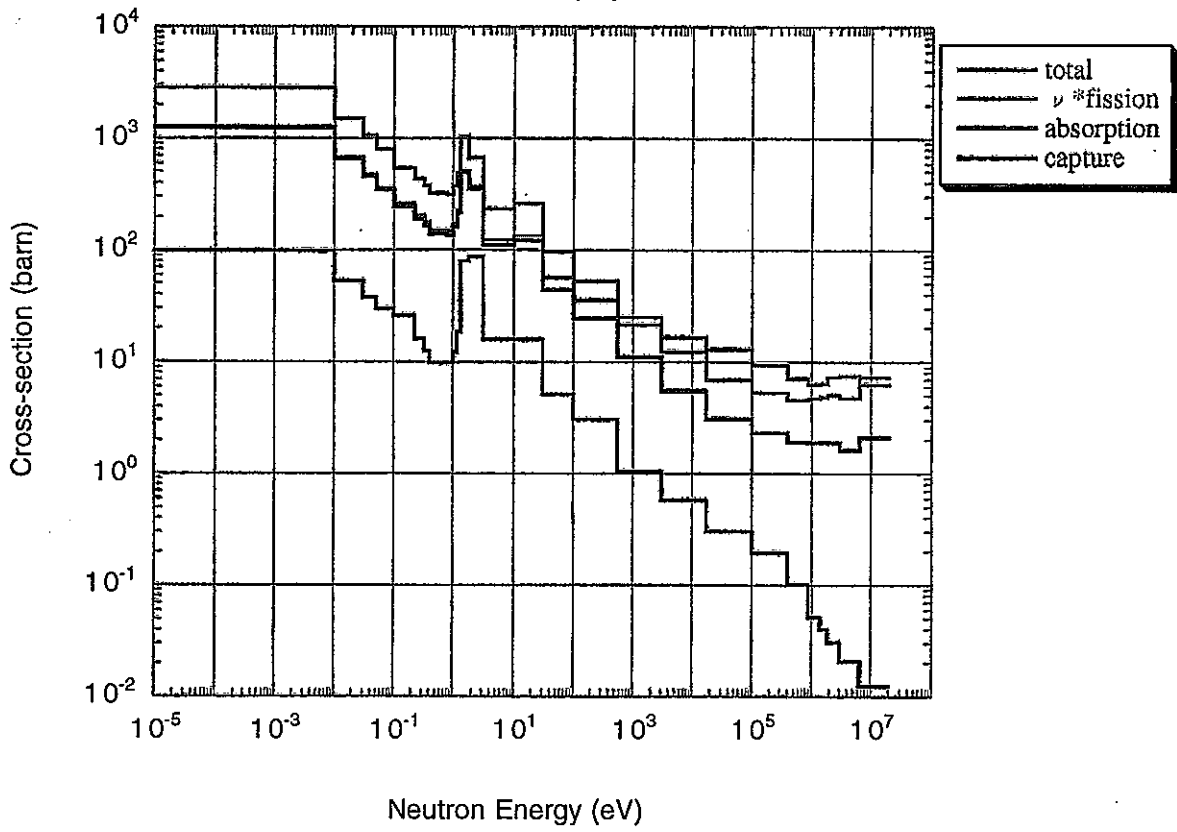
Th - 232



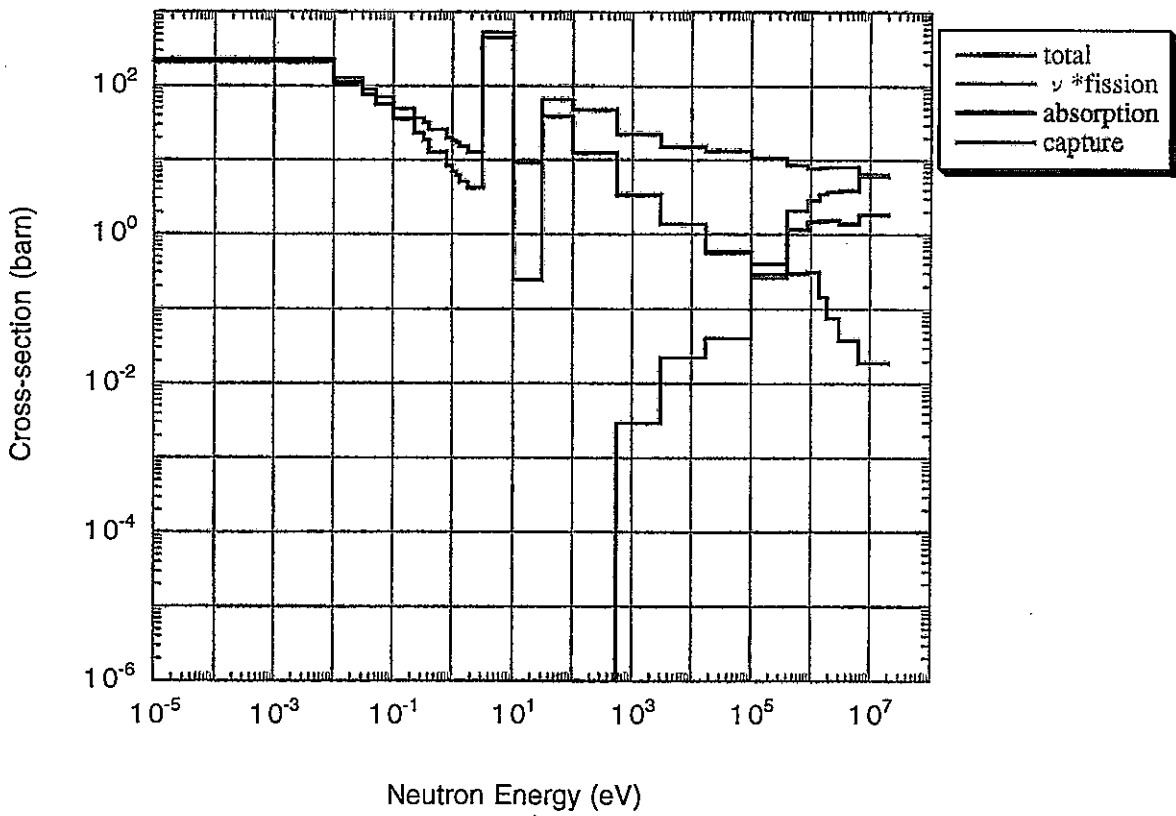
Pa - 233



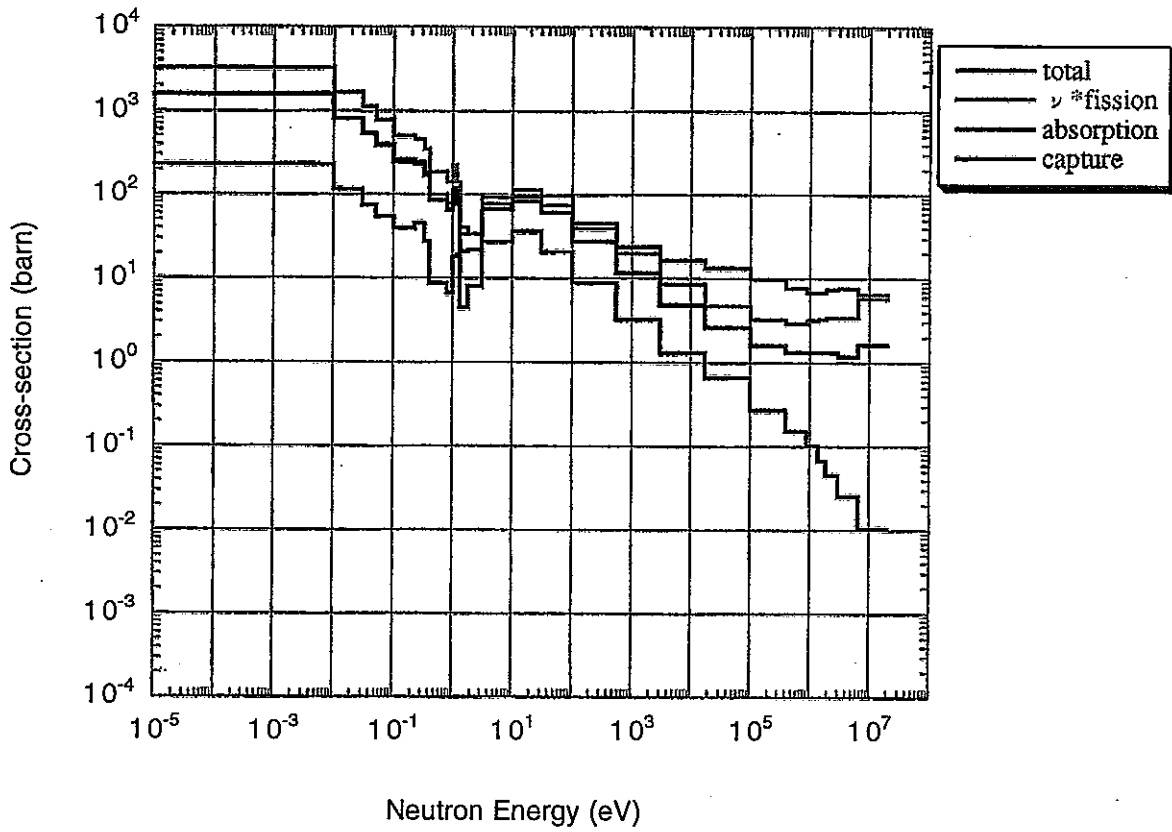
U-233



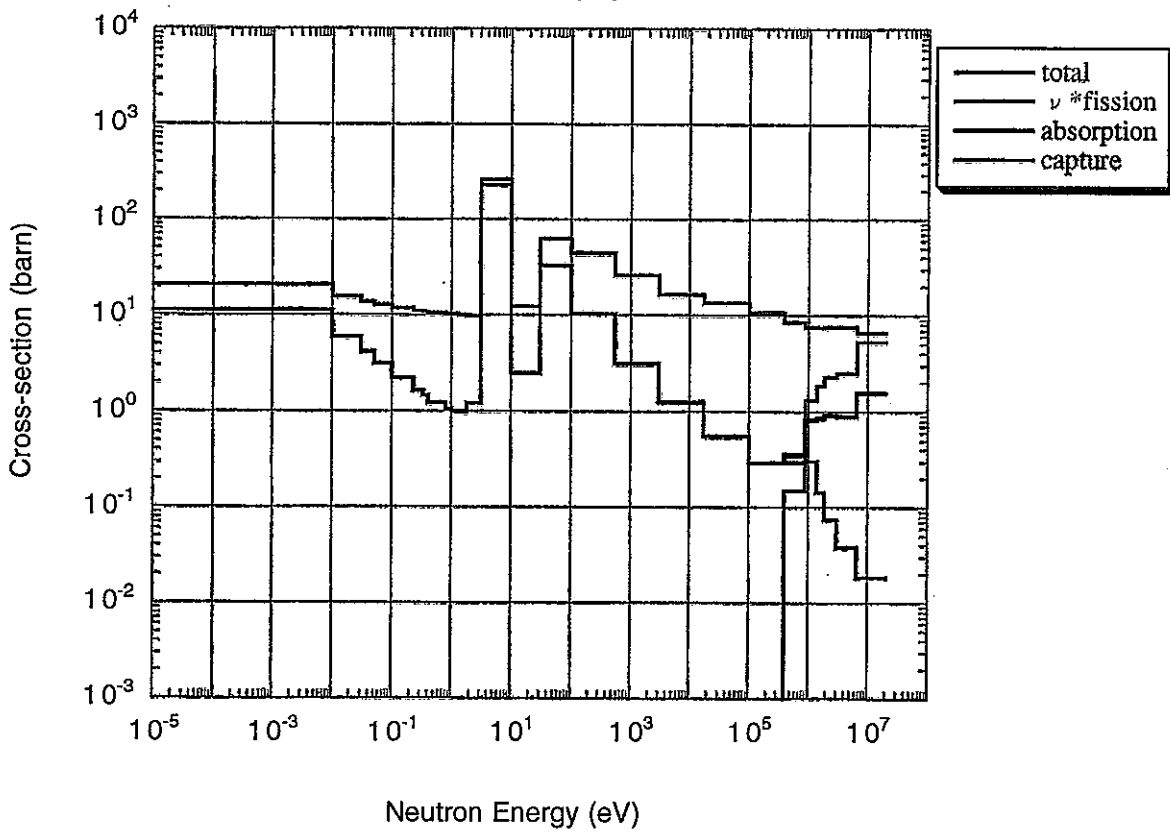
U-234



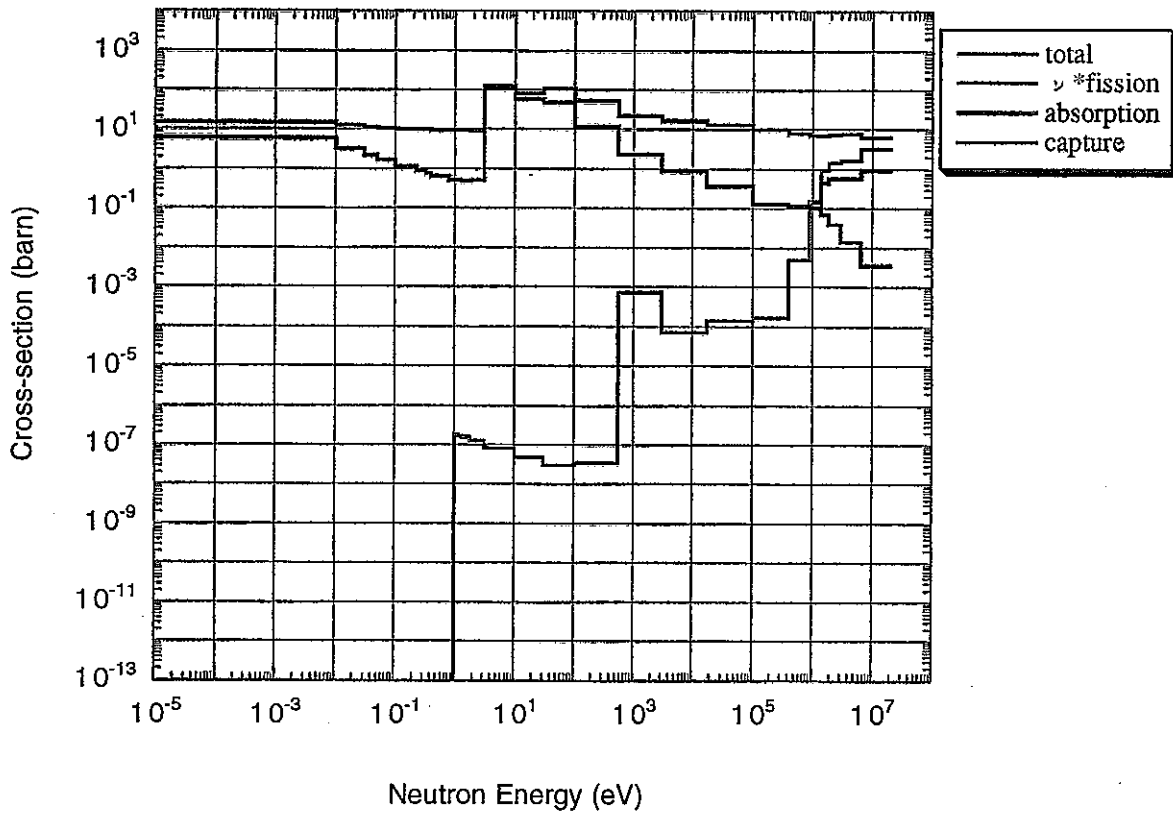
U-235



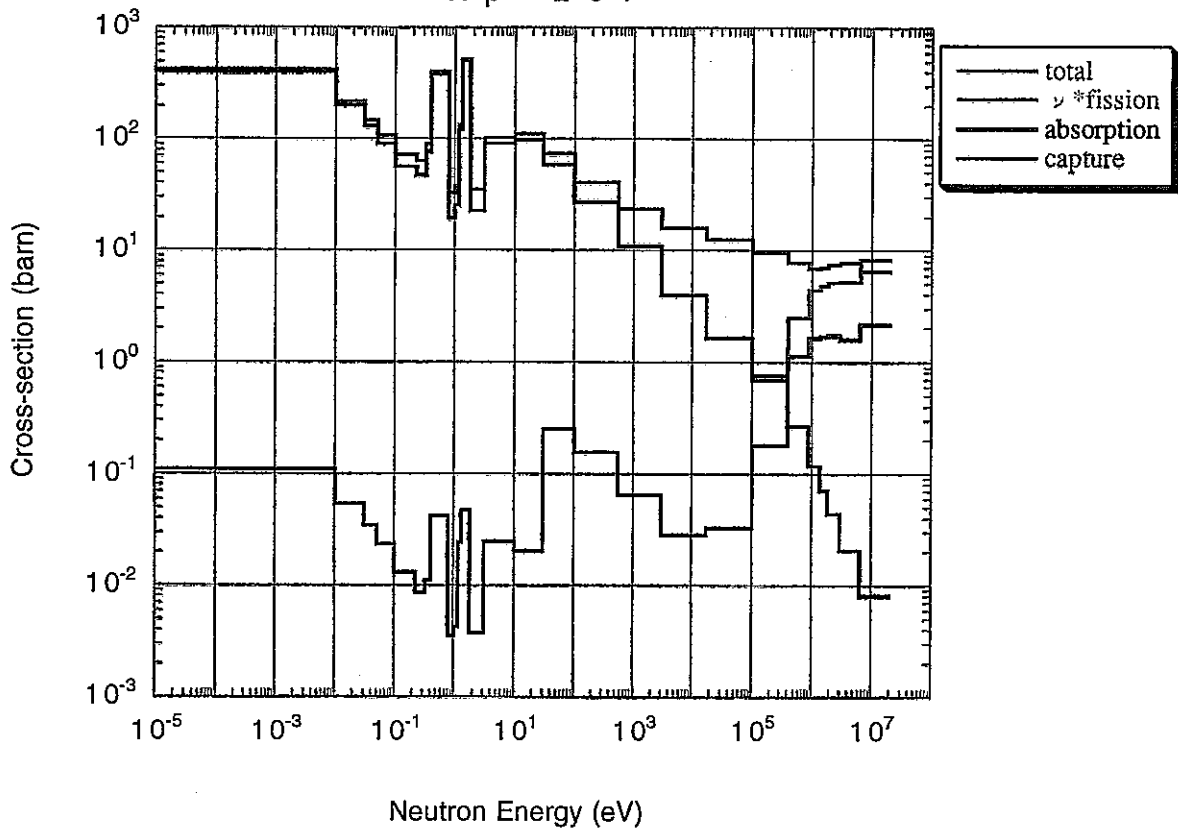
U-236



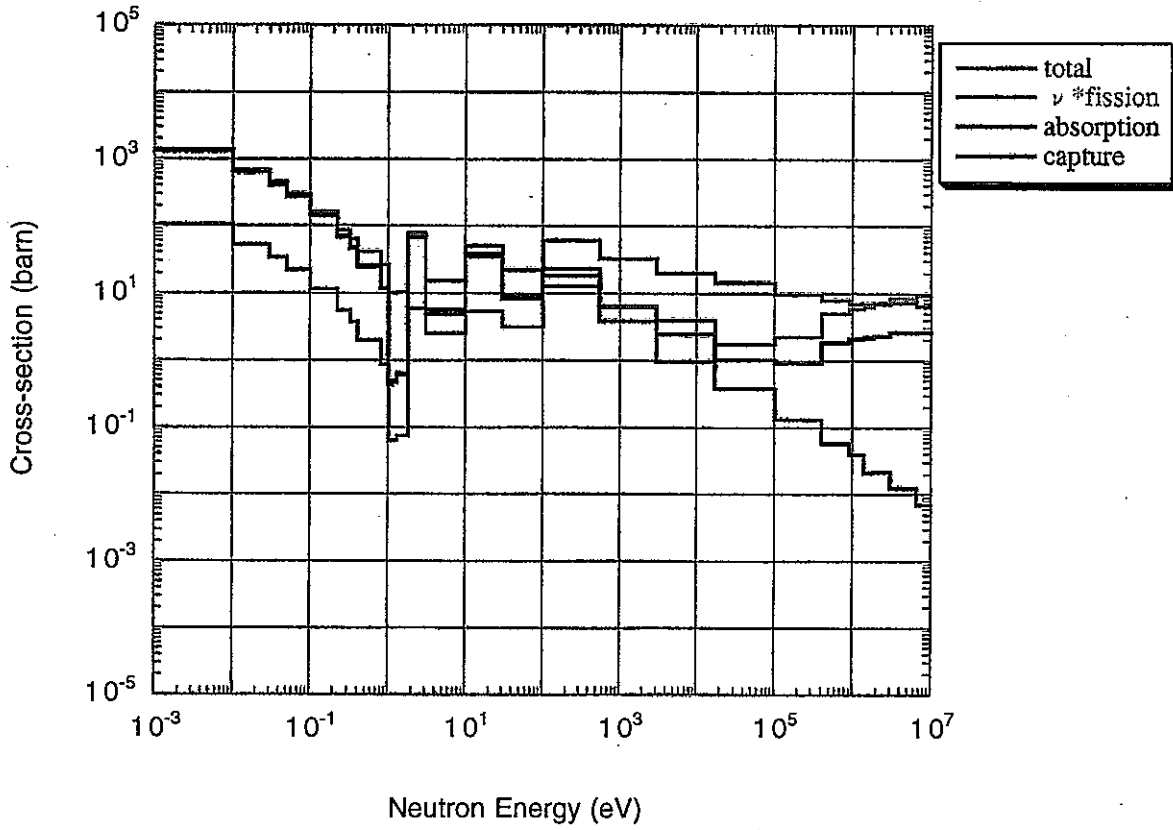
U - 2 3 8



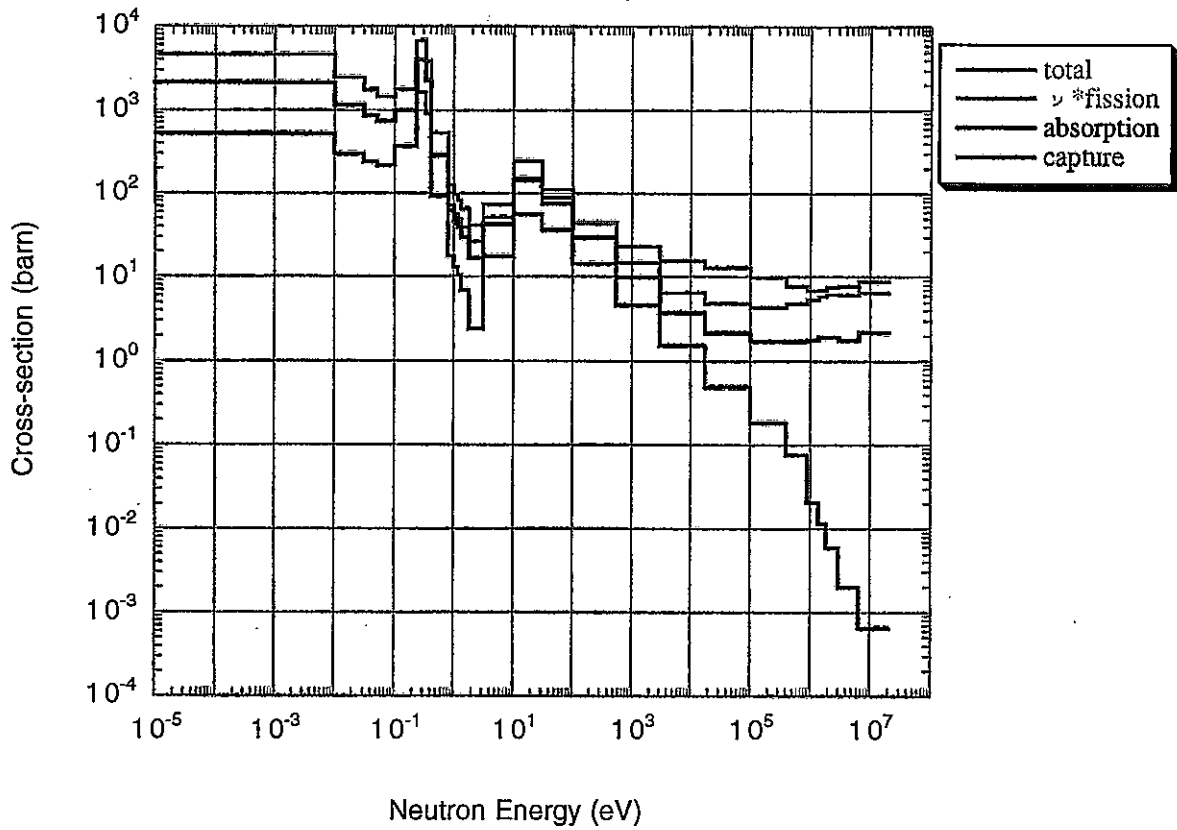
N p - 2 3 7

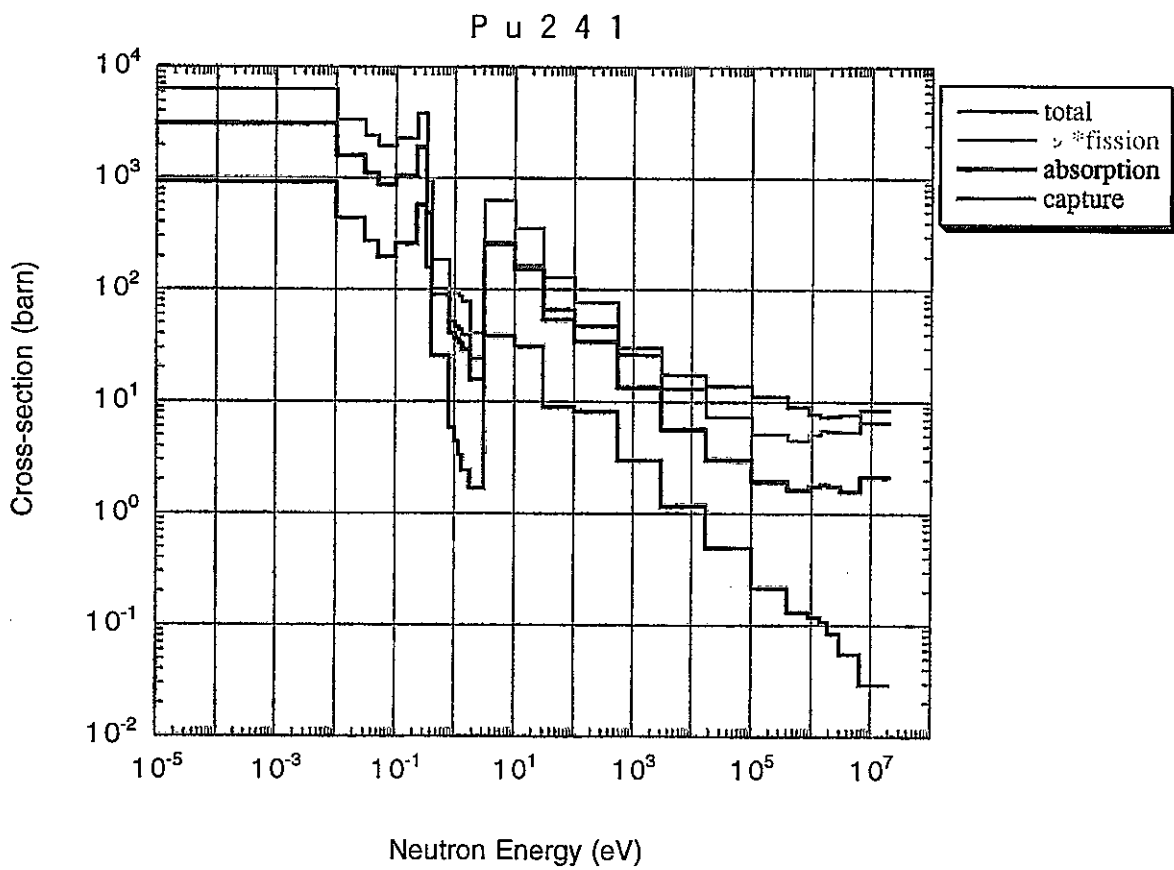
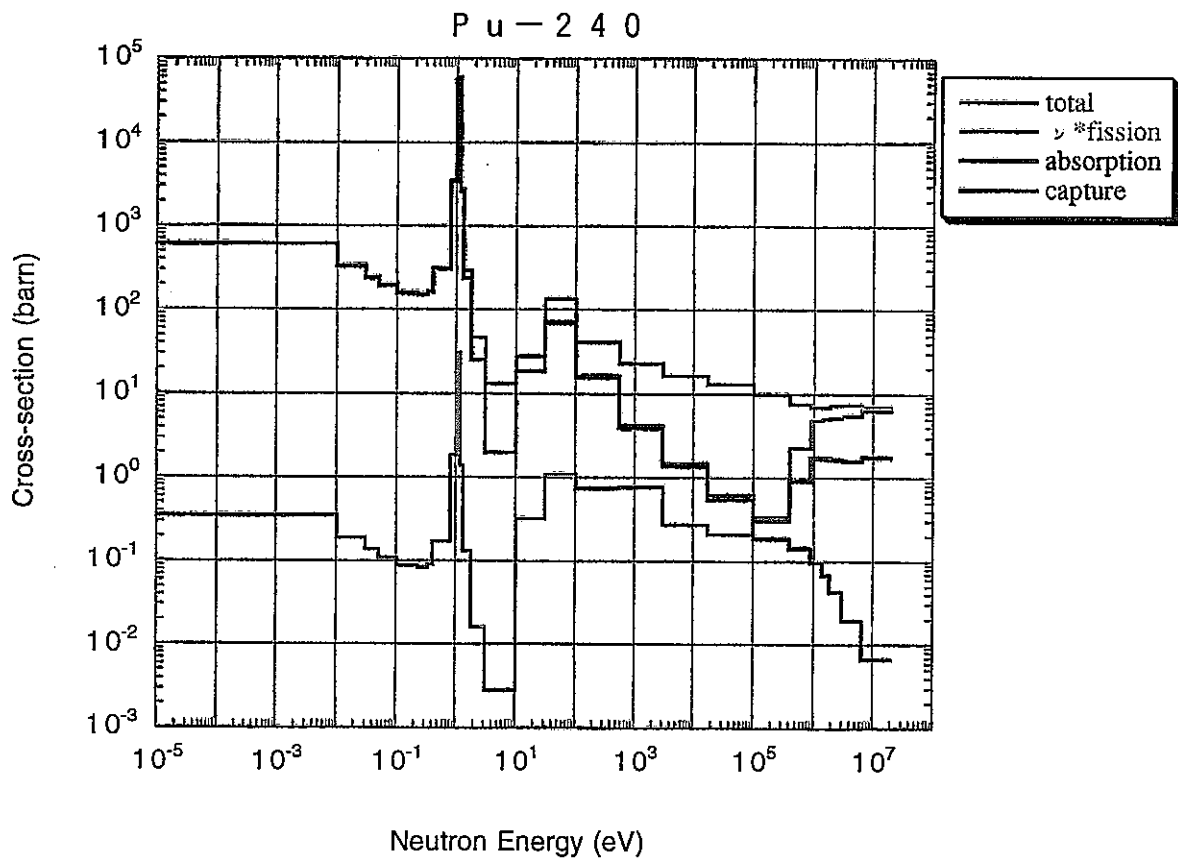


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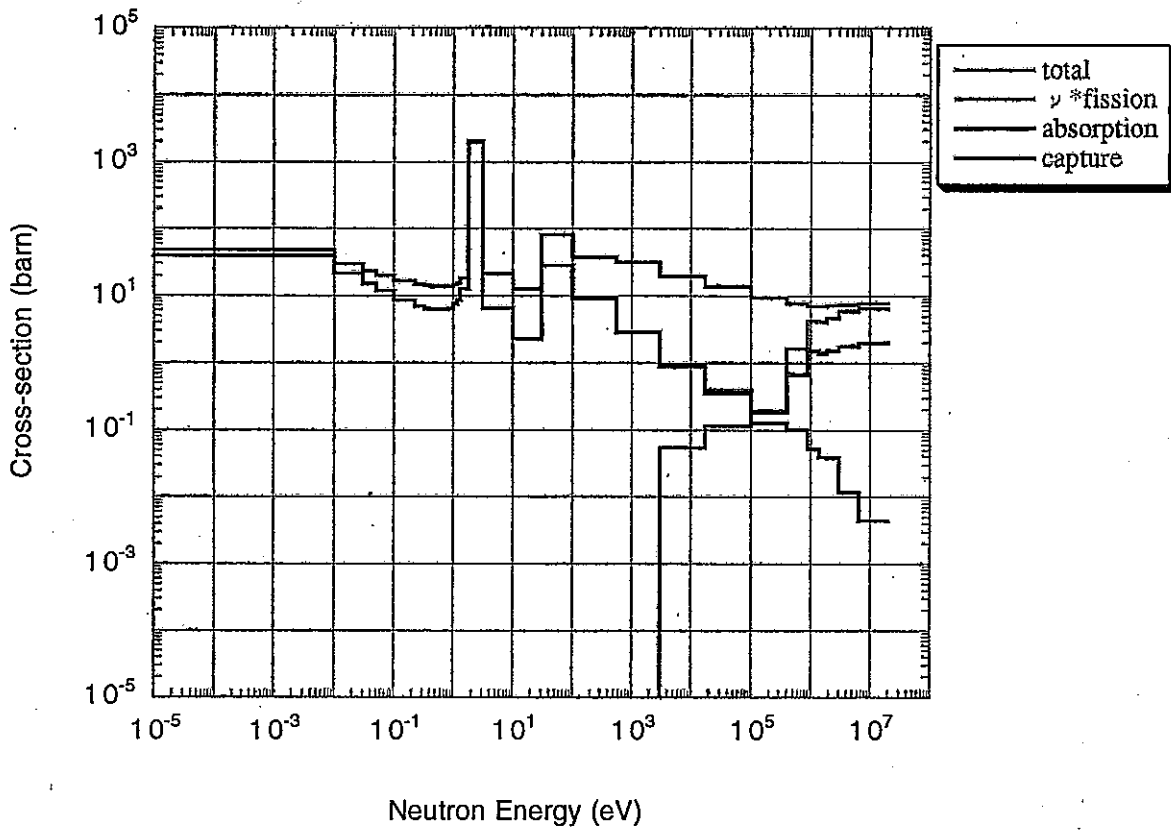


P u - 2 3 9

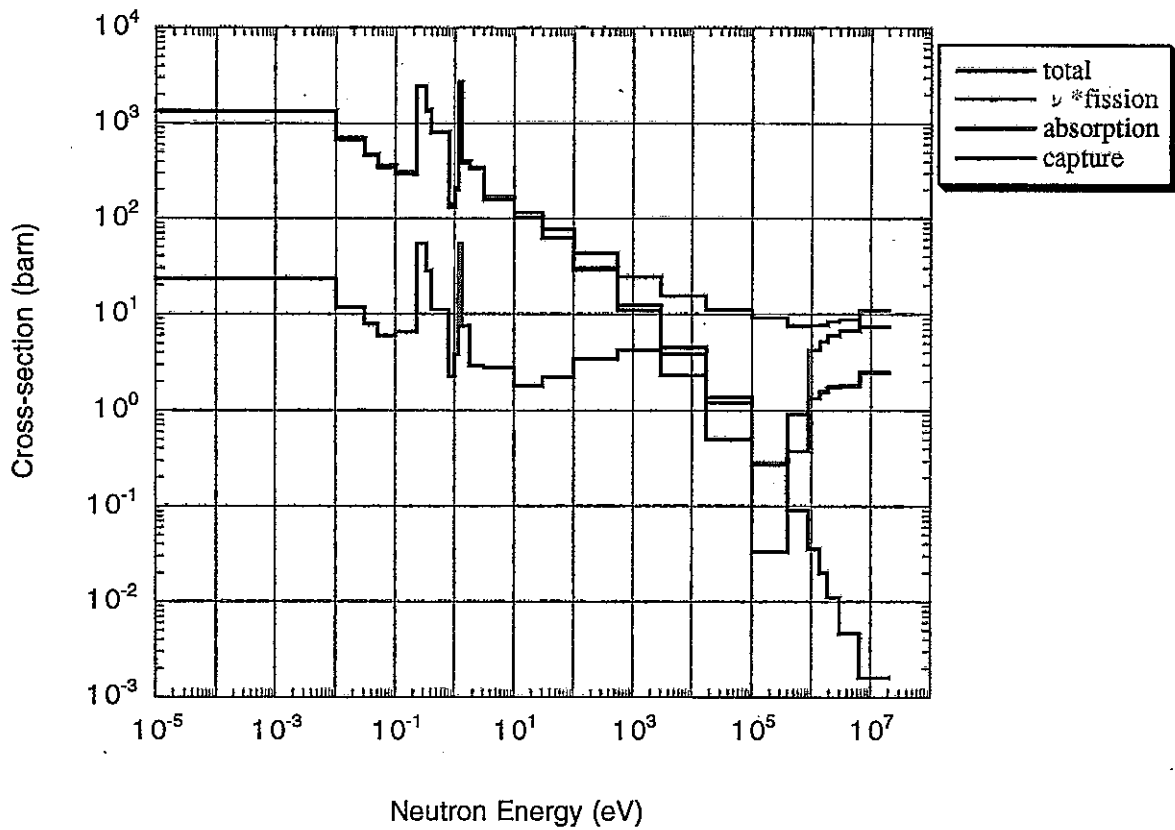




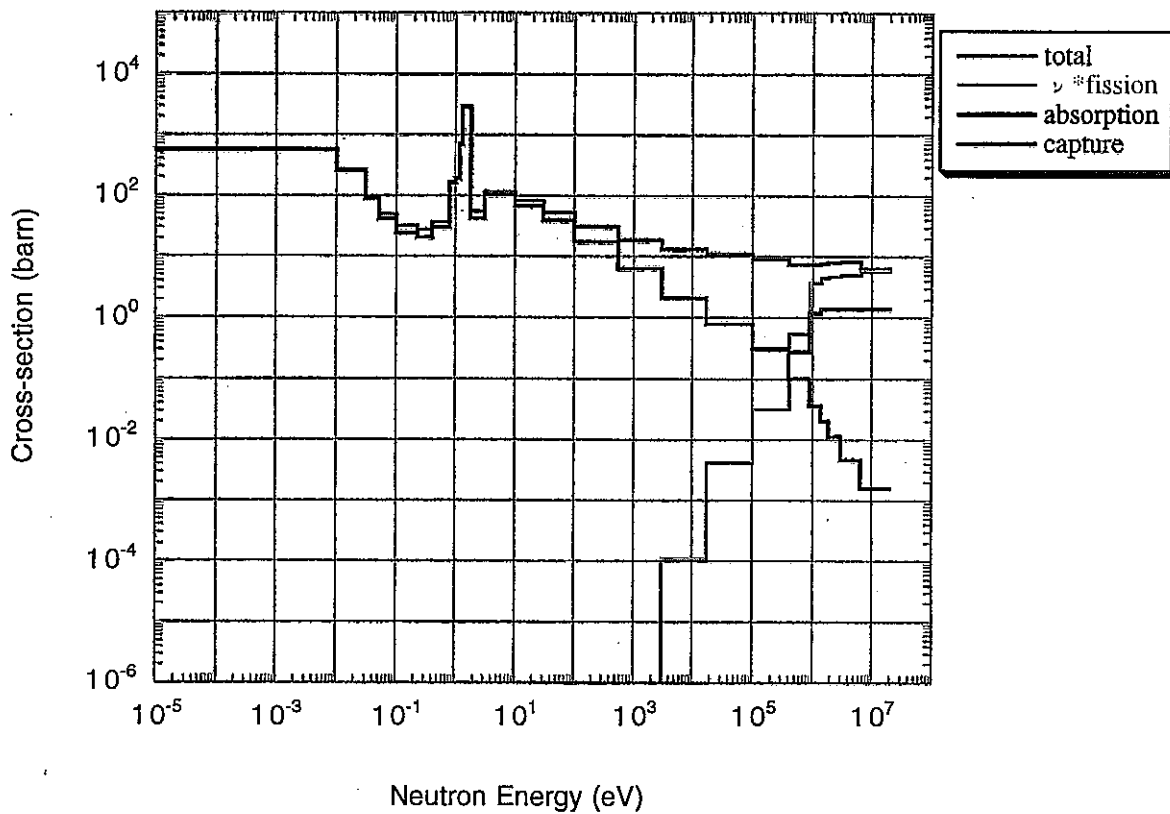
P u - 2 4 2



A m - 2 4 1



Am-243



Cm-244

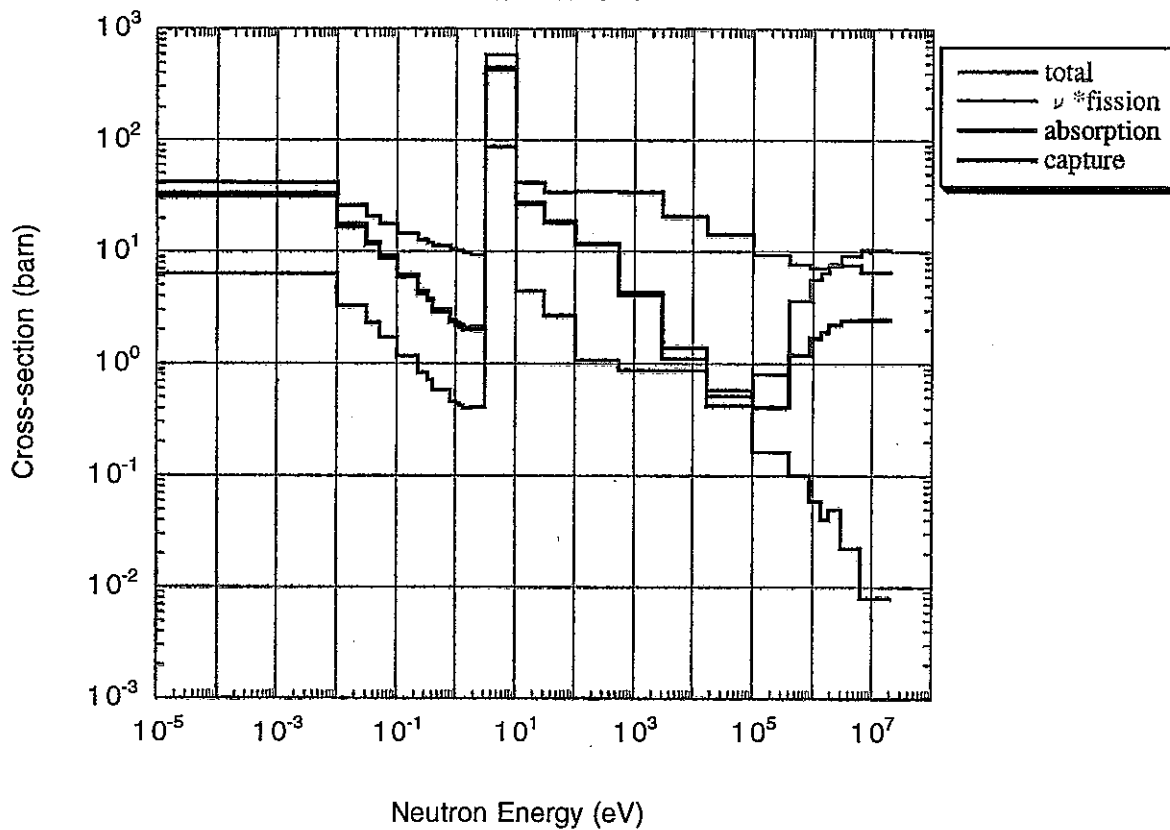


Table Data

H-1

Energy Grp. No.	cross section(barn)			
	total	elastic scattering	absorption	capture
1	1.18E+00	1.18E+00	3.44E-05	3.44E-05
2	1.91E+00	1.91E+00	3.61E-05	3.61E-05
3	2.67E+00	2.67E+00	3.48E-05	3.48E-05
4	3.30E+00	3.30E+00	3.43E-05	3.43E-05
5	4.00E+00	4.00E+00	3.45E-05	3.45E-05
6	5.54E+00	5.54E+00	3.68E-05	3.68E-05
7	9.43E+00	9.43E+00	6.39E-05	6.39E-05
8	1.58E+01	1.58E+01	2.04E-04	2.04E-04
9	1.94E+01	1.94E+01	6.19E-04	6.19E-04
10	2.03E+01	2.03E+01	1.52E-03	1.52E-03
11	2.04E+01	2.04E+01	3.54E-03	3.54E-03
12	2.05E+01	2.04E+01	7.24E-03	7.24E-03
13	2.05E+01	2.04E+01	1.28E-02	1.28E-02
14	2.05E+01	2.04E+01	2.28E-02	2.28E-02
15	2.09E+01	2.09E+01	3.47E-02	3.47E-02
16	2.07E+01	2.07E+01	4.28E-02	4.29E-02
17	2.09E+01	2.08E+01	4.79E-02	4.80E-02
18	2.11E+01	2.11E+01	5.11E-02	5.12E-02
19	2.13E+01	2.13E+01	5.57E-02	5.58E-02
20	2.25E+01	2.24E+01	7.04E-02	7.05E-02
21	2.46E+01	2.45E+01	8.78E-02	8.80E-02
22	2.63E+01	2.62E+01	1.01E-01	1.02E-01
23	3.08E+01	3.06E+01	1.39E-01	1.40E-01
24	3.82E+01	3.80E+01	2.02E-01	2.03E-01
25	4.65E+01	4.63E+01	2.67E-01	2.68E-01
26	5.93E+01	5.90E+01	3.81E-01	3.82E-01
27	7.98E+01	7.91E+01	7.22E-01	7.23E-01

H-2

Energy Grp. No.	cross section(barn)			
	total	elastic scattering	absorption	capture
1	1.25E+00	1.15E+00	9.90E-06	9.90E-06
2	1.84E+00	1.82E+00	8.59E-06	8.59E-06
3	2.34E+00	2.34E+00	6.68E-06	6.68E-06
4	2.62E+00	2.62E+00	5.37E-06	5.37E-06
5	2.83E+00	2.83E+00	4.46E-06	4.46E-06
6	3.00E+00	3.00E+00	3.19E-06	3.19E-06
7	3.18E+00	3.18E+00	2.13E-06	2.13E-06
8	3.30E+00	3.30E+00	1.49E-06	1.49E-06
9	3.34E+00	3.34E+00	1.50E-06	1.50E-06
10	3.35E+00	3.35E+00	2.46E-06	2.46E-06
11	3.35E+00	3.35E+00	5.54E-06	5.54E-06
12	3.35E+00	3.35E+00	1.13E-05	1.13E-05
13	3.35E+00	3.35E+00	2.00E-05	2.00E-05
14	3.35E+00	3.35E+00	3.56E-05	3.56E-05
15	3.38E+00	3.38E+00	5.43E-05	5.43E-05
16	3.38E+00	3.38E+00	6.70E-05	6.70E-05
17	3.39E+00	3.39E+00	7.50E-05	7.50E-05
18	3.41E+00	3.41E+00	8.00E-05	8.00E-05
19	3.42E+00	3.42E+00	8.73E-05	8.73E-05
20	3.48E+00	3.48E+00	1.10E-04	1.10E-04
21	3.54E+00	3.54E+00	1.38E-04	1.38E-04
22	3.66E+00	3.66E+00	1.59E-04	1.59E-04
23	4.03E+00	4.03E+00	2.18E-04	2.18E-04
24	4.61E+00	4.61E+00	3.17E-04	3.17E-04
25	5.17E+00	5.16E+00	4.19E-04	4.19E-04
26	6.18E+00	6.18E+00	5.98E-04	5.98E-04
27	7.80E+00	7.80E+00	1.13E-03	1.13E-03

He - 4

cross section(barn)

Energy Grp. No.	total	elastic scattering
1	1.70E+00	1.70E+00
2	2.43E+00	2.43E+00
3	3.45E+00	3.45E+00
4	5.27E+00	5.27E+00
5	7.05E+00	7.05E+00
6	1.98E+00	1.98E+00
7	8.37E-01	8.37E-01
8	7.60E-01	7.60E-01
9	7.59E-01	7.59E-01
10	7.59E-01	7.59E-01
11	7.59E-01	7.59E-01
12	7.59E-01	7.59E-01
13	7.59E-01	7.59E-01
14	7.59E-01	7.59E-01
15	7.59E-01	7.59E-01
16	7.59E-01	7.59E-01
17	7.59E-01	7.59E-01
18	7.59E-01	7.59E-01
19	7.59E-01	7.59E-01
20	7.59E-01	7.59E-01
21	7.59E-01	7.59E-01
22	7.59E-01	7.59E-01
23	7.59E-01	7.59E-01
24	7.59E-01	7.59E-01
25	7.59E-01	7.59E-01
26	7.59E-01	7.59E-01
27	7.59E-01	7.59E-01

Li - 6

cross section(barn)

Energy Grp. No.	total	elastic scattering	inelastic	absorption	capture
1	1.86E+00	1.15E+00	6.33E-01	6.71E-02	1.05E-05
2	2.07E+00	1.38E+00	5.59E-01	1.28E-01	1.08E-05
3	1.58E+00	1.26E+00	1.10E-01	2.03E-01	1.11E-05
4	1.25E+00	9.88E-01	1.29E-03	2.58E-01	1.13E-05
5	1.25E+00	1.00E+00	0.00E+00	2.49E-01	1.15E-05
6	1.66E+00	1.33E+00	0.00E+00	3.38E-01	1.18E-05
7	3.08E+00	1.97E+00	0.00E+00	1.11E+00	1.56E-05
8	1.55E+00	7.22E-01	0.00E+00	8.30E-01	3.05E-05
9	2.47E+00	7.11E-01	0.00E+00	1.76E+00	7.16E-05
10	4.80E+00	7.17E-01	0.00E+00	4.08E+00	1.67E-04
11	1.02E+01	7.19E-01	0.00E+00	9.50E+00	3.90E-04
12	2.06E+01	7.20E-01	0.00E+00	1.99E+01	8.16E-04
13	3.62E+01	7.21E-01	0.00E+00	3.55E+01	1.45E-03
14	6.34E+01	7.21E-01	0.00E+00	6.27E+01	2.57E-03
15	9.85E+01	7.21E-01	0.00E+00	9.78E+01	4.01E-03
16	1.22E+02	7.21E-01	0.00E+00	1.21E+02	4.97E-03
17	1.37E+02	7.21E-01	0.00E+00	1.36E+02	5.56E-03
18	1.46E+02	7.21E-01	0.00E+00	1.45E+02	5.94E-03
19	1.59E+02	7.21E-01	0.00E+00	1.58E+02	6.47E-03
20	1.99E+02	7.21E-01	0.00E+00	1.98E+02	8.10E-03
21	2.50E+02	7.21E-01	0.00E+00	2.49E+02	1.02E-02
22	2.88E+02	7.21E-01	0.00E+00	2.87E+02	1.18E-02
23	3.91E+02	7.21E-01	0.00E+00	3.91E+02	1.60E-02
24	5.75E+02	7.21E-01	0.00E+00	5.74E+02	2.35E-02
25	7.59E+02	7.21E-01	0.00E+00	7.58E+02	3.10E-02
26	1.08E+03	7.21E-01	0.00E+00	1.08E+03	4.43E-02
27	2.05E+03	7.21E-01	0.00E+00	2.05E+03	8.39E-02

Li - 7

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.87E+00	1.25E+00	6.19E-01	3.31E-04	1.00E-05
2	2.24E+00	1.89E+00	3.51E-01	1.00E-05	1.00E-05
3	1.88E+00	1.68E+00	1.97E-01	1.00E-05	1.00E-05
4	1.71E+00	1.51E+00	1.99E-01	1.00E-05	1.00E-05
5	1.64E+00	1.47E+00	1.68E-01	1.00E-05	1.00E-05
6	1.12E+00	1.09E+00	2.99E-02	1.00E-05	1.00E-05
7	1.48E+00	1.48E+00	0.00E+00	1.36E-05	1.36E-05
8	1.00E+00	1.00E+00	0.00E+00	3.92E-05	3.92E-05
9	1.05E+00	1.05E+00	0.00E+00	1.09E-04	1.09E-04
10	1.05E+00	1.05E+00	0.00E+00	1.92E-04	1.92E-04
11	1.05E+00	1.05E+00	0.00E+00	4.11E-04	4.11E-04
12	1.05E+00	1.05E+00	0.00E+00	8.11E-04	8.11E-04
13	1.05E+00	1.05E+00	0.00E+00	1.40E-03	1.40E-03
14	1.05E+00	1.05E+00	0.00E+00	2.47E-03	2.47E-03
15	1.05E+00	1.05E+00	0.00E+00	3.79E-03	3.79E-03
16	1.05E+00	1.05E+00	0.00E+00	4.70E-03	4.70E-03
17	1.05E+00	1.05E+00	0.00E+00	5.26E-03	5.26E-03
18	1.05E+00	1.05E+00	0.00E+00	5.62E-03	5.62E-03
19	1.06E+00	1.05E+00	0.00E+00	6.13E-03	6.13E-03
20	1.06E+00	1.05E+00	0.00E+00	7.73E-03	7.73E-03
21	1.06E+00	1.05E+00	0.00E+00	9.63E-03	9.63E-03
22	1.06E+00	1.05E+00	0.00E+00	1.11E-02	1.11E-02
23	1.06E+00	1.05E+00	0.00E+00	1.52E-02	1.52E-02
24	1.07E+00	1.05E+00	0.00E+00	2.21E-02	2.21E-02
25	1.08E+00	1.05E+00	0.00E+00	2.91E-02	2.91E-02
26	1.09E+00	1.05E+00	0.00E+00	4.11E-02	4.11E-02
27	1.13E+00	1.05E+00	0.00E+00	7.62E-02	7.62E-02

Be - 9

Energy Grp. No.	cross section (barn)			
	total	elastic scattering	absorption	capture
1	1.75E+00	1.14E+00	3.19E-02	1.00E-04
2	2.25E+00	1.68E+00	8.34E-02	1.00E-04
3	2.44E+00	2.32E+00	7.32E-02	1.00E-04
4	1.98E+00	1.95E+00	2.30E-02	1.00E-04
5	2.99E+00	2.99E+00	5.55E-03	1.00E-04
6	3.82E+00	3.82E+00	3.45E-04	1.00E-04
7	4.63E+00	4.63E+00	1.00E-04	1.00E-04
8	5.79E+00	5.79E+00	1.00E-04	1.00E-04
9	6.00E+00	6.00E+00	1.00E-04	1.00E-04
10	6.00E+00	6.00E+00	1.01E-04	1.01E-04
11	6.00E+00	6.00E+00	1.30E-04	1.30E-04
12	6.00E+00	6.00E+00	2.07E-04	2.07E-04
13	6.00E+00	6.00E+00	3.68E-04	3.68E-04
14	6.00E+00	6.00E+00	6.53E-04	6.53E-04
15	6.00E+00	6.00E+00	9.95E-04	9.95E-04
16	6.01E+00	6.00E+00	1.23E-03	1.23E-03
17	6.01E+00	6.00E+00	1.37E-03	1.37E-03
18	6.00E+00	6.00E+00	1.47E-03	1.47E-03
19	6.07E+00	6.07E+00	1.60E-03	1.60E-03
20	6.07E+00	6.07E+00	2.02E-03	2.02E-03
21	6.06E+00	6.06E+00	2.52E-03	2.52E-03
22	6.05E+00	6.05E+00	2.91E-03	2.91E-03
23	6.03E+00	6.03E+00	4.00E-03	4.00E-03
24	5.98E+00	5.98E+00	5.80E-03	5.80E-03
25	5.94E+00	5.93E+00	7.66E-03	7.66E-03
26	6.15E+00	6.14E+00	1.09E-02	1.09E-02
27	5.00E+00	4.98E+00	2.07E-02	2.07E-02

B-10

Energy Grp. No.	cross section(barn)			
	total	elastic scattering	inelastic	absorption
1	1.52E+00	1.02E+00	2.12E-01	2.93E-01
2	1.72E+00	1.28E+00	8.59E-02	3.53E-01
3	2.12E+00	1.67E+00	4.81E-02	4.06E-01
4	2.03E+00	1.63E+00	1.14E-02	3.82E-01
5	2.47E+00	2.25E+00	1.00E-03	2.10E-01
6	3.74E+00	3.21E+00	1.05E-05	5.26E-01
7	4.80E+00	3.42E+00	0.00E+00	1.38E+00
8	5.37E+00	2.40E+00	0.00E+00	2.97E+00
9	8.99E+00	2.12E+00	0.00E+00	6.87E+00
10	1.84E+01	2.09E+00	0.00E+00	1.63E+01
11	4.05E+01	2.10E+00	0.00E+00	3.84E+01
12	8.29E+01	2.10E+00	0.00E+00	8.08E+01
13	1.47E+02	2.10E+00	0.00E+00	1.44E+02
14	2.58E+02	2.10E+00	0.00E+00	2.56E+02
15	4.01E+02	2.10E+00	0.00E+00	3.99E+02
16	4.97E+02	2.10E+00	0.00E+00	4.95E+02
17	5.56E+02	2.11E+00	0.00E+00	5.54E+02
18	5.94E+02	2.11E+00	0.00E+00	5.91E+02
19	6.47E+02	2.11E+00	0.00E+00	6.45E+02
20	8.09E+02	2.11E+00	0.00E+00	8.07E+02
21	1.02E+03	2.11E+00	0.00E+00	1.02E+03
22	1.17E+03	2.11E+00	0.00E+00	1.17E+03
23	1.60E+03	2.11E+00	0.00E+00	1.59E+03
24	2.34E+03	2.11E+00	0.00E+00	2.34E+03
25	3.10E+03	2.11E+00	0.00E+00	3.09E+03
26	4.41E+03	2.11E+00	0.00E+00	4.41E+03
27	8.36E+03	2.11E+00	0.00E+00	8.36E+03

B-11

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.42E+00	1.18E+00	2.39E-01	2.35E-03	4.44E-07
2	1.50E+00	1.46E+00	4.11E-02	9.82E-07	9.82E-07
3	1.72E+00	1.71E+00	2.49E-03	1.81E-06	1.81E-06
4	2.20E+00	2.20E+00	0.00E+00	2.45E-06	2.45E-06
5	2.60E+00	2.60E+00	0.00E+00	3.17E-06	3.17E-06
6	3.38E+00	3.38E+00	0.00E+00	3.83E-06	3.83E-06
7	3.96E+00	3.96E+00	0.00E+00	2.66E-06	2.66E-06
8	4.81E+00	4.81E+00	0.00E+00	4.29E-05	4.29E-05
9	5.02E+00	5.02E+00	0.00E+00	1.62E-05	1.62E-05
10	5.03E+00	5.03E+00	0.00E+00	2.29E-05	2.29E-05
11	5.04E+00	5.04E+00	0.00E+00	5.35E-05	5.35E-05
12	5.04E+00	5.04E+00	0.00E+00	1.09E-04	1.09E-04
13	5.04E+00	5.04E+00	0.00E+00	1.94E-04	1.94E-04
14	5.04E+00	5.04E+00	0.00E+00	3.43E-04	3.43E-04
15	5.04E+00	5.04E+00	0.00E+00	5.23E-04	5.23E-04
16	5.04E+00	5.04E+00	0.00E+00	6.46E-04	6.46E-04
17	5.04E+00	5.04E+00	0.00E+00	7.23E-04	7.23E-04
18	5.04E+00	5.04E+00	0.00E+00	7.71E-04	7.71E-04
19	5.04E+00	5.04E+00	0.00E+00	8.41E-04	8.41E-04
20	5.04E+00	5.04E+00	0.00E+00	1.06E-03	1.06E-03
21	5.04E+00	5.04E+00	0.00E+00	1.33E-03	1.33E-03
22	5.04E+00	5.04E+00	0.00E+00	1.53E-03	1.53E-03
23	5.04E+00	5.04E+00	0.00E+00	2.10E-03	2.10E-03
24	5.04E+00	5.04E+00	0.00E+00	3.05E-03	3.05E-03
25	5.04E+00	5.04E+00	0.00E+00	4.03E-03	4.03E-03
26	5.04E+00	5.04E+00	0.00E+00	5.75E-03	5.75E-03
27	5.05E+00	5.04E+00	0.00E+00	1.09E-02	1.09E-02

C-12

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.21E+00	8.72E-01	2.73E-01	6.25E-02	0.00E+00
2	1.86E+00	1.84E+00	2.70E-02	7.79E-06	0.00E+00
3	1.81E+00	1.81E+00	0.00E+00	0.00E+00	0.00E+00
4	1.94E+00	1.94E+00	0.00E+00	0.00E+00	0.00E+00
5	2.39E+00	2.39E+00	0.00E+00	0.00E+00	0.00E+00
6	3.15E+00	3.15E+00	0.00E+00	0.00E+00	0.00E+00
7	4.05E+00	4.05E+00	0.00E+00	0.00E+00	0.00E+00
8	4.57E+00	4.57E+00	0.00E+00	0.00E+00	0.00E+00
9	4.70E+00	4.70E+00	0.00E+00	6.39E-07	6.39E-07
10	4.73E+00	4.73E+00	0.00E+00	1.95E-05	1.95E-05
11	4.73E+00	4.73E+00	0.00E+00	3.38E-05	3.38E-05
12	4.73E+00	4.73E+00	0.00E+00	7.01E-05	7.01E-05
13	4.73E+00	4.73E+00	0.00E+00	1.25E-04	1.25E-04
14	4.73E+00	4.73E+00	0.00E+00	2.41E-04	2.41E-04
15	4.73E+00	4.73E+00	0.00E+00	3.53E-04	3.53E-04
16	4.73E+00	4.73E+00	0.00E+00	4.38E-04	4.38E-04
17	4.73E+00	4.73E+00	0.00E+00	4.91E-04	4.91E-04
18	4.73E+00	4.73E+00	0.00E+00	5.24E-04	5.24E-04
19	4.71E+00	4.71E+00	0.00E+00	5.71E-04	5.71E-04
20	4.69E+00	4.69E+00	0.00E+00	7.09E-04	7.09E-04
21	4.68E+00	4.68E+00	0.00E+00	8.99E-04	8.99E-04
22	4.67E+00	4.67E+00	0.00E+00	1.04E-03	1.04E-03
23	4.69E+00	4.69E+00	0.00E+00	1.40E-03	1.40E-03
24	4.82E+00	4.81E+00	0.00E+00	2.07E-03	2.07E-03
25	4.86E+00	4.86E+00	0.00E+00	2.72E-03	2.72E-03
26	4.81E+00	4.81E+00	0.00E+00	3.87E-03	3.87E-03
27	4.47E+00	4.47E+00	0.00E+00	7.36E-03	7.36E-03

N-14

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.35E+00	9.80E-01	1.89E-01	1.79E-01	1.56E-05
2	1.65E+00	1.29E+00	2.13E-02	3.32E-01	2.05E-05
3	1.52E+00	1.38E+00	3.68E-04	1.36E-01	2.18E-05
4	2.12E+00	2.03E+00	0.00E+00	9.63E-02	3.50E-05
5	1.68E+00	1.65E+00	0.00E+00	2.59E-02	3.07E-05
6	2.11E+00	2.07E+00	0.00E+00	4.00E-02	2.56E-05
7	3.53E+00	3.53E+00	0.00E+00	1.54E-03	2.78E-05
8	5.69E+00	5.69E+00	0.00E+00	1.74E-03	5.88E-05
9	7.64E+00	7.63E+00	0.00E+00	3.64E-03	1.44E-04
10	8.68E+00	8.67E+00	0.00E+00	8.59E-03	3.40E-04
11	9.48E+00	9.46E+00	0.00E+00	2.02E-02	7.98E-04
12	9.90E+00	9.86E+00	0.00E+00	4.13E-02	1.63E-03
13	1.00E+01	9.92E+00	0.00E+00	7.33E-02	2.90E-03
14	1.01E+01	9.96E+00	0.00E+00	1.30E-01	5.14E-03
15	1.02E+01	9.96E+00	0.00E+00	1.98E-01	7.83E-03
16	1.02E+01	9.96E+00	0.00E+00	2.45E-01	9.67E-03
17	1.02E+01	9.96E+00	0.00E+00	2.74E-01	1.08E-02
18	1.03E+01	9.97E+00	0.00E+00	2.92E-01	1.15E-02
19	1.03E+01	9.97E+00	0.00E+00	3.19E-01	1.26E-02
20	1.04E+01	9.98E+00	0.00E+00	4.02E-01	1.59E-02
21	1.05E+01	9.99E+00	0.00E+00	5.02E-01	1.98E-02
22	1.06E+01	9.99E+00	0.00E+00	5.80E-01	2.29E-02
23	1.08E+01	1.00E+01	0.00E+00	7.96E-01	3.15E-02
24	1.13E+01	1.01E+01	0.00E+00	1.16E+00	4.58E-02
25	1.18E+01	1.02E+01	0.00E+00	1.53E+00	6.05E-02
26	1.27E+01	1.05E+01	0.00E+00	2.18E+00	8.62E-02
27	1.60E+01	1.19E+01	0.00E+00	4.13E+00	1.63E-01

O-16

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.16E+00	8.97E-01	1.61E-01	1.04E-01	1.02E-08
2	2.14E+00	2.10E+00	0.00E+00	3.59E-02	1.42E-08
3	1.25E+00	1.25E+00	0.00E+00	9.89E-08	1.86E-08
4	2.10E+00	2.10E+00	0.00E+00	2.23E-08	2.23E-08
5	3.84E+00	3.84E+00	0.00E+00	2.65E-08	2.65E-08
6	3.62E+00	3.62E+00	0.00E+00	3.53E-08	3.53E-08
7	3.61E+00	3.61E+00	0.00E+00	6.52E-08	6.52E-08
8	3.67E+00	3.67E+00	0.00E+00	1.50E-07	1.50E-07
9	3.73E+00	3.73E+00	0.00E+00	3.56E-07	3.56E-07
10	3.74E+00	3.74E+00	0.00E+00	7.79E-07	7.79E-07
11	3.75E+00	3.75E+00	0.00E+00	1.87E-06	1.87E-06
12	3.75E+00	3.75E+00	0.00E+00	3.94E-06	3.94E-06
13	3.75E+00	3.75E+00	0.00E+00	6.62E-06	6.62E-06
14	3.75E+00	3.75E+00	0.00E+00	1.24E-05	1.24E-05
15	3.75E+00	3.75E+00	0.00E+00	1.85E-05	1.85E-05
16	3.75E+00	3.75E+00	0.00E+00	2.29E-05	2.29E-05
17	3.75E+00	3.75E+00	0.00E+00	2.57E-05	2.57E-05
18	3.75E+00	3.75E+00	0.00E+00	2.74E-05	2.74E-05
19	3.75E+00	3.75E+00	0.00E+00	3.02E-05	3.02E-05
20	3.75E+00	3.75E+00	0.00E+00	3.79E-05	3.79E-05
21	3.76E+00	3.76E+00	0.00E+00	4.71E-05	4.71E-05
22	3.76E+00	3.76E+00	0.00E+00	5.43E-05	5.43E-05
23	3.77E+00	3.77E+00	0.00E+00	7.34E-05	7.34E-05
24	3.80E+00	3.80E+00	0.00E+00	1.09E-04	1.09E-04
25	3.84E+00	3.84E+00	0.00E+00	1.44E-04	1.44E-04
26	3.94E+00	3.94E+00	0.00E+00	2.05E-04	2.05E-04
27	4.41E+00	4.41E+00	0.00E+00	3.88E-04	3.88E-04

F

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.62E+00	6.74E-01	7.79E-01	1.53E-01	1.84E-05
2	1.95E+00	1.19E+00	6.96E-01	6.87E-02	3.55E-05
3	2.64E+00	1.83E+00	8.14E-01	5.99E-04	5.65E-05
4	2.91E+00	1.91E+00	9.94E-01	1.38E-04	9.33E-05
5	3.37E+00	2.08E+00	1.29E+00	6.75E-05	6.75E-05
6	4.62E+00	2.54E+00	2.08E+00	1.89E-04	1.89E-04
7	5.88E+00	4.40E+00	1.47E+00	6.41E-04	6.41E-04
8	4.31E+00	4.31E+00	0.00E+00	2.80E-03	2.80E-03
9	3.48E+00	3.48E+00	0.00E+00	1.38E-03	1.38E-03
10	3.48E+00	3.48E+00	0.00E+00	5.79E-05	5.79E-05
11	3.83E+00	3.83E+00	0.00E+00	1.05E-04	1.05E-04
12	4.00E+00	4.00E+00	0.00E+00	2.13E-04	2.13E-04
13	4.00E+00	4.00E+00	0.00E+00	3.56E-04	3.56E-04
14	4.00E+00	4.00E+00	0.00E+00	6.63E-04	6.63E-04
15	4.00E+00	4.00E+00	0.00E+00	9.86E-04	9.86E-04
16	4.00E+00	4.00E+00	0.00E+00	1.22E-03	1.22E-03
17	4.00E+00	4.00E+00	0.00E+00	1.37E-03	1.37E-03
18	4.00E+00	4.00E+00	0.00E+00	1.47E-03	1.47E-03
19	4.00E+00	4.00E+00	0.00E+00	1.61E-03	1.61E-03
20	4.01E+00	4.00E+00	0.00E+00	2.02E-03	2.02E-03
21	4.01E+00	4.01E+00	0.00E+00	2.52E-03	2.52E-03
22	4.01E+00	4.01E+00	0.00E+00	2.90E-03	2.90E-03
23	4.02E+00	4.02E+00	0.00E+00	3.92E-03	3.92E-03
24	4.05E+00	4.04E+00	0.00E+00	5.80E-03	5.80E-03
25	4.09E+00	4.08E+00	0.00E+00	7.66E-03	7.66E-03
26	4.19E+00	4.18E+00	0.00E+00	1.09E-02	1.09E-02
27	4.63E+00	4.60E+00	0.00E+00	2.07E-02	2.07E-02

Na - 23

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.66E+00	6.95E-01	8.84E-01	7.80E-02	1.70E-04
2	2.05E+00	1.22E+00	8.32E-01	3.38E-03	1.64E-04
3	2.73E+00	2.09E+00	6.34E-01	1.84E-04	1.84E-04
4	2.65E+00	2.15E+00	4.96E-01	2.03E-04	2.03E-04
5	3.50E+00	2.95E+00	5.50E-01	2.23E-04	2.23E-04
6	4.54E+00	4.32E+00	2.17E-01	2.98E-04	2.98E-04
7	3.76E+00	3.76E+00	0.00E+00	7.70E-04	7.70E-04
8	4.39E+00	4.39E+00	0.00E+00	1.70E-03	1.70E-03
9	1.91E+01	1.91E+01	0.00E+00	1.22E-02	1.22E-02
10	3.46E+01	3.45E+01	0.00E+00	4.78E-02	4.78E-02
11	3.19E+00	3.18E+00	0.00E+00	8.46E-03	8.46E-03
12	3.15E+00	3.14E+00	0.00E+00	1.21E-02	1.21E-02
13	3.15E+00	3.13E+00	0.00E+00	2.07E-02	2.07E-02
14	3.18E+00	3.15E+00	0.00E+00	3.67E-02	3.67E-02
15	3.22E+00	3.17E+00	0.00E+00	5.59E-02	5.59E-02
16	3.25E+00	3.18E+00	0.00E+00	6.90E-02	6.90E-02
17	3.26E+00	3.19E+00	0.00E+00	7.72E-02	7.72E-02
18	3.27E+00	3.19E+00	0.00E+00	8.24E-02	8.24E-02
19	3.29E+00	3.20E+00	0.00E+00	8.99E-02	8.99E-02
20	3.34E+00	3.22E+00	0.00E+00	1.13E-01	1.13E-01
21	3.38E+00	3.24E+00	0.00E+00	1.41E-01	1.41E-01
22	3.41E+00	3.25E+00	0.00E+00	1.64E-01	1.64E-01
23	3.49E+00	3.27E+00	0.00E+00	2.25E-01	2.25E-01
24	3.62E+00	3.29E+00	0.00E+00	3.26E-01	3.26E-01
25	3.74E+00	3.31E+00	0.00E+00	4.31E-01	4.31E-01
26	3.94E+00	3.33E+00	0.00E+00	6.14E-01	6.14E-01
27	4.52E+00	3.36E+00	0.00E+00	1.16E+00	1.16E+00

Mg

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.74E+00	8.62E-01	7.57E-01	1.18E-01	2.94E-04
2	1.93E+00	1.18E+00	7.43E-01	1.02E-02	3.27E-04
3	2.39E+00	1.89E+00	4.94E-01	8.96E-04	4.49E-04
4	2.68E+00	2.47E+00	2.10E-01	6.44E-04	6.44E-04
5	2.92E+00	2.90E+00	1.69E-02	9.31E-04	9.31E-04
6	4.63E+00	4.62E+00	2.75E-03	1.48E-03	1.48E-03
7	5.25E+00	5.25E+00	0.00E+00	1.01E-04	1.01E-04
8	4.34E+00	4.34E+00	0.00E+00	6.22E-04	6.22E-04
9	3.38E+00	3.38E+00	0.00E+00	1.81E-04	1.81E-04
10	3.39E+00	3.38E+00	0.00E+00	3.00E-04	3.00E-04
11	3.40E+00	3.40E+00	0.00E+00	6.67E-04	6.67E-04
12	3.40E+00	3.40E+00	0.00E+00	1.37E-03	1.37E-03
13	3.40E+00	3.40E+00	0.00E+00	2.44E-03	2.44E-03
14	3.40E+00	3.40E+00	0.00E+00	4.38E-03	4.38E-03
15	3.40E+00	3.39E+00	0.00E+00	6.67E-03	6.67E-03
16	3.40E+00	3.39E+00	0.00E+00	8.22E-03	8.22E-03
17	3.40E+00	3.39E+00	0.00E+00	9.18E-03	9.18E-03
18	3.40E+00	3.39E+00	0.00E+00	9.80E-03	9.80E-03
19	3.40E+00	3.39E+00	0.00E+00	1.07E-02	1.07E-02
20	3.40E+00	3.38E+00	0.00E+00	1.35E-02	1.35E-02
21	3.39E+00	3.38E+00	0.00E+00	1.68E-02	1.68E-02
22	3.39E+00	3.37E+00	0.00E+00	1.94E-02	1.94E-02
23	3.39E+00	3.36E+00	0.00E+00	2.66E-02	2.66E-02
24	3.39E+00	3.35E+00	0.00E+00	3.85E-02	3.85E-02
25	3.39E+00	3.34E+00	0.00E+00	5.09E-02	5.09E-02
26	3.40E+00	3.33E+00	0.00E+00	7.24E-02	7.24E-02
27	3.44E+00	3.30E+00	0.00E+00	1.37E-01	1.37E-01

Al - 27

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.86E+00	9.14E-01	8.33E-01	1.15E-01	1.88E-04
2	2.35E+00	1.65E+00	6.92E-01	1.38E-02	7.62E-05
3	2.98E+00	2.63E+00	3.47E-01	2.81E-04	1.31E-04
4	3.00E+00	2.74E+00	2.65E-01	1.42E-04	1.42E-04
5	3.05E+00	2.95E+00	9.59E-02	1.42E-04	1.42E-04
6	3.84E+00	3.84E+00	2.02E-06	4.15E-04	4.15E-04
7	3.40E+00	3.40E+00	0.00E+00	1.31E-03	1.31E-03
8	1.63E+00	1.63E+00	0.00E+00	2.84E-03	2.84E-03
9	1.28E+00	1.28E+00	0.00E+00	4.90E-03	4.90E-03
10	1.35E+00	1.35E+00	0.00E+00	2.26E-03	2.26E-03
11	1.35E+00	1.35E+00	0.00E+00	2.72E-03	2.72E-03
12	1.35E+00	1.35E+00	0.00E+00	5.13E-03	5.13E-03
13	1.36E+00	1.35E+00	0.00E+00	8.64E-03	8.64E-03
14	1.36E+00	1.35E+00	0.00E+00	1.62E-02	1.62E-02
15	1.37E+00	1.35E+00	0.00E+00	2.41E-02	2.41E-02
16	1.38E+00	1.35E+00	0.00E+00	2.99E-02	2.99E-02
17	1.38E+00	1.35E+00	0.00E+00	3.35E-02	3.35E-02
18	1.38E+00	1.35E+00	0.00E+00	3.58E-02	3.58E-02
19	1.39E+00	1.35E+00	0.00E+00	3.93E-02	3.93E-02
20	1.40E+00	1.35E+00	0.00E+00	4.95E-02	4.95E-02
21	1.41E+00	1.35E+00	0.00E+00	6.15E-02	6.15E-02
22	1.42E+00	1.35E+00	0.00E+00	7.09E-02	7.09E-02
23	1.44E+00	1.35E+00	0.00E+00	9.59E-02	9.59E-02
24	1.49E+00	1.35E+00	0.00E+00	1.42E-01	1.42E-01
25	1.54E+00	1.35E+00	0.00E+00	1.87E-01	1.87E-01
26	1.61E+00	1.35E+00	0.00E+00	2.67E-01	2.67E-01
27	1.85E+00	1.35E+00	0.00E+00	5.06E-01	5.06E-01

Si

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	1.90E+00	8.20E-01	7.05E-01	3.69E-01	5.79E-04
2	2.25E+00	1.59E+00	6.41E-01	1.54E-02	6.24E-04
3	2.89E+00	2.56E+00	3.35E-01	6.55E-04	6.44E-04
4	3.05E+00	3.04E+00	1.37E-02	6.50E-04	6.50E-04
5	3.01E+00	3.01E+00	4.32E-04	6.60E-04	6.60E-04
6	3.17E+00	3.17E+00	0.00E+00	6.65E-04	6.65E-04
7	1.41E+00	1.41E+00	0.00E+00	6.77E-04	6.77E-04
8	1.53E+00	1.53E+00	0.00E+00	4.32E-03	4.32E-03
9	2.00E+00	2.00E+00	0.00E+00	3.08E-04	3.08E-04
10	2.15E+00	2.15E+00	0.00E+00	7.37E-04	7.37E-04
11	2.15E+00	2.15E+00	0.00E+00	1.72E-03	1.72E-03
12	2.15E+00	2.15E+00	0.00E+00	3.51E-03	3.51E-03
13	2.16E+00	2.15E+00	0.00E+00	6.24E-03	6.24E-03
14	2.16E+00	2.15E+00	0.00E+00	1.10E-02	1.10E-02
15	2.17E+00	2.15E+00	0.00E+00	1.68E-02	1.68E-02
16	2.17E+00	2.15E+00	0.00E+00	2.07E-02	2.07E-02
17	2.17E+00	2.15E+00	0.00E+00	2.32E-02	2.32E-02
18	2.17E+00	2.15E+00	0.00E+00	2.48E-02	2.48E-02
19	2.18E+00	2.15E+00	0.00E+00	2.71E-02	2.71E-02
20	2.18E+00	2.15E+00	0.00E+00	3.42E-02	3.42E-02
21	2.19E+00	2.15E+00	0.00E+00	4.26E-02	4.26E-02
22	2.20E+00	2.15E+00	0.00E+00	4.94E-02	4.94E-02
23	2.22E+00	2.15E+00	0.00E+00	6.78E-02	6.78E-02
24	2.25E+00	2.15E+00	0.00E+00	9.79E-02	9.79E-02
25	2.28E+00	2.15E+00	0.00E+00	1.29E-01	1.29E-01
26	2.33E+00	2.15E+00	0.00E+00	1.85E-01	1.85E-01
27	2.50E+00	2.15E+00	0.00E+00	3.50E-01	3.50E-01

P - 3 1

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.19E+00	1.27E+00	6.96E-01	2.13E-01	5.25E-04
2	2.72E+00	1.89E+00	7.22E-01	1.07E-01	6.59E-04
3	2.91E+00	2.32E+00	5.64E-01	3.06E-02	1.01E-03
4	2.99E+00	2.88E+00	1.05E-01	3.71E-03	1.37E-03
5	3.19E+00	3.18E+00	1.75E-03	1.60E-03	1.60E-03
6	2.82E+00	2.82E+00	0.00E+00	1.85E-03	1.85E-03
7	2.62E+00	2.62E+00	0.00E+00	3.75E-03	3.75E-03
8	4.20E+00	4.19E+00	0.00E+00	6.89E-03	6.89E-03
9	4.13E+00	4.12E+00	0.00E+00	9.58E-03	9.58E-03
10	4.11E+00	4.10E+00	0.00E+00	9.84E-03	9.84E-03
11	4.11E+00	4.10E+00	0.00E+00	9.97E-03	9.97E-03
12	4.11E+00	4.10E+00	0.00E+00	1.00E-02	1.00E-02
13	4.11E+00	4.10E+00	0.00E+00	1.02E-02	1.02E-02
14	4.11E+00	4.10E+00	0.00E+00	1.37E-02	1.37E-02
15	4.12E+00	4.10E+00	0.00E+00	2.24E-02	2.24E-02
16	4.13E+00	4.10E+00	0.00E+00	2.76E-02	2.76E-02
17	4.13E+00	4.10E+00	0.00E+00	2.96E-02	2.96E-02
18	4.13E+00	4.10E+00	0.00E+00	3.06E-02	3.06E-02
19	4.13E+00	4.10E+00	0.00E+00	3.31E-02	3.31E-02
20	4.15E+00	4.10E+00	0.00E+00	4.50E-02	4.50E-02
21	4.16E+00	4.10E+00	0.00E+00	6.07E-02	6.07E-02
22	4.17E+00	4.10E+00	0.00E+00	6.88E-02	6.88E-02
23	4.19E+00	4.10E+00	0.00E+00	8.61E-02	8.61E-02
24	4.22E+00	4.10E+00	0.00E+00	1.23E-01	1.23E-01
25	4.26E+00	4.10E+00	0.00E+00	1.65E-01	1.65E-01
26	4.33E+00	4.10E+00	0.00E+00	2.27E-01	2.27E-01
27	4.51E+00	4.10E+00	0.00E+00	4.13E-01	4.13E-01

S

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.38E+00	1.36E+00	5.57E-01	4.59E-01	6.77E-05
2	2.89E+00	2.06E+00	4.49E-01	3.80E-01	8.52E-05
3	2.73E+00	2.51E+00	8.18E-02	1.44E-01	9.36E-05
4	2.58E+00	2.56E+00	0.00E+00	1.56E-02	9.71E-05
5	2.31E+00	2.30E+00	0.00E+00	5.14E-03	1.05E-04
6	2.23E+00	2.23E+00	0.00E+00	4.22E-03	2.65E-04
7	3.37E+00	3.37E+00	0.00E+00	3.83E-03	4.28E-04
8	7.62E-01	7.56E-01	0.00E+00	5.47E-03	2.40E-03
9	1.11E+00	1.08E+00	0.00E+00	2.38E-02	2.07E-02
10	1.14E+00	1.06E+00	0.00E+00	7.32E-02	7.02E-02
11	1.17E+00	1.08E+00	0.00E+00	8.70E-02	8.40E-02
12	1.18E+00	1.09E+00	0.00E+00	9.11E-02	8.81E-02
13	1.19E+00	1.09E+00	0.00E+00	9.44E-02	9.14E-02
14	1.19E+00	1.09E+00	0.00E+00	9.89E-02	9.59E-02
15	1.19E+00	1.09E+00	0.00E+00	1.02E-01	9.87E-02
16	1.20E+00	1.09E+00	0.00E+00	1.02E-01	9.95E-02
17	1.20E+00	1.09E+00	0.00E+00	1.03E-01	9.98E-02
18	1.20E+00	1.09E+00	0.00E+00	1.03E-01	9.99E-02
19	1.21E+00	1.10E+00	0.00E+00	1.09E-01	1.06E-01
20	1.25E+00	1.11E+00	0.00E+00	1.32E-01	1.29E-01
21	1.29E+00	1.13E+00	0.00E+00	1.60E-01	1.57E-01
22	1.31E+00	1.13E+00	0.00E+00	1.81E-01	1.78E-01
23	1.40E+00	1.16E+00	0.00E+00	2.37E-01	2.34E-01
24	1.51E+00	1.19E+00	0.00E+00	3.25E-01	3.22E-01
25	1.61E+00	1.20E+00	0.00E+00	4.12E-01	4.09E-01
26	1.76E+00	1.20E+00	0.00E+00	5.57E-01	5.54E-01
27	2.18E+00	1.22E+00	0.00E+00	9.60E-01	9.57E-01

C I

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	capture	absorption
1	2.17E+00	1.14E+00	8.04E-01	1.00E-05	1.90E-01
2	2.85E+00	2.01E+00	6.95E-01	1.00E-05	1.46E-01
3	3.06E+00	2.58E+00	4.38E-01	1.00E-05	4.09E-02
4	2.76E+00	2.63E+00	1.11E-01	1.04E-05	1.62E-02
5	2.42E+00	2.40E+00	8.25E-03	1.10E-05	7.32E-03
6	2.32E+00	2.32E+00	0.00E+00	2.29E-05	2.32E-03
7	2.20E+00	2.20E+00	0.00E+00	3.47E-04	9.70E-04
8	3.32E+00	3.31E+00	0.00E+00	6.63E-03	6.74E-03
9	5.41E+00	5.40E+00	0.00E+00	1.20E-02	1.34E-02
10	1.92E+00	1.89E+00	0.00E+00	2.29E-02	2.85E-02
11	5.33E+00	4.97E+00	0.00E+00	3.02E-01	3.69E-01
12	9.63E+00	9.19E+00	0.00E+00	4.38E-01	4.41E-01
13	1.41E+01	1.30E+01	0.00E+00	1.04E+00	1.05E+00
14	1.75E+01	1.55E+01	0.00E+00	2.00E+00	2.02E+00
15	1.93E+01	1.59E+01	0.00E+00	3.39E+00	3.42E+00
16	2.03E+01	1.59E+01	0.00E+00	4.33E+00	4.37E+00
17	2.09E+01	1.59E+01	0.00E+00	4.94E+00	4.99E+00
18	2.13E+01	1.59E+01	0.00E+00	5.33E+00	5.39E+00
19	2.17E+01	1.59E+01	0.00E+00	5.73E+00	5.79E+00
20	2.31E+01	1.59E+01	0.00E+00	7.10E+00	7.18E+00
21	2.49E+01	1.59E+01	0.00E+00	8.93E+00	9.02E+00
22	2.63E+01	1.59E+01	0.00E+00	1.02E+01	1.03E+01
23	2.95E+01	1.59E+01	0.00E+00	1.34E+01	1.36E+01
24	3.57E+01	1.60E+01	0.00E+00	1.95E+01	1.97E+01
25	4.28E+01	1.61E+01	0.00E+00	2.64E+01	2.67E+01
26	5.66E+01	1.62E+01	0.00E+00	3.99E+01	4.03E+01
27	1.92E+02	1.71E+01	0.00E+00	1.73E+02	1.75E+02

K

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.69E+00	1.47E+00	6.73E-01	5.06E-01	6.55E-05
2	3.37E+00	2.64E+00	3.99E-01	3.33E-01	1.27E-04
3	3.14E+00	2.99E+00	4.69E-02	1.01E-01	2.16E-04
4	2.80E+00	2.75E+00	2.11E-02	3.12E-02	3.11E-04
5	2.47E+00	2.46E+00	3.57E-03	5.40E-03	4.52E-04
6	2.18E+00	2.18E+00	0.00E+00	1.03E-03	8.52E-04
7	1.72E+00	1.72E+00	0.00E+00	2.67E-03	2.63E-03
8	2.21E+00	2.19E+00	0.00E+00	1.44E-02	1.44E-02
9	1.51E+00	1.50E+00	0.00E+00	1.31E-02	1.30E-02
10	1.21E+00	1.20E+00	0.00E+00	9.88E-03	9.63E-03
11	1.51E+00	1.49E+00	0.00E+00	2.27E-02	2.22E-02
12	1.79E+00	1.75E+00	0.00E+00	4.68E-02	4.56E-02
13	1.98E+00	1.90E+00	0.00E+00	8.31E-02	8.10E-02
14	2.16E+00	2.02E+00	0.00E+00	1.47E-01	1.44E-01
15	2.28E+00	2.05E+00	0.00E+00	2.25E-01	2.20E-01
16	2.32E+00	2.04E+00	0.00E+00	2.79E-01	2.71E-01
17	2.33E+00	2.02E+00	0.00E+00	3.11E-01	3.03E-01
18	2.35E+00	2.01E+00	0.00E+00	3.33E-01	3.24E-01
19	2.38E+00	2.01E+00	0.00E+00	3.63E-01	3.53E-01
20	2.48E+00	2.03E+00	0.00E+00	4.57E-01	4.45E-01
21	2.61E+00	2.03E+00	0.00E+00	5.71E-01	5.56E-01
22	2.71E+00	2.05E+00	0.00E+00	6.60E-01	6.43E-01
23	3.00E+00	2.10E+00	0.00E+00	9.02E-01	8.79E-01
24	3.48E+00	2.16E+00	0.00E+00	1.32E+00	1.28E+00
25	3.93E+00	2.19E+00	0.00E+00	1.74E+00	1.69E+00
26	4.68E+00	2.20E+00	0.00E+00	2.48E+00	2.41E+00
27	6.90E+00	2.20E+00	0.00E+00	4.70E+00	4.58E+00

Ca

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.89E+00	1.55E+00	4.50E-01	8.76E-01	1.99E-05
2	3.49E+00	2.76E+00	1.75E-01	5.60E-01	5.91E-05
3	3.37E+00	3.25E+00	8.59E-03	1.11E-01	1.17E-04
4	2.70E+00	2.67E+00	8.81E-03	1.21E-02	1.66E-04
5	2.18E+00	2.17E+00	1.38E-03	4.35E-03	2.33E-04
6	1.32E+00	1.31E+00	0.00E+00	3.14E-03	2.63E-04
7	1.26E+00	1.26E+00	0.00E+00	3.66E-03	1.09E-03
8	1.59E+00	1.58E+00	0.00E+00	1.02E-02	7.69E-03
9	2.35E+00	2.34E+00	0.00E+00	4.55E-03	2.05E-03
10	2.57E+00	2.56E+00	0.00E+00	5.11E-03	2.61E-03
11	2.57E+00	2.57E+00	0.00E+00	7.17E-03	4.67E-03
12	2.58E+00	2.57E+00	0.00E+00	1.19E-02	9.40E-03
13	2.59E+00	2.57E+00	0.00E+00	1.94E-02	1.69E-02
14	2.67E+00	2.64E+00	0.00E+00	3.26E-02	3.01E-02
15	2.78E+00	2.73E+00	0.00E+00	4.76E-02	4.51E-02
16	2.83E+00	2.78E+00	0.00E+00	5.82E-02	5.57E-02
17	2.86E+00	2.80E+00	0.00E+00	6.48E-02	6.23E-02
18	2.88E+00	2.81E+00	0.00E+00	6.90E-02	6.65E-02
19	2.90E+00	2.83E+00	0.00E+00	7.52E-02	7.27E-02
20	2.97E+00	2.87E+00	0.00E+00	9.38E-02	9.13E-02
21	3.03E+00	2.91E+00	0.00E+00	1.17E-01	1.15E-01
22	3.07E+00	2.93E+00	0.00E+00	1.35E-01	1.33E-01
23	3.16E+00	2.97E+00	0.00E+00	1.84E-01	1.82E-01
24	3.25E+00	2.99E+00	0.00E+00	2.65E-01	2.63E-01
25	3.34E+00	2.99E+00	0.00E+00	3.49E-01	3.47E-01
26	3.48E+00	2.99E+00	0.00E+00	4.96E-01	4.94E-01
27	3.93E+00	2.99E+00	0.00E+00	9.38E-01	9.37E-01

Ti

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.07E+00	1.64E+00	1.40E+00	2.04E-02	8.19E-04
2	3.55E+00	2.31E+00	1.24E+00	1.81E-03	1.75E-03
3	3.33E+00	2.55E+00	7.75E-01	2.49E-03	2.49E-03
4	3.24E+00	2.67E+00	5.71E-01	2.90E-03	2.90E-03
5	3.01E+00	2.77E+00	2.36E-01	3.23E-03	3.23E-03
6	2.65E+00	2.62E+00	2.30E-02	4.17E-03	4.17E-03
7	1.84E+00	1.84E+00	1.41E-03	5.17E-03	5.17E-03
8	7.57E+00	7.55E+00	0.00E+00	1.15E-02	1.15E-02
9	1.63E+01	1.62E+01	0.00E+00	5.34E-02	5.34E-02
10	4.74E+00	4.71E+00	0.00E+00	3.16E-02	3.16E-02
11	4.47E+00	4.40E+00	0.00E+00	6.56E-02	6.56E-02
12	4.53E+00	4.40E+00	0.00E+00	1.33E-01	1.33E-01
13	4.64E+00	4.40E+00	0.00E+00	2.36E-01	2.36E-01
14	4.82E+00	4.40E+00	0.00E+00	4.18E-01	4.18E-01
15	5.04E+00	4.40E+00	0.00E+00	6.38E-01	6.38E-01
16	5.19E+00	4.40E+00	0.00E+00	7.89E-01	7.89E-01
17	5.28E+00	4.40E+00	0.00E+00	8.82E-01	8.82E-01
18	5.34E+00	4.40E+00	0.00E+00	9.42E-01	9.42E-01
19	5.43E+00	4.40E+00	0.00E+00	1.03E+00	1.03E+00
20	5.69E+00	4.40E+00	0.00E+00	1.29E+00	1.29E+00
21	6.02E+00	4.40E+00	0.00E+00	1.62E+00	1.62E+00
22	6.27E+00	4.40E+00	0.00E+00	1.87E+00	1.87E+00
23	6.95E+00	4.40E+00	0.00E+00	2.55E+00	2.55E+00
24	8.13E+00	4.40E+00	0.00E+00	3.73E+00	3.73E+00
25	9.32E+00	4.40E+00	0.00E+00	4.92E+00	4.92E+00
26	1.14E+01	4.40E+00	0.00E+00	7.02E+00	7.02E+00
27	1.77E+01	4.40E+00	0.00E+00	1.33E+01	1.33E+01

V

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.20E+00	1.78E+00	1.39E+00	2.55E-02	3.15E-04
2	3.79E+00	2.25E+00	1.54E+00	3.18E-03	6.08E-04
3	3.56E+00	2.53E+00	1.03E+00	1.03E-03	1.03E-03
4	3.32E+00	2.74E+00	5.80E-01	1.33E-03	1.33E-03
5	3.22E+00	2.79E+00	4.37E-01	1.52E-03	1.52E-03
6	3.01E+00	2.72E+00	2.88E-01	1.90E-03	1.90E-03
7	3.67E+00	3.64E+00	2.04E-02	5.04E-03	5.04E-03
8	3.14E+00	3.13E+00	0.00E+00	8.47E-03	8.47E-03
9	4.70E+01	4.69E+01	0.00E+00	5.16E-02	5.16E-02
10	7.73E+00	7.70E+00	0.00E+00	3.16E-02	3.16E-02
11	6.16E+00	6.07E+00	0.00E+00	8.71E-02	8.71E-02
12	5.30E+00	5.19E+00	0.00E+00	1.13E-01	1.13E-01
13	5.20E+00	5.00E+00	0.00E+00	1.96E-01	1.96E-01
14	5.35E+00	5.00E+00	0.00E+00	3.47E-01	3.47E-01
15	5.53E+00	5.00E+00	0.00E+00	5.29E-01	5.29E-01
16	5.65E+00	5.00E+00	0.00E+00	6.54E-01	6.54E-01
17	5.73E+00	5.00E+00	0.00E+00	7.31E-01	7.31E-01
18	5.78E+00	5.00E+00	0.00E+00	7.81E-01	7.81E-01
19	5.85E+00	5.00E+00	0.00E+00	8.51E-01	8.51E-01
20	6.07E+00	5.00E+00	0.00E+00	1.07E+00	1.07E+00
21	6.34E+00	5.00E+00	0.00E+00	1.34E+00	1.34E+00
22	6.55E+00	5.00E+00	0.00E+00	1.55E+00	1.55E+00
23	7.12E+00	5.00E+00	0.00E+00	2.12E+00	2.12E+00
24	8.09E+00	5.00E+00	0.00E+00	3.09E+00	3.09E+00
25	9.08E+00	5.00E+00	0.00E+00	4.08E+00	4.08E+00
26	1.08E+01	5.00E+00	0.00E+00	5.82E+00	5.82E+00
27	1.60E+01	5.00E+00	0.00E+00	1.10E+01	1.10E+01

Cr

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.31E+00	1.90E+00	1.35E+00	4.34E-02	3.95E-04
2	3.74E+00	2.50E+00	1.23E+00	5.89E-03	1.61E-03
3	3.52E+00	2.67E+00	8.52E-01	3.46E-03	3.23E-03
4	3.35E+00	2.86E+00	4.82E-01	5.34E-03	5.33E-03
5	3.07E+00	2.97E+00	8.56E-02	7.49E-03	7.49E-03
6	3.33E+00	3.31E+00	9.78E-03	5.24E-03	5.24E-03
7	4.12E+00	4.12E+00	0.00E+00	4.68E-03	4.68E-03
8	4.58E+00	4.56E+00	0.00E+00	2.31E-02	2.31E-02
9	1.75E+01	1.75E+01	0.00E+00	5.60E-02	5.60E-02
10	6.06E+00	5.98E+00	0.00E+00	8.15E-02	8.15E-02
11	4.49E+00	4.45E+00	0.00E+00	3.47E-02	3.47E-02
12	4.43E+00	4.36E+00	0.00E+00	6.84E-02	6.84E-02
13	4.47E+00	4.35E+00	0.00E+00	1.21E-01	1.21E-01
14	4.56E+00	4.34E+00	0.00E+00	2.14E-01	2.14E-01
15	4.67E+00	4.34E+00	0.00E+00	3.26E-01	3.26E-01
16	4.74E+00	4.34E+00	0.00E+00	4.02E-01	4.02E-01
17	4.79E+00	4.34E+00	0.00E+00	4.49E-01	4.49E-01
18	4.82E+00	4.34E+00	0.00E+00	4.80E-01	4.80E-01
19	4.87E+00	4.34E+00	0.00E+00	5.23E-01	5.23E-01
20	5.00E+00	4.34E+00	0.00E+00	6.60E-01	6.60E-01
21	5.16E+00	4.34E+00	0.00E+00	8.23E-01	8.23E-01
22	5.29E+00	4.34E+00	0.00E+00	9.50E-01	9.50E-01
23	5.64E+00	4.34E+00	0.00E+00	1.30E+00	1.30E+00
24	6.23E+00	4.34E+00	0.00E+00	1.89E+00	1.89E+00
25	6.84E+00	4.34E+00	0.00E+00	2.50E+00	2.50E+00
26	7.91E+00	4.34E+00	0.00E+00	3.56E+00	3.56E+00
27	1.11E+01	4.34E+00	0.00E+00	6.75E+00	6.75E+00

C r - s s

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.67E+00	1.34E+00	9.31E-01	1.03E-01	6.71E-04
2	3.72E+00	2.43E+00	1.29E+00	7.20E-03	1.39E-03
3	3.53E+00	2.67E+00	8.54E-01	3.46E-03	3.22E-03
4	3.30E+00	2.82E+00	4.81E-01	5.36E-03	5.35E-03
5	2.98E+00	2.89E+00	8.27E-02	7.44E-03	7.44E-03
6	3.24E+00	3.23E+00	7.52E-03	4.92E-03	4.92E-03
7	4.09E+00	4.09E+00	0.00E+00	4.63E-03	4.63E-03
8	3.69E+00	3.67E+00	0.00E+00	2.06E-02	2.06E-02
9	1.49E+01	1.49E+01	0.00E+00	4.99E-02	4.99E-02
10	5.92E+00	5.86E+00	0.00E+00	5.83E-02	5.83E-02
11	4.48E+00	4.45E+00	0.00E+00	3.53E-02	3.53E-02
12	4.43E+00	4.36E+00	0.00E+00	6.83E-02	6.83E-02
13	4.47E+00	4.35E+00	0.00E+00	1.20E-01	1.20E-01
14	4.56E+00	4.34E+00	0.00E+00	2.13E-01	2.13E-01
15	4.67E+00	4.34E+00	0.00E+00	3.25E-01	3.25E-01
16	4.74E+00	4.34E+00	0.00E+00	4.01E-01	4.01E-01
17	4.79E+00	4.34E+00	0.00E+00	4.48E-01	4.48E-01
18	4.82E+00	4.34E+00	0.00E+00	4.78E-01	4.78E-01
19	4.86E+00	4.34E+00	0.00E+00	5.22E-01	5.22E-01
20	5.00E+00	4.34E+00	0.00E+00	6.59E-01	6.59E-01
21	5.16E+00	4.34E+00	0.00E+00	8.22E-01	8.22E-01
22	5.29E+00	4.34E+00	0.00E+00	9.49E-01	9.49E-01
23	5.64E+00	4.34E+00	0.00E+00	1.30E+00	1.30E+00
24	6.23E+00	4.34E+00	0.00E+00	1.89E+00	1.89E+00
25	6.84E+00	4.34E+00	0.00E+00	2.50E+00	2.50E+00
26	7.91E+00	4.34E+00	0.00E+00	3.56E+00	3.56E+00
27	1.11E+01	4.34E+00	0.00E+00	6.75E+00	6.75E+00

C r - i n c

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.68E+00	1.35E+00	9.38E-01	1.02E-01	6.67E-04
2	3.72E+00	2.43E+00	1.29E+00	7.15E-03	1.40E-03
3	3.53E+00	2.67E+00	8.56E-01	3.46E-03	3.22E-03
4	3.34E+00	2.85E+00	4.84E-01	5.33E-03	5.33E-03
5	3.02E+00	2.93E+00	8.15E-02	7.43E-03	7.43E-03
6	3.32E+00	3.31E+00	7.60E-03	5.00E-03	5.00E-03
7	4.48E+00	4.47E+00	0.00E+00	4.91E-03	4.91E-03
8	4.50E+00	4.48E+00	0.00E+00	1.88E-02	1.88E-02
9	1.81E+01	1.80E+01	0.00E+00	5.65E-02	5.65E-02
10	5.98E+00	5.92E+00	0.00E+00	6.46E-02	6.46E-02
11	4.48E+00	4.45E+00	0.00E+00	3.50E-02	3.50E-02
12	4.43E+00	4.36E+00	0.00E+00	6.83E-02	6.83E-02
13	4.47E+00	4.35E+00	0.00E+00	1.20E-01	1.20E-01
14	4.56E+00	4.34E+00	0.00E+00	2.13E-01	2.13E-01
15	4.67E+00	4.34E+00	0.00E+00	3.25E-01	3.25E-01
16	4.74E+00	4.34E+00	0.00E+00	4.01E-01	4.01E-01
17	4.79E+00	4.34E+00	0.00E+00	4.48E-01	4.48E-01
18	4.82E+00	4.34E+00	0.00E+00	4.78E-01	4.78E-01
19	4.86E+00	4.34E+00	0.00E+00	5.22E-01	5.22E-01
20	5.00E+00	4.34E+00	0.00E+00	6.59E-01	6.59E-01
21	5.16E+00	4.34E+00	0.00E+00	8.22E-01	8.22E-01
22	5.29E+00	4.34E+00	0.00E+00	9.49E-01	9.49E-01
23	5.64E+00	4.34E+00	0.00E+00	1.30E+00	1.30E+00
24	6.23E+00	4.34E+00	0.00E+00	1.89E+00	1.89E+00
25	6.84E+00	4.34E+00	0.00E+00	2.50E+00	2.50E+00
26	7.91E+00	4.34E+00	0.00E+00	3.56E+00	3.56E+00
27	1.11E+01	4.34E+00	0.00E+00	6.75E+00	6.75E+00

Mn-55

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.41E+00	1.73E+00	1.63E+00	3.22E-02	7.24E-04
2	3.71E+00	2.13E+00	1.58E+00	4.62E-03	1.25E-03
3	3.61E+00	2.44E+00	1.17E+00	1.79E-03	1.78E-03
4	3.45E+00	2.53E+00	9.13E-01	2.19E-03	2.19E-03
5	3.36E+00	2.60E+00	7.55E-01	2.65E-03	2.65E-03
6	3.34E+00	2.74E+00	6.01E-01	3.69E-03	3.69E-03
7	4.59E+00	4.18E+00	4.06E-01	8.86E-03	8.86E-03
8	1.15E+01	1.15E+01	0.00E+00	4.46E-02	4.46E-02
9	2.39E+01	2.38E+01	0.00E+00	5.33E-02	5.33E-02
10	1.14E+02	1.13E+02	0.00E+00	7.60E-01	7.60E-01
11	2.02E+02	1.98E+02	0.00E+00	4.70E+00	4.70E+00
12	3.26E+00	2.87E+00	0.00E+00	3.90E-01	3.90E-01
13	2.59E+00	2.03E+00	0.00E+00	5.59E-01	5.59E-01
14	2.77E+00	1.83E+00	0.00E+00	9.37E-01	9.37E-01
15	3.20E+00	1.79E+00	0.00E+00	1.41E+00	1.41E+00
16	3.51E+00	1.78E+00	0.00E+00	1.73E+00	1.73E+00
17	3.70E+00	1.77E+00	0.00E+00	1.93E+00	1.93E+00
18	3.83E+00	1.77E+00	0.00E+00	2.06E+00	2.06E+00
19	4.01E+00	1.77E+00	0.00E+00	2.25E+00	2.25E+00
20	4.60E+00	1.76E+00	0.00E+00	2.83E+00	2.83E+00
21	5.29E+00	1.76E+00	0.00E+00	3.53E+00	3.53E+00
22	5.84E+00	1.76E+00	0.00E+00	4.08E+00	4.08E+00
23	7.36E+00	1.76E+00	0.00E+00	5.59E+00	5.59E+00
24	9.89E+00	1.76E+00	0.00E+00	8.12E+00	8.12E+00
25	1.25E+01	1.77E+00	0.00E+00	1.07E+01	1.07E+01
26	1.71E+01	1.78E+00	0.00E+00	1.53E+01	1.53E+01
27	3.08E+01	1.84E+00	0.00E+00	2.90E+01	2.90E+01

F e

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.46E+00	1.93E+00	1.44E+00	8.20E-02	3.49E-04
2	3.57E+00	2.18E+00	1.37E+00	1.91E-02	6.66E-04
3	3.26E+00	2.34E+00	9.17E-01	4.22E-03	1.13E-03
4	2.96E+00	2.26E+00	6.98E-01	2.03E-03	1.76E-03
5	2.64E+00	2.22E+00	4.10E-01	2.58E-03	2.55E-03
6	3.20E+00	3.18E+00	1.42E-02	4.93E-03	4.92E-03
7	3.65E+00	3.64E+00	0.00E+00	5.62E-03	5.62E-03
8	8.52E+00	8.50E+00	0.00E+00	1.19E-02	1.19E-02
9	7.15E+00	7.14E+00	0.00E+00	1.36E-02	1.36E-02
10	8.86E+00	8.71E+00	0.00E+00	1.44E-01	1.44E-01
11	1.11E+01	1.11E+01	0.00E+00	2.74E-02	2.74E-02
12	1.14E+01	1.14E+01	0.00E+00	5.59E-02	5.59E-02
13	1.15E+01	1.14E+01	0.00E+00	9.91E-02	9.91E-02
14	1.16E+01	1.14E+01	0.00E+00	1.76E-01	1.76E-01
15	1.17E+01	1.14E+01	0.00E+00	2.68E-01	2.68E-01
16	1.17E+01	1.14E+01	0.00E+00	3.31E-01	3.31E-01
17	1.18E+01	1.14E+01	0.00E+00	3.70E-01	3.70E-01
18	1.18E+01	1.14E+01	0.00E+00	3.95E-01	3.95E-01
19	1.18E+01	1.14E+01	0.00E+00	4.31E-01	4.31E-01
20	1.19E+01	1.14E+01	0.00E+00	5.44E-01	5.44E-01
21	1.21E+01	1.14E+01	0.00E+00	6.78E-01	6.78E-01
22	1.22E+01	1.14E+01	0.00E+00	7.84E-01	7.84E-01
23	1.25E+01	1.14E+01	0.00E+00	1.08E+00	1.08E+00
24	1.30E+01	1.14E+01	0.00E+00	1.56E+00	1.56E+00
25	1.35E+01	1.14E+01	0.00E+00	2.06E+00	2.06E+00
26	1.43E+01	1.14E+01	0.00E+00	2.94E+00	2.94E+00
27	1.70E+01	1.14E+01	0.00E+00	5.58E+00	5.58E+00

Fe - s s

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.84E+00	1.40E+00	9.84E-01	1.34E-01	2.48E-04
2	3.59E+00	2.15E+00	1.42E+00	2.36E-02	6.16E-04
3	3.19E+00	2.27E+00	9.14E-01	4.27E-03	1.13E-03
4	2.82E+00	2.13E+00	6.85E-01	2.03E-03	1.76E-03
5	2.36E+00	1.98E+00	3.77E-01	2.65E-03	2.62E-03
6	2.81E+00	2.80E+00	9.29E-03	4.96E-03	4.96E-03
7	2.84E+00	2.84E+00	0.00E+00	5.69E-03	5.69E-03
8	4.07E+00	4.06E+00	0.00E+00	6.97E-03	6.97E-03
9	6.15E+00	6.14E+00	0.00E+00	1.08E-02	1.08E-02
10	8.81E+00	8.77E+00	0.00E+00	3.87E-02	3.87E-02
11	1.11E+01	1.11E+01	0.00E+00	2.79E-02	2.79E-02
12	1.15E+01	1.14E+01	0.00E+00	5.59E-02	5.59E-02
13	1.15E+01	1.14E+01	0.00E+00	9.91E-02	9.91E-02
14	1.16E+01	1.14E+01	0.00E+00	1.76E-01	1.76E-01
15	1.17E+01	1.14E+01	0.00E+00	2.68E-01	2.68E-01
16	1.17E+01	1.14E+01	0.00E+00	3.31E-01	3.31E-01
17	1.18E+01	1.14E+01	0.00E+00	3.70E-01	3.70E-01
18	1.18E+01	1.14E+01	0.00E+00	3.95E-01	3.95E-01
19	1.18E+01	1.14E+01	0.00E+00	4.31E-01	4.31E-01
20	1.19E+01	1.14E+01	0.00E+00	5.44E-01	5.44E-01
21	1.21E+01	1.14E+01	0.00E+00	6.78E-01	6.78E-01
22	1.22E+01	1.14E+01	0.00E+00	7.84E-01	7.84E-01
23	1.25E+01	1.14E+01	0.00E+00	1.08E+00	1.08E+00
24	1.30E+01	1.14E+01	0.00E+00	1.56E+00	1.56E+00
25	1.35E+01	1.14E+01	0.00E+00	2.06E+00	2.06E+00
26	1.43E+01	1.14E+01	0.00E+00	2.94E+00	2.94E+00
27	1.70E+01	1.14E+01	0.00E+00	5.58E+00	5.58E+00

Fe - i n c

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.85E+00	1.41E+00	9.92E-01	1.34E-01	2.50E-04
2	3.60E+00	2.16E+00	1.41E+00	2.35E-02	6.18E-04
3	3.25E+00	2.33E+00	9.19E-01	4.30E-03	1.12E-03
4	2.96E+00	2.26E+00	6.99E-01	2.03E-03	1.76E-03
5	2.58E+00	2.18E+00	3.97E-01	2.65E-03	2.63E-03
6	3.22E+00	3.20E+00	1.02E-02	4.95E-03	4.95E-03
7	3.54E+00	3.54E+00	0.00E+00	5.73E-03	5.73E-03
8	7.04E+00	7.03E+00	0.00E+00	1.02E-02	1.02E-02
9	8.25E+00	8.23E+00	0.00E+00	1.64E-02	1.64E-02
10	8.85E+00	8.74E+00	0.00E+00	1.03E-01	1.03E-01
11	1.11E+01	1.11E+01	0.00E+00	2.76E-02	2.76E-02
12	1.15E+01	1.14E+01	0.00E+00	5.58E-02	5.58E-02
13	1.15E+01	1.14E+01	0.00E+00	9.90E-02	9.90E-02
14	1.16E+01	1.14E+01	0.00E+00	1.76E-01	1.76E-01
15	1.17E+01	1.14E+01	0.00E+00	2.68E-01	2.68E-01
16	1.17E+01	1.14E+01	0.00E+00	3.31E-01	3.31E-01
17	1.18E+01	1.14E+01	0.00E+00	3.70E-01	3.70E-01
18	1.18E+01	1.14E+01	0.00E+00	3.95E-01	3.95E-01
19	1.18E+01	1.14E+01	0.00E+00	4.31E-01	4.31E-01
20	1.19E+01	1.14E+01	0.00E+00	5.44E-01	5.44E-01
21	1.21E+01	1.14E+01	0.00E+00	6.78E-01	6.78E-01
22	1.22E+01	1.14E+01	0.00E+00	7.84E-01	7.84E-01
23	1.25E+01	1.14E+01	0.00E+00	1.08E+00	1.08E+00
24	1.30E+01	1.14E+01	0.00E+00	1.56E+00	1.56E+00
25	1.35E+01	1.14E+01	0.00E+00	2.06E+00	2.06E+00
26	1.43E+01	1.14E+01	0.00E+00	2.94E+00	2.94E+00
27	1.70E+01	1.14E+01	0.00E+00	5.58E+00	5.58E+00

Co-59

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.52E+00	2.14E+00	1.31E+00	5.40E-02	1.87E-03
2	3.58E+00	2.15E+00	1.42E+00	9.08E-03	2.56E-03
3	3.32E+00	2.25E+00	1.07E+00	5.58E-03	3.59E-03
4	3.26E+00	2.68E+00	5.67E-01	6.66E-03	5.57E-03
5	3.29E+00	3.20E+00	8.27E-02	8.24E-03	7.77E-03
6	3.73E+00	3.72E+00	0.00E+00	8.62E-03	8.61E-03
7	4.53E+00	4.52E+00	0.00E+00	1.43E-02	1.43E-02
8	1.04E+01	1.04E+01	0.00E+00	1.97E-02	1.97E-02
9	3.78E+01	3.77E+01	0.00E+00	1.19E-01	1.19E-01
10	2.53E+00	2.50E+00	0.00E+00	3.35E-02	3.35E-02
11	4.01E+02	3.67E+02	0.00E+00	3.39E+01	3.39E+01
12	1.85E+01	1.59E+01	0.00E+00	2.60E+00	2.60E+00
13	9.94E+00	8.13E+00	0.00E+00	1.80E+00	1.80E+00
14	1.21E+01	9.40E+00	0.00E+00	2.73E+00	2.73E+00
15	1.45E+01	1.05E+01	0.00E+00	4.00E+00	4.00E+00
16	1.60E+01	1.11E+01	0.00E+00	4.89E+00	4.89E+00
17	1.68E+01	1.14E+01	0.00E+00	5.45E+00	5.45E+00
18	1.74E+01	1.16E+01	0.00E+00	5.81E+00	5.81E+00
19	1.82E+01	1.18E+01	0.00E+00	6.33E+00	6.33E+00
20	2.05E+01	1.25E+01	0.00E+00	7.96E+00	7.96E+00
21	2.32E+01	1.33E+01	0.00E+00	9.90E+00	9.90E+00
22	2.52E+01	1.38E+01	0.00E+00	1.14E+01	1.14E+01
23	3.06E+01	1.49E+01	0.00E+00	1.57E+01	1.57E+01
24	3.91E+01	1.64E+01	0.00E+00	2.27E+01	2.27E+01
25	4.76E+01	1.76E+01	0.00E+00	3.00E+01	3.00E+01
26	6.20E+01	1.92E+01	0.00E+00	4.28E+01	4.28E+01
27	1.04E+02	2.24E+01	0.00E+00	8.11E+01	8.11E+01

Ni

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.53E+00	2.06E+00	9.11E-01	5.53E-01	4.92E-04
2	3.48E+00	2.03E+00	1.20E+00	2.57E-01	1.63E-03
3	3.04E+00	2.23E+00	7.42E-01	6.46E-02	3.61E-03
4	3.05E+00	2.71E+00	3.22E-01	1.90E-02	6.36E-03
5	2.94E+00	2.92E+00	6.95E-03	1.01E-02	7.48E-03
6	3.21E+00	3.21E+00	0.00E+00	7.68E-03	7.63E-03
7	5.57E+00	5.56E+00	0.00E+00	1.01E-02	1.01E-02
8	1.21E+01	1.20E+01	0.00E+00	3.14E-02	3.14E-02
9	2.82E+01	2.81E+01	0.00E+00	5.58E-02	5.58E-02
10	1.64E+01	1.63E+01	0.00E+00	3.23E-02	3.23E-02
11	1.75E+01	1.75E+01	0.00E+00	4.96E-02	4.96E-02
12	1.79E+01	1.78E+01	0.00E+00	1.00E-01	1.00E-01
13	1.80E+01	1.78E+01	0.00E+00	1.77E-01	1.77E-01
14	1.82E+01	1.79E+01	0.00E+00	3.14E-01	3.14E-01
15	1.83E+01	1.79E+01	0.00E+00	4.79E-01	4.79E-01
16	1.85E+01	1.79E+01	0.00E+00	5.91E-01	5.91E-01
17	1.85E+01	1.79E+01	0.00E+00	6.61E-01	6.61E-01
18	1.86E+01	1.79E+01	0.00E+00	7.06E-01	7.06E-01
19	1.86E+01	1.79E+01	0.00E+00	7.69E-01	7.69E-01
20	1.88E+01	1.79E+01	0.00E+00	9.72E-01	9.72E-01
21	1.91E+01	1.79E+01	0.00E+00	1.21E+00	1.21E+00
22	1.93E+01	1.79E+01	0.00E+00	1.40E+00	1.40E+00
23	1.98E+01	1.79E+01	0.00E+00	1.92E+00	1.92E+00
24	2.07E+01	1.79E+01	0.00E+00	2.79E+00	2.79E+00
25	2.15E+01	1.79E+01	0.00E+00	3.68E+00	3.68E+00
26	2.31E+01	1.79E+01	0.00E+00	5.25E+00	5.25E+00
27	2.78E+01	1.79E+01	0.00E+00	9.96E+00	9.96E+00

Ni - s s

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.97E+00	1.56E+00	7.62E-01	4.74E-01	1.56E-04
2	3.54E+00	2.06E+00	1.19E+00	2.97E-01	1.47E-03
3	3.04E+00	2.23E+00	7.46E-01	6.54E-02	3.60E-03
4	3.05E+00	2.71E+00	3.21E-01	1.90E-02	6.36E-03
5	2.90E+00	2.89E+00	5.78E-03	9.85E-03	7.49E-03
6	3.30E+00	3.29E+00	0.00E+00	7.68E-03	7.64E-03
7	5.42E+00	5.40E+00	0.00E+00	1.15E-02	1.15E-02
8	1.20E+01	1.20E+01	0.00E+00	2.73E-02	2.73E-02
9	2.92E+01	2.91E+01	0.00E+00	6.27E-02	6.27E-02
10	1.64E+01	1.64E+01	0.00E+00	2.93E-02	2.93E-02
11	1.75E+01	1.75E+01	0.00E+00	5.05E-02	5.05E-02
12	1.79E+01	1.78E+01	0.00E+00	1.00E-01	1.00E-01
13	1.80E+01	1.78E+01	0.00E+00	1.77E-01	1.77E-01
14	1.82E+01	1.79E+01	0.00E+00	3.14E-01	3.14E-01
15	1.83E+01	1.79E+01	0.00E+00	4.78E-01	4.78E-01
16	1.85E+01	1.79E+01	0.00E+00	5.91E-01	5.91E-01
17	1.85E+01	1.79E+01	0.00E+00	6.60E-01	6.60E-01
18	1.86E+01	1.79E+01	0.00E+00	7.05E-01	7.05E-01
19	1.86E+01	1.79E+01	0.00E+00	7.69E-01	7.69E-01
20	1.88E+01	1.79E+01	0.00E+00	9.71E-01	9.71E-01
21	1.91E+01	1.79E+01	0.00E+00	1.21E+00	1.21E+00
22	1.93E+01	1.79E+01	0.00E+00	1.40E+00	1.40E+00
23	1.98E+01	1.79E+01	0.00E+00	1.92E+00	1.92E+00
24	2.07E+01	1.79E+01	0.00E+00	2.79E+00	2.79E+00
25	2.15E+01	1.79E+01	0.00E+00	3.68E+00	3.68E+00
26	2.31E+01	1.79E+01	0.00E+00	5.25E+00	5.25E+00
27	2.78E+01	1.79E+01	0.00E+00	9.96E+00	9.96E+00

Ni - i n c

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	2.97E+00	1.57E+00	7.64E-01	4.76E-01	1.60E-04
2	3.54E+00	2.06E+00	1.19E+00	2.96E-01	1.48E-03
3	3.04E+00	2.23E+00	7.50E-01	6.60E-02	3.59E-03
4	3.05E+00	2.71E+00	3.23E-01	1.90E-02	6.37E-03
5	2.89E+00	2.88E+00	5.34E-03	9.77E-03	7.50E-03
6	3.08E+00	3.07E+00	0.00E+00	7.68E-03	7.64E-03
7	4.60E+00	4.59E+00	0.00E+00	1.12E-02	1.12E-02
8	8.19E+00	8.17E+00	0.00E+00	2.18E-02	2.18E-02
9	1.96E+01	1.95E+01	0.00E+00	4.11E-02	4.11E-02
10	1.64E+01	1.64E+01	0.00E+00	2.97E-02	2.97E-02
11	1.75E+01	1.75E+01	0.00E+00	5.00E-02	5.00E-02
12	1.79E+01	1.78E+01	0.00E+00	1.00E-01	1.00E-01
13	1.80E+01	1.78E+01	0.00E+00	1.77E-01	1.77E-01
14	1.82E+01	1.79E+01	0.00E+00	3.14E-01	3.14E-01
15	1.83E+01	1.79E+01	0.00E+00	4.78E-01	4.78E-01
16	1.85E+01	1.79E+01	0.00E+00	5.91E-01	5.91E-01
17	1.85E+01	1.79E+01	0.00E+00	6.60E-01	6.60E-01
18	1.86E+01	1.79E+01	0.00E+00	7.05E-01	7.05E-01
19	1.86E+01	1.79E+01	0.00E+00	7.69E-01	7.69E-01
20	1.88E+01	1.79E+01	0.00E+00	9.71E-01	9.71E-01
21	1.91E+01	1.79E+01	0.00E+00	1.21E+00	1.21E+00
22	1.93E+01	1.79E+01	0.00E+00	1.40E+00	1.40E+00
23	1.98E+01	1.79E+01	0.00E+00	1.92E+00	1.92E+00
24	2.07E+01	1.79E+01	0.00E+00	2.79E+00	2.79E+00
25	2.15E+01	1.79E+01	0.00E+00	3.68E+00	3.68E+00
26	2.31E+01	1.79E+01	0.00E+00	5.25E+00	5.25E+00
27	2.78E+01	1.79E+01	0.00E+00	9.96E+00	9.96E+00

Cu

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.69E+00	2.04E+00	1.54E+00	9.50E-02	2.92E-03
2	3.57E+00	2.04E+00	1.47E+00	5.48E-02	4.01E-03
3	3.11E+00	1.97E+00	1.12E+00	2.55E-02	5.65E-03
4	3.07E+00	2.23E+00	8.23E-01	1.35E-02	7.75E-03
5	3.32E+00	2.97E+00	3.33E-01	1.18E-02	1.03E-02
6	3.96E+00	3.92E+00	3.11E-02	1.16E-02	1.16E-02
7	5.10E+00	5.08E+00	0.00E+00	1.75E-02	1.75E-02
8	1.05E+01	1.04E+01	0.00E+00	5.25E-02	5.25E-02
9	1.50E+01	1.48E+01	0.00E+00	1.91E-01	1.91E-01
10	1.59E+01	1.46E+01	0.00E+00	1.29E+00	1.29E+00
11	6.91E+00	6.72E+00	0.00E+00	1.86E-01	1.86E-01
12	8.12E+00	8.05E+00	0.00E+00	7.53E-02	7.53E-02
13	8.56E+00	8.42E+00	0.00E+00	1.41E-01	1.41E-01
14	8.79E+00	8.55E+00	0.00E+00	2.42E-01	2.42E-01
15	8.98E+00	8.59E+00	0.00E+00	3.91E-01	3.91E-01
16	9.08E+00	8.60E+00	0.00E+00	4.85E-01	4.85E-01
17	9.14E+00	8.60E+00	0.00E+00	5.44E-01	5.44E-01
18	9.18E+00	8.60E+00	0.00E+00	5.81E-01	5.81E-01
19	9.24E+00	8.60E+00	0.00E+00	6.35E-01	6.35E-01
20	9.41E+00	8.61E+00	0.00E+00	8.03E-01	8.03E-01
21	9.61E+00	8.61E+00	0.00E+00	1.00E+00	1.00E+00
22	9.77E+00	8.61E+00	0.00E+00	1.16E+00	1.16E+00
23	1.02E+01	8.61E+00	0.00E+00	1.59E+00	1.59E+00
24	1.09E+01	8.61E+00	0.00E+00	2.31E+00	2.31E+00
25	1.17E+01	8.61E+00	0.00E+00	3.05E+00	3.05E+00
26	1.30E+01	8.61E+00	0.00E+00	4.36E+00	4.36E+00
27	1.69E+01	8.61E+00	0.00E+00	8.26E+00	8.26E+00

Br - 79

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.92E+00	2.51E+00	1.41E+00	2.78E-03	2.78E-03
2	3.61E+00	2.00E+00	1.57E+00	3.98E-02	3.98E-02
3	3.49E+00	1.86E+00	1.56E+00	6.63E-02	6.63E-02
4	3.70E+00	2.18E+00	1.45E+00	6.95E-02	6.95E-02
5	4.25E+00	2.95E+00	1.23E+00	6.83E-02	6.83E-02
6	5.27E+00	4.26E+00	9.20E-01	9.16E-02	9.16E-02
7	6.63E+00	6.17E+00	2.21E-01	2.35E-01	2.35E-01
8	8.50E+00	7.86E+00	0.00E+00	6.32E-01	6.32E-01
9	1.17E+01	1.00E+01	0.00E+00	1.65E+00	1.65E+00
10	1.89E+01	1.37E+01	0.00E+00	5.19E+00	5.19E+00
11	3.51E+01	2.14E+01	0.00E+00	1.37E+01	1.37E+01
12	9.08E+01	1.27E+01	0.00E+00	7.81E+01	7.81E+01
13	3.25E+00	1.85E+00	0.00E+00	1.40E+00	1.40E+00
14	3.19E+00	2.27E+00	0.00E+00	9.19E-01	9.19E-01
15	3.57E+00	2.33E+00	0.00E+00	1.24E+00	1.24E+00
16	3.84E+00	2.34E+00	0.00E+00	1.50E+00	1.50E+00
17	4.00E+00	2.34E+00	0.00E+00	1.66E+00	1.66E+00
18	4.11E+00	2.35E+00	0.00E+00	1.77E+00	1.77E+00
19	4.27E+00	2.35E+00	0.00E+00	1.92E+00	1.92E+00
20	4.75E+00	2.35E+00	0.00E+00	2.40E+00	2.40E+00
21	5.33E+00	2.36E+00	0.00E+00	2.97E+00	2.97E+00
22	5.78E+00	2.36E+00	0.00E+00	3.42E+00	3.42E+00
23	7.05E+00	2.36E+00	0.00E+00	4.68E+00	4.68E+00
24	9.15E+00	2.37E+00	0.00E+00	6.79E+00	6.79E+00
25	1.13E+01	2.37E+00	0.00E+00	8.96E+00	8.96E+00
26	1.51E+01	2.38E+00	0.00E+00	1.28E+01	1.28E+01
27	2.66E+01	2.44E+00	0.00E+00	2.42E+01	2.42E+01

Br - 81

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.92E+00	2.50E+00	1.41E+00	2.28E-03	2.28E-03
2	3.61E+00	2.04E+00	1.55E+00	2.30E-02	2.30E-02
3	3.58E+00	2.23E+00	1.32E+00	3.94E-02	3.94E-02
4	3.87E+00	2.80E+00	1.03E+00	4.55E-02	4.55E-02
5	4.44E+00	3.57E+00	8.12E-01	5.31E-02	5.31E-02
6	5.52E+00	4.94E+00	5.04E-01	7.55E-02	7.55E-02
7	6.84E+00	6.62E+00	6.92E-02	1.47E-01	1.47E-01
8	8.38E+00	7.98E+00	0.00E+00	3.99E-01	3.99E-01
9	1.11E+01	1.00E+01	0.00E+00	1.06E+00	1.06E+00
10	1.60E+01	1.40E+01	0.00E+00	1.97E+00	1.97E+00
11	5.63E+01	3.24E+01	0.00E+00	2.39E+01	2.39E+01
12	4.24E+00	2.51E+00	0.00E+00	1.73E+00	1.73E+00
13	2.87E+00	2.74E+00	0.00E+00	1.35E-01	1.35E-01
14	3.01E+00	2.81E+00	0.00E+00	1.99E-01	1.99E-01
15	3.12E+00	2.83E+00	0.00E+00	2.90E-01	2.90E-01
16	3.19E+00	2.83E+00	0.00E+00	3.55E-01	3.55E-01
17	3.23E+00	2.84E+00	0.00E+00	3.95E-01	3.95E-01
18	3.26E+00	2.84E+00	0.00E+00	4.21E-01	4.21E-01
19	3.29E+00	2.84E+00	0.00E+00	4.58E-01	4.58E-01
20	3.42E+00	2.84E+00	0.00E+00	5.76E-01	5.76E-01
21	3.56E+00	2.84E+00	0.00E+00	7.16E-01	7.16E-01
22	3.67E+00	2.84E+00	0.00E+00	8.27E-01	8.27E-01
23	3.98E+00	2.85E+00	0.00E+00	1.13E+00	1.13E+00
24	4.49E+00	2.85E+00	0.00E+00	1.64E+00	1.64E+00
25	5.03E+00	2.86E+00	0.00E+00	2.17E+00	2.17E+00
26	5.96E+00	2.87E+00	0.00E+00	3.09E+00	3.09E+00
27	8.80E+00	2.94E+00	0.00E+00	5.86E+00	5.86E+00

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Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.15E+00	2.39E+00	1.63E+00	1.92E-02	7.37E-04
2	3.93E+00	2.46E+00	1.47E+00	8.58E-03	1.23E-03
3	4.31E+00	3.49E+00	8.14E-01	5.82E-03	3.74E-03
4	4.96E+00	4.53E+00	4.22E-01	4.66E-03	4.59E-03
5	6.29E+00	6.12E+00	1.62E-01	4.81E-03	4.81E-03
6	8.96E+00	8.96E+00	0.00E+00	5.98E-03	5.98E-03
7	9.13E+00	9.12E+00	0.00E+00	6.34E-03	6.34E-03
8	9.32E+00	9.30E+00	0.00E+00	1.89E-02	1.89E-02
9	1.03E+01	1.02E+01	0.00E+00	8.80E-02	8.80E-02
10	8.68E+00	8.55E+00	0.00E+00	1.35E-01	1.35E-01
11	7.66E+00	7.35E+00	0.00E+00	3.11E-01	3.11E-01
12	6.29E+00	6.28E+00	0.00E+00	4.42E-03	4.42E-03
13	6.31E+00	6.30E+00	0.00E+00	7.41E-03	7.41E-03
14	6.32E+00	6.30E+00	0.00E+00	1.32E-02	1.32E-02
15	6.32E+00	6.30E+00	0.00E+00	1.99E-02	1.99E-02
16	6.32E+00	6.30E+00	0.00E+00	2.47E-02	2.47E-02
17	6.33E+00	6.30E+00	0.00E+00	2.73E-02	2.73E-02
18	6.33E+00	6.30E+00	0.00E+00	2.86E-02	2.86E-02
19	6.33E+00	6.30E+00	0.00E+00	3.16E-02	3.16E-02
20	6.33E+00	6.29E+00	0.00E+00	4.02E-02	4.02E-02
21	6.34E+00	6.29E+00	0.00E+00	5.22E-02	5.22E-02
22	6.34E+00	6.29E+00	0.00E+00	5.93E-02	5.93E-02
23	6.36E+00	6.28E+00	0.00E+00	7.90E-02	7.90E-02
24	6.39E+00	6.27E+00	0.00E+00	1.15E-01	1.15E-01
25	6.40E+00	6.25E+00	0.00E+00	1.53E-01	1.53E-01
26	6.44E+00	6.22E+00	0.00E+00	2.20E-01	2.20E-01
27	6.54E+00	6.13E+00	0.00E+00	4.13E-01	4.13E-01

Z i r c a l o y

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.15E+00	2.45E+00	1.63E+00	9.24E-03	2.80E-03
2	3.83E+00	2.27E+00	1.56E+00	4.43E-03	3.50E-03
3	4.49E+00	3.48E+00	9.94E-01	9.31E-03	9.06E-03
4	5.21E+00	4.79E+00	4.07E-01	1.13E-02	1.13E-02
5	6.29E+00	6.12E+00	1.59E-01	1.10E-02	1.10E-02
6	8.97E+00	8.96E+00	0.00E+00	1.20E-02	1.20E-02
7	9.11E+00	9.10E+00	0.00E+00	1.33E-02	1.33E-02
8	1.00E+01	1.00E+01	0.00E+00	1.73E-02	1.73E-02
9	1.00E+01	9.88E+00	0.00E+00	1.34E-01	1.34E-01
10	8.15E+00	8.02E+00	0.00E+00	1.32E-01	1.32E-01
11	7.40E+00	7.10E+00	0.00E+00	2.97E-01	2.97E-01
12	6.19E+00	6.18E+00	0.00E+00	5.40E-03	5.40E-03
13	6.20E+00	6.19E+00	0.00E+00	9.22E-03	9.22E-03
14	6.22E+00	6.20E+00	0.00E+00	1.62E-02	1.62E-02
15	6.23E+00	6.20E+00	0.00E+00	2.39E-02	2.39E-02
16	6.23E+00	6.20E+00	0.00E+00	2.69E-02	2.69E-02
17	6.23E+00	6.20E+00	0.00E+00	3.01E-02	3.01E-02
18	6.23E+00	6.20E+00	0.00E+00	3.21E-02	3.21E-02
19	6.24E+00	6.20E+00	0.00E+00	3.50E-02	3.50E-02
20	6.24E+00	6.20E+00	0.00E+00	4.42E-02	4.42E-02
21	6.26E+00	6.20E+00	0.00E+00	5.51E-02	5.51E-02
22	6.26E+00	6.20E+00	0.00E+00	6.37E-02	6.37E-02
23	6.29E+00	6.20E+00	0.00E+00	8.75E-02	8.75E-02
24	6.33E+00	6.20E+00	0.00E+00	1.27E-01	1.27E-01
25	6.37E+00	6.20E+00	0.00E+00	1.68E-01	1.68E-01
26	6.44E+00	6.20E+00	0.00E+00	2.39E-01	2.39E-01
27	6.65E+00	6.20E+00	0.00E+00	4.53E-01	4.53E-01

N b - 9 3

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.17E+00	2.51E+00	1.57E+00	1.82E-02	1.65E-03
2	3.81E+00	1.85E+00	1.96E+00	4.98E-03	3.42E-03
3	4.55E+00	2.36E+00	2.19E+00	7.43E-03	7.43E-03
4	5.20E+00	3.37E+00	1.82E+00	1.31E-02	1.31E-02
5	6.15E+00	5.10E+00	1.02E+00	2.85E-02	2.85E-02
6	7.76E+00	7.62E+00	9.05E-02	4.95E-02	4.95E-02
7	9.29E+00	9.21E+00	1.39E-02	7.18E-02	7.18E-02
8	6.64E+00	6.45E+00	3.92E-04	1.98E-01	1.98E-01
9	8.15E+00	7.50E+00	0.00E+00	6.48E-01	6.48E-01
10	1.08E+01	9.01E+00	0.00E+00	1.83E+00	1.83E+00
11	8.42E+00	6.16E+00	0.00E+00	2.26E+00	2.26E+00
12	5.94E+00	5.62E+00	0.00E+00	3.27E-01	3.27E-01
13	5.70E+00	5.65E+00	0.00E+00	4.61E-02	4.61E-02
14	5.74E+00	5.66E+00	0.00E+00	7.94E-02	7.94E-02
15	5.78E+00	5.66E+00	0.00E+00	1.21E-01	1.21E-01
16	5.81E+00	5.66E+00	0.00E+00	1.49E-01	1.49E-01
17	5.82E+00	5.66E+00	0.00E+00	1.66E-01	1.66E-01
18	5.84E+00	5.66E+00	0.00E+00	1.78E-01	1.78E-01
19	5.85E+00	5.66E+00	0.00E+00	1.94E-01	1.94E-01
20	5.90E+00	5.66E+00	0.00E+00	2.45E-01	2.45E-01
21	5.96E+00	5.66E+00	0.00E+00	3.05E-01	3.05E-01
22	6.01E+00	5.66E+00	0.00E+00	3.52E-01	3.52E-01
23	6.14E+00	5.66E+00	0.00E+00	4.84E-01	4.84E-01
24	6.36E+00	5.66E+00	0.00E+00	7.02E-01	7.02E-01
25	6.59E+00	5.66E+00	0.00E+00	9.27E-01	9.27E-01
26	6.98E+00	5.66E+00	0.00E+00	1.32E+00	1.32E+00
27	8.17E+00	5.66E+00	0.00E+00	2.51E+00	2.51E+00

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Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.15E+00	2.27E+00	1.70E+00	3.65E-03	3.65E-03
2	3.92E+00	2.01E+00	1.90E+00	7.59E-03	7.59E-03
3	4.58E+00	2.74E+00	1.83E+00	1.29E-02	1.29E-02
4	5.45E+00	3.93E+00	1.50E+00	1.87E-02	1.87E-02
5	6.09E+00	5.25E+00	8.11E-01	2.66E-02	2.66E-02
6	7.56E+00	7.29E+00	2.33E-01	4.17E-02	4.17E-02
7	8.70E+00	8.63E+00	1.68E-02	5.81E-02	5.81E-02
8	8.35E+00	8.21E+00	0.00E+00	1.39E-01	1.39E-01
9	9.15E+00	8.68E+00	0.00E+00	4.67E-01	4.67E-01
10	1.11E+01	1.00E+01	0.00E+00	1.06E+00	1.06E+00
11	1.52E+01	1.12E+01	0.00E+00	3.99E+00	3.99E+00
12	3.38E+01	1.92E+01	0.00E+00	1.46E+01	1.46E+01
13	5.78E+00	4.89E+00	0.00E+00	8.85E-01	8.85E-01
14	5.17E+00	4.98E+00	0.00E+00	1.82E-01	1.82E-01
15	5.28E+00	5.00E+00	0.00E+00	2.77E-01	2.77E-01
16	5.34E+00	5.00E+00	0.00E+00	3.43E-01	3.43E-01
17	5.38E+00	5.00E+00	0.00E+00	3.83E-01	3.83E-01
18	5.41E+00	5.00E+00	0.00E+00	4.09E-01	4.09E-01
19	5.45E+00	5.00E+00	0.00E+00	4.46E-01	4.46E-01
20	5.56E+00	5.00E+00	0.00E+00	5.63E-01	5.63E-01
21	5.70E+00	5.00E+00	0.00E+00	7.02E-01	7.02E-01
22	5.81E+00	5.00E+00	0.00E+00	8.12E-01	8.12E-01
23	6.11E+00	5.00E+00	0.00E+00	1.11E+00	1.11E+00
24	6.62E+00	5.00E+00	0.00E+00	1.62E+00	1.62E+00
25	7.14E+00	5.00E+00	0.00E+00	2.14E+00	2.14E+00
26	8.05E+00	5.00E+00	0.00E+00	3.05E+00	3.05E+00
27	1.08E+01	5.00E+00	0.00E+00	5.77E+00	5.77E+00

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Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.32E+00	2.39E+00	1.85E+00	8.50E-03	1.31E-03
2	4.20E+00	2.09E+00	2.07E+00	3.68E-02	3.67E-02
3	5.11E+00	3.07E+00	1.95E+00	8.59E-02	8.59E-02
4	5.93E+00	4.02E+00	1.81E+00	9.80E-02	9.80E-02
5	6.53E+00	4.87E+00	1.56E+00	1.00E-01	1.00E-01
6	7.50E+00	6.24E+00	1.13E+00	1.30E-01	1.30E-01
7	8.64E+00	8.20E+00	1.42E-01	2.99E-01	2.99E-01
8	9.24E+00	8.38E+00	2.99E-05	8.65E-01	8.65E-01
9	1.10E+01	9.07E+00	0.00E+00	1.91E+00	1.91E+00
10	1.50E+01	1.11E+01	0.00E+00	3.93E+00	3.93E+00
11	1.42E+01	8.43E+00	0.00E+00	5.81E+00	5.81E+00
12	4.13E+01	1.02E+01	0.00E+00	3.11E+01	3.11E+01
13	4.81E+01	8.56E+00	0.00E+00	3.96E+01	3.96E+01
14	8.19E+00	5.47E+00	0.00E+00	2.72E+00	2.72E+00
15	9.50E+00	5.57E+00	0.00E+00	3.93E+00	3.93E+00
16	1.04E+01	5.59E+00	0.00E+00	4.82E+00	4.82E+00
17	1.10E+01	5.60E+00	0.00E+00	5.37E+00	5.37E+00
18	1.13E+01	5.60E+00	0.00E+00	5.73E+00	5.73E+00
19	1.18E+01	5.60E+00	0.00E+00	6.24E+00	6.24E+00
20	1.35E+01	5.61E+00	0.00E+00	7.86E+00	7.86E+00
21	1.54E+01	5.62E+00	0.00E+00	9.79E+00	9.79E+00
22	1.69E+01	5.62E+00	0.00E+00	1.13E+01	1.13E+01
23	2.11E+01	5.62E+00	0.00E+00	1.55E+01	1.55E+01
24	2.81E+01	5.62E+00	0.00E+00	2.25E+01	2.25E+01
25	3.53E+01	5.62E+00	0.00E+00	2.97E+01	2.97E+01
26	4.80E+01	5.62E+00	0.00E+00	4.24E+01	4.24E+01
27	8.59E+01	5.62E+00	0.00E+00	8.03E+01	8.03E+01

Ag-109

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.18E+00	2.24E+00	1.86E+00	6.16E-03	4.50E-04
2	4.06E+00	1.92E+00	2.12E+00	1.70E-02	1.68E-02
3	4.92E+00	2.88E+00	2.00E+00	4.49E-02	4.49E-02
4	5.79E+00	3.97E+00	1.77E+00	5.46E-02	5.46E-02
5	6.51E+00	4.89E+00	1.57E+00	5.59E-02	5.59E-02
6	7.44E+00	6.20E+00	1.18E+00	6.85E-02	6.85E-02
7	8.42E+00	8.08E+00	1.74E-01	1.68E-01	1.68E-01
8	9.06E+00	8.53E+00	1.45E-04	5.32E-01	5.32E-01
9	1.09E+01	9.58E+00	0.00E+00	1.32E+00	1.32E+00
10	1.54E+01	1.19E+01	0.00E+00	3.46E+00	3.46E+00
11	2.47E+01	1.26E+01	0.00E+00	1.22E+01	1.22E+01
12	5.73E+01	1.04E+01	0.00E+00	4.68E+01	4.68E+01
13	7.80E+00	5.09E+00	0.00E+00	2.70E+00	2.70E+00
14	1.22E+03	1.06E+02	0.00E+00	1.11E+03	1.11E+03
15	3.26E+01	5.88E-01	0.00E+00	3.20E+01	3.20E+01
16	2.41E+01	1.03E+00	0.00E+00	2.31E+01	2.31E+01
17	2.32E+01	1.19E+00	0.00E+00	2.20E+01	2.20E+01
18	2.31E+01	1.26E+00	0.00E+00	2.19E+01	2.19E+01
19	2.34E+01	1.33E+00	0.00E+00	2.21E+01	2.21E+01
20	2.57E+01	1.47E+00	0.00E+00	2.42E+01	2.42E+01
21	2.93E+01	1.56E+00	0.00E+00	2.77E+01	2.77E+01
22	3.25E+01	1.59E+00	0.00E+00	3.09E+01	3.09E+01
23	4.20E+01	1.64E+00	0.00E+00	4.04E+01	4.04E+01
24	5.86E+01	1.66E+00	0.00E+00	5.70E+01	5.70E+01
25	7.61E+01	1.68E+00	0.00E+00	7.44E+01	7.44E+01
26	1.07E+02	1.68E+00	0.00E+00	1.05E+02	1.05E+02
27	2.00E+02	1.69E+00	0.00E+00	1.99E+02	1.99E+02

Cd

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.15E+00	2.09E+00	1.97E+00	7.28E-03	5.16E-03
2	4.15E+00	2.08E+00	2.06E+00	1.13E-02	1.12E-02
3	5.04E+00	3.20E+00	1.82E+00	2.16E-02	2.16E-02
4	5.72E+00	4.19E+00	1.49E+00	3.39E-02	3.39E-02
5	6.21E+00	5.08E+00	1.08E+00	5.13E-02	5.13E-02
6	6.96E+00	6.44E+00	4.25E-01	8.57E-02	8.57E-02
7	7.24E+00	7.12E+00	9.51E-03	1.18E-01	1.18E-01
8	6.92E+00	6.63E+00	0.00E+00	2.88E-01	2.88E-01
9	6.59E+00	5.58E+00	0.00E+00	1.01E+00	1.01E+00
10	6.38E+00	5.58E+00	0.00E+00	7.95E-01	7.95E-01
11	6.30E+00	5.57E+00	0.00E+00	7.30E-01	7.30E-01
12	5.77E+00	4.88E+00	0.00E+00	8.89E-01	8.89E-01
13	5.28E+00	4.83E+00	0.00E+00	4.41E-01	4.41E-01
14	5.21E+00	4.96E+00	0.00E+00	2.51E-01	2.51E-01
15	6.73E+00	5.13E+00	0.00E+00	1.60E+00	1.60E+00
16	1.01E+01	5.31E+00	0.00E+00	4.77E+00	4.77E+00
17	1.43E+01	5.47E+00	0.00E+00	8.87E+00	8.87E+00
18	1.85E+01	5.60E+00	0.00E+00	1.29E+01	1.29E+01
19	2.71E+01	5.81E+00	0.00E+00	2.13E+01	2.13E+01
20	8.46E+01	6.75E+00	0.00E+00	7.78E+01	7.78E+01
21	4.95E+02	1.11E+01	0.00E+00	4.84E+02	4.84E+02
22	1.55E+03	1.88E+01	0.00E+00	1.53E+03	1.53E+03
23	5.30E+03	2.97E+01	0.00E+00	5.27E+03	5.27E+03
24	2.70E+03	1.07E+01	0.00E+00	2.69E+03	2.69E+03
25	2.35E+03	7.95E+00	0.00E+00	2.34E+03	2.34E+03
26	2.65E+03	6.97E+00	0.00E+00	2.65E+03	2.65E+03
27	4.31E+03	6.39E+00	0.00E+00	4.30E+03	4.30E+03

In-113

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.00E+00	2.30E+00	1.70E+00	4.22E-03	4.22E-03
2	3.94E+00	2.23E+00	1.60E+00	1.08E-01	1.08E-01
3	4.70E+00	3.49E+00	9.79E-01	2.30E-01	2.30E-01
4	5.56E+00	4.91E+00	3.64E-01	2.88E-01	2.88E-01
5	6.17E+00	5.80E+00	6.12E-02	3.11E-01	3.11E-01
6	6.82E+00	6.53E+00	9.34E-03	2.86E-01	2.86E-01
7	7.22E+00	6.90E+00	9.47E-07	3.18E-01	3.18E-01
8	6.81E+00	6.08E+00	0.00E+00	7.36E-01	7.36E-01
9	6.58E+00	5.30E+00	0.00E+00	1.28E+00	1.28E+00
10	7.50E+00	5.23E+00	0.00E+00	2.27E+00	2.27E+00
11	1.05E+01	5.31E+00	0.00E+00	5.23E+00	5.23E+00
12	2.71E+01	6.51E+00	0.00E+00	2.06E+01	2.06E+01
13	1.12E+02	1.48E+01	0.00E+00	9.72E+01	9.72E+01
14	1.26E+01	3.60E+00	0.00E+00	9.03E+00	9.03E+00
15	8.12E+01	4.14E+00	0.00E+00	7.70E+01	7.70E+01
16	7.18E+01	3.22E+00	0.00E+00	6.86E+01	6.86E+01
17	9.41E+00	3.52E+00	0.00E+00	5.89E+00	5.89E+00
18	7.99E+00	3.57E+00	0.00E+00	4.42E+00	4.42E+00
19	7.27E+00	3.60E+00	0.00E+00	3.66E+00	3.66E+00
20	6.94E+00	3.65E+00	0.00E+00	3.30E+00	3.30E+00
21	7.20E+00	3.67E+00	0.00E+00	3.53E+00	3.53E+00
22	7.57E+00	3.68E+00	0.00E+00	3.89E+00	3.89E+00
23	8.72E+00	3.68E+00	0.00E+00	5.03E+00	5.03E+00
24	1.08E+01	3.69E+00	0.00E+00	7.08E+00	7.08E+00
25	1.29E+01	3.69E+00	0.00E+00	9.24E+00	9.24E+00
26	1.68E+01	3.69E+00	0.00E+00	1.31E+01	1.31E+01
27	2.84E+01	3.69E+00	0.00E+00	2.47E+01	2.47E+01

In-115

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	3.99E+00	2.34E+00	1.65E+00	2.72E-03	2.72E-03
2	4.01E+00	2.46E+00	1.52E+00	3.60E-02	3.60E-02
3	4.83E+00	3.58E+00	1.15E+00	9.96E-02	9.96E-02
4	5.63E+00	4.58E+00	9.00E-01	1.49E-01	1.49E-01
5	6.18E+00	5.62E+00	3.78E-01	1.77E-01	1.77E-01
6	6.74E+00	6.53E+00	1.86E-02	1.88E-01	1.88E-01
7	7.02E+00	6.81E+00	2.10E-04	2.09E-01	2.09E-01
8	6.64E+00	6.11E+00	0.00E+00	5.21E-01	5.21E-01
9	6.52E+00	5.46E+00	0.00E+00	1.06E+00	1.06E+00
10	7.64E+00	5.56E+00	0.00E+00	2.08E+00	2.08E+00
11	1.23E+01	6.09E+00	0.00E+00	6.20E+00	6.20E+00
12	1.24E+01	4.59E+00	0.00E+00	7.86E+00	7.86E+00
13	1.46E+01	4.66E+00	0.00E+00	9.93E+00	9.93E+00
14	8.16E+01	6.21E+00	0.00E+00	7.54E+01	7.54E+01
15	1.21E+02	1.55E+01	0.00E+00	1.06E+02	1.06E+02
16	9.38E+03	3.99E+02	0.00E+00	8.98E+03	8.98E+03
17	1.15E+03	2.89E+01	0.00E+00	1.12E+03	1.12E+03
18	4.23E+02	7.42E+00	0.00E+00	4.15E+02	4.15E+02
19	2.26E+02	3.11E+00	0.00E+00	2.23E+02	2.23E+02
20	1.17E+02	1.63E+00	0.00E+00	1.15E+02	1.15E+02
21	9.21E+01	1.52E+00	0.00E+00	9.06E+01	9.06E+01
22	9.12E+01	1.53E+00	0.00E+00	8.97E+01	8.97E+01
23	1.03E+02	1.54E+00	0.00E+00	1.01E+02	1.01E+02
24	1.33E+02	1.56E+00	0.00E+00	1.31E+02	1.31E+02
25	1.68E+02	1.57E+00	0.00E+00	1.66E+02	1.66E+02
26	2.32E+02	1.58E+00	0.00E+00	2.31E+02	2.31E+02
27	4.31E+02	1.61E+00	0.00E+00	4.29E+02	4.29E+02

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Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.29E+00	2.30E+00	1.93E+00	5.35E-03	5.35E-03
2	4.27E+00	2.34E+00	1.92E+00	1.10E-02	1.10E-02
3	5.06E+00	3.95E+00	1.09E+00	1.84E-02	1.84E-02
4	5.63E+00	5.28E+00	3.26E-01	2.77E-02	2.77E-02
5	6.31E+00	6.18E+00	9.25E-02	3.71E-02	3.71E-02
6	6.81E+00	6.76E+00	3.15E-03	4.40E-02	4.40E-02
7	6.51E+00	6.46E+00	0.00E+00	4.84E-02	4.84E-02
8	5.94E+00	5.86E+00	0.00E+00	8.23E-02	8.23E-02
9	5.31E+00	5.20E+00	0.00E+00	1.09E-01	1.09E-01
10	5.06E+00	4.95E+00	0.00E+00	1.11E-01	1.11E-01
11	5.68E+00	5.57E+00	0.00E+00	1.12E-01	1.12E-01
12	5.26E+00	5.15E+00	0.00E+00	1.12E-01	1.12E-01
13	4.72E+00	4.61E+00	0.00E+00	1.12E-01	1.12E-01
14	4.82E+00	4.71E+00	0.00E+00	1.12E-01	1.12E-01
15	4.86E+00	4.75E+00	0.00E+00	1.12E-01	1.12E-01
16	4.87E+00	4.76E+00	0.00E+00	1.12E-01	1.12E-01
17	4.88E+00	4.76E+00	0.00E+00	1.12E-01	1.12E-01
18	4.88E+00	4.77E+00	0.00E+00	1.12E-01	1.12E-01
19	4.88E+00	4.77E+00	0.00E+00	1.12E-01	1.12E-01
20	4.88E+00	4.74E+00	0.00E+00	1.32E-01	1.32E-01
21	4.87E+00	4.70E+00	0.00E+00	1.65E-01	1.65E-01
22	4.87E+00	4.68E+00	0.00E+00	1.92E-01	1.92E-01
23	4.87E+00	4.61E+00	0.00E+00	2.63E-01	2.63E-01
24	4.85E+00	4.47E+00	0.00E+00	3.82E-01	3.82E-01
25	4.64E+00	4.14E+00	0.00E+00	5.04E-01	5.04E-01
26	4.35E+00	3.66E+00	0.00E+00	6.92E-01	6.92E-01
27	4.79E+00	3.56E+00	0.00E+00	1.23E+00	1.23E+00

X e - 1 3 5

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.02E+00	2.42E+00	1.60E+00	1.66E-03	1.66E-03
2	4.88E+00	3.09E+00	1.79E+00	9.38E-04	9.38E-04
3	6.01E+00	4.70E+00	1.31E+00	3.49E-04	3.49E-04
4	6.44E+00	5.84E+00	5.98E-01	4.22E-04	4.22E-04
5	6.42E+00	6.24E+00	1.83E-01	5.02E-04	5.02E-04
6	5.90E+00	5.87E+00	2.69E-02	8.67E-04	8.67E-04
7	5.51E+00	5.51E+00	0.00E+00	1.61E-03	1.61E-03
8	6.53E+00	6.52E+00	0.00E+00	4.10E-03	4.10E-03
9	1.00E+01	1.00E+01	0.00E+00	1.43E-02	1.43E-02
10	1.16E+01	1.15E+01	0.00E+00	6.16E-02	6.16E-02
11	8.03E+00	7.88E+00	0.00E+00	1.42E-01	1.42E-01
12	1.15E+01	1.10E+01	0.00E+00	4.25E-01	4.25E-01
13	2.58E+01	2.31E+01	0.00E+00	2.70E+00	2.70E+00
14	1.22E+02	8.89E+01	0.00E+00	3.35E+01	3.35E+01
15	6.25E+02	2.97E+02	0.00E+00	3.28E+02	3.28E+02
16	1.32E+03	2.98E+02	0.00E+00	1.02E+03	1.02E+03
17	2.16E+03	2.88E+02	0.00E+00	1.87E+03	1.87E+03
18	2.94E+03	2.85E+02	0.00E+00	2.65E+03	2.65E+03
19	4.46E+03	2.91E+02	0.00E+00	4.17E+03	4.17E+03
20	1.34E+04	2.99E+02	0.00E+00	1.31E+04	1.31E+04
21	5.39E+04	2.91E+02	0.00E+00	5.36E+04	5.36E+04
22	1.25E+05	2.93E+02	0.00E+00	1.25E+05	1.25E+05
23	7.53E+05	2.96E+02	0.00E+00	7.53E+05	7.53E+05
24	2.80E+06	2.90E+02	0.00E+00	2.80E+06	2.80E+06
25	2.68E+06	2.91E+02	0.00E+00	2.68E+06	2.68E+06
26	2.77E+06	2.74E+02	0.00E+00	2.77E+06	2.77E+06
27	4.17E+06	2.22E+02	0.00E+00	4.17E+06	4.17E+06

Cesium-133

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.39E+00	2.26E+00	2.01E+00	6.04E-03	5.16E-04
2	4.94E+00	2.45E+00	2.48E+00	8.86E-03	7.97E-03
3	6.01E+00	3.59E+00	2.39E+00	3.35E-02	3.35E-02
4	6.53E+00	4.44E+00	2.03E+00	6.13E-02	6.13E-02
5	6.59E+00	4.99E+00	1.53E+00	8.22E-02	8.22E-02
6	6.35E+00	5.31E+00	9.33E-01	1.09E-01	1.09E-01
7	6.32E+00	5.61E+00	5.39E-01	1.67E-01	1.67E-01
8	8.42E+00	7.87E+00	1.69E-02	5.37E-01	5.37E-01
9	1.37E+01	1.23E+01	0.00E+00	1.42E+00	1.42E+00
10	1.37E+01	1.09E+01	0.00E+00	2.80E+00	2.80E+00
11	3.36E+01	2.11E+01	0.00E+00	1.25E+01	1.25E+01
12	2.65E+01	8.08E+00	0.00E+00	1.84E+01	1.84E+01
13	3.13E+01	7.13E+00	0.00E+00	2.42E+01	2.42E+01
14	2.61E+02	1.58E+01	0.00E+00	2.45E+02	2.45E+02
15	1.02E+01	4.38E+00	0.00E+00	5.84E+00	5.84E+00
16	9.94E+00	4.60E+00	0.00E+00	5.34E+00	5.34E+00
17	1.01E+01	4.67E+00	0.00E+00	5.48E+00	5.48E+00
18	1.03E+01	4.69E+00	0.00E+00	5.63E+00	5.63E+00
19	1.06E+01	4.72E+00	0.00E+00	5.90E+00	5.90E+00
20	1.17E+01	4.78E+00	0.00E+00	6.94E+00	6.94E+00
21	1.31E+01	4.81E+00	0.00E+00	8.31E+00	8.31E+00
22	1.43E+01	4.82E+00	0.00E+00	9.44E+00	9.44E+00
23	1.75E+01	4.84E+00	0.00E+00	1.27E+01	1.27E+01
24	2.30E+01	4.85E+00	0.00E+00	1.81E+01	1.81E+01
25	2.87E+01	4.85E+00	0.00E+00	2.38E+01	2.38E+01
26	3.87E+01	4.85E+00	0.00E+00	3.39E+01	3.39E+01
27	6.89E+01	4.86E+00	0.00E+00	6.41E+01	6.41E+01

Ba-138

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.58E+00	2.32E+00	2.02E+00	1.54E-02	9.14E-05
2	5.25E+00	3.28E+00	1.96E+00	7.08E-03	5.07E-04
3	6.65E+00	5.36E+00	1.29E+00	2.95E-03	2.22E-03
4	7.33E+00	6.95E+00	3.78E-01	3.96E-03	3.96E-03
5	6.94E+00	6.93E+00	0.00E+00	3.54E-03	3.54E-03
6	5.89E+00	5.89E+00	0.00E+00	2.17E-03	2.17E-03
7	6.09E+00	6.09E+00	0.00E+00	2.21E-03	2.21E-03
8	6.78E+00	6.78E+00	0.00E+00	6.96E-03	6.96E-03
9	6.50E+00	6.47E+00	0.00E+00	2.21E-02	2.21E-02
10	6.52E+00	6.49E+00	0.00E+00	3.17E-02	3.17E-02
11	6.89E+00	6.86E+00	0.00E+00	3.37E-02	3.37E-02
12	7.25E+00	7.22E+00	0.00E+00	3.43E-02	3.43E-02
13	7.57E+00	7.54E+00	0.00E+00	3.49E-02	3.49E-02
14	7.93E+00	7.89E+00	0.00E+00	3.50E-02	3.50E-02
15	8.32E+00	8.28E+00	0.00E+00	4.19E-02	4.19E-02
16	8.71E+00	8.63E+00	0.00E+00	7.59E-02	7.59E-02
17	8.81E+00	8.70E+00	0.00E+00	1.06E-01	1.06E-01
18	8.87E+00	8.74E+00	0.00E+00	1.29E-01	1.29E-01
19	8.90E+00	8.75E+00	0.00E+00	1.51E-01	1.51E-01
20	8.94E+00	8.75E+00	0.00E+00	1.94E-01	1.94E-01
21	9.00E+00	8.75E+00	0.00E+00	2.46E-01	2.46E-01
22	9.03E+00	8.75E+00	0.00E+00	2.76E-01	2.76E-01
23	9.06E+00	8.75E+00	0.00E+00	3.08E-01	3.08E-01
24	9.08E+00	8.75E+00	0.00E+00	3.33E-01	3.33E-01
25	9.09E+00	8.75E+00	0.00E+00	3.43E-01	3.43E-01
26	9.15E+00	8.75E+00	0.00E+00	4.04E-01	4.04E-01
27	9.51E+00	8.75E+00	0.00E+00	7.59E-01	7.59E-01

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Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.05E+00	2.53E+00	2.08E+00	4.02E-03	4.02E-03
2	5.79E+00	3.12E+00	2.65E+00	1.85E-02	1.85E-02
3	6.60E+00	3.83E+00	2.71E+00	5.92E-02	5.92E-02
4	7.02E+00	4.13E+00	2.79E+00	9.95E-02	9.95E-02
5	7.20E+00	4.24E+00	2.85E+00	1.14E-01	1.14E-01
6	7.28E+00	4.86E+00	2.32E+00	1.05E-01	1.05E-01
7	7.75E+00	6.47E+00	1.07E+00	2.13E-01	2.13E-01
8	9.95E+00	8.94E+00	3.87E-02	9.69E-01	9.69E-01
9	1.41E+01	1.05E+01	0.00E+00	3.69E+00	3.69E+00
10	2.04E+01	1.10E+01	0.00E+00	9.47E+00	9.47E+00
11	3.38E+01	1.16E+01	0.00E+00	2.23E+01	2.23E+01
12	3.77E+01	8.99E+00	0.00E+00	2.87E+01	2.87E+01
13	4.94E+01	8.58E+00	0.00E+00	4.08E+01	4.08E+01
14	3.09E+01	2.90E+00	0.00E+00	2.80E+01	2.80E+01
15	2.46E+02	5.09E+00	0.00E+00	2.41E+02	2.41E+02
16	2.23E+01	2.49E+00	0.00E+00	1.99E+01	1.99E+01
17	2.38E+01	3.02E+00	0.00E+00	2.07E+01	2.07E+01
18	2.90E+01	3.35E+00	0.00E+00	2.56E+01	2.56E+01
19	4.05E+01	3.88E+00	0.00E+00	3.67E+01	3.67E+01
20	1.28E+02	6.19E+00	0.00E+00	1.22E+02	1.22E+02
21	3.53E+02	1.03E+01	0.00E+00	3.42E+02	3.42E+02
22	7.63E+02	1.57E+01	0.00E+00	7.47E+02	7.47E+02
23	4.40E+03	4.60E+01	0.00E+00	4.36E+03	4.36E+03
24	2.04E+04	1.26E+02	0.00E+00	2.03E+04	2.03E+04
25	3.84E+04	1.68E+02	0.00E+00	3.83E+04	3.83E+04
26	5.41E+04	1.60E+02	0.00E+00	5.39E+04	5.39E+04
27	8.89E+04	1.35E+02	0.00E+00	8.87E+04	8.87E+04

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Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	4.99E+00	2.66E+00	1.98E+00	2.16E-02	1.97E-02
2	5.85E+00	3.41E+00	2.40E+00	4.64E-02	4.57E-02
3	6.77E+00	4.24E+00	2.45E+00	8.15E-02	8.13E-02
4	6.91E+00	4.26E+00	2.55E+00	1.05E-01	1.05E-01
5	6.77E+00	4.05E+00	2.60E+00	1.16E-01	1.16E-01
6	6.87E+00	4.46E+00	2.29E+00	1.20E-01	1.20E-01
7	7.74E+00	6.27E+00	1.29E+00	1.77E-01	1.77E-01
8	1.27E+01	1.24E+01	3.74E-02	2.03E-01	2.03E-01
9	1.67E+01	1.62E+01	0.00E+00	4.75E-01	4.75E-01
10	2.96E+01	2.80E+01	0.00E+00	1.61E+00	1.61E+00
11	1.09E+02	9.68E+01	0.00E+00	1.26E+01	1.26E+01
12	9.21E+00	9.03E+00	0.00E+00	1.76E-01	1.76E-01
13	2.11E+01	1.98E+01	0.00E+00	1.30E+00	1.30E+00
14	6.87E+01	5.46E+01	0.00E+00	1.41E+01	1.41E+01
15	1.67E+02	1.11E+02	0.00E+00	5.61E+01	5.61E+01
16	2.51E+02	1.48E+02	0.00E+00	1.03E+02	1.03E+02
17	3.11E+02	1.72E+02	0.00E+00	1.39E+02	1.39E+02
18	3.50E+02	1.86E+02	0.00E+00	1.64E+02	1.64E+02
19	4.06E+02	2.05E+02	0.00E+00	2.01E+02	2.01E+02
20	5.80E+02	2.53E+02	0.00E+00	3.28E+02	3.28E+02
21	7.78E+02	2.94E+02	0.00E+00	4.84E+02	4.84E+02
22	9.22E+02	3.15E+02	0.00E+00	6.07E+02	6.07E+02
23	1.29E+03	3.49E+02	0.00E+00	9.39E+02	9.39E+02
24	1.85E+03	3.74E+02	0.00E+00	1.47E+03	1.47E+03
25	2.39E+03	3.84E+02	0.00E+00	2.00E+03	2.00E+03
26	3.30E+03	3.90E+02	0.00E+00	2.91E+03	2.91E+03
27	5.99E+03	3.96E+02	0.00E+00	5.60E+03	5.60E+03

Lu-175

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.07E+00	2.81E+00	1.97E+00	6.46E-03	4.49E-03
2	6.14E+00	3.95E+00	2.18E+00	1.18E-02	1.08E-02
3	7.14E+00	5.15E+00	1.97E+00	2.26E-02	2.20E-02
4	7.28E+00	5.29E+00	1.96E+00	3.60E-02	3.56E-02
5	7.23E+00	5.02E+00	2.15E+00	5.74E-02	5.71E-02
6	7.70E+00	5.33E+00	2.27E+00	1.09E-01	1.09E-01
7	8.71E+00	7.42E+00	9.82E-01	3.11E-01	3.11E-01
8	1.11E+01	9.84E+00	0.00E+00	1.23E+00	1.23E+00
9	1.55E+01	1.26E+01	0.00E+00	2.88E+00	2.88E+00
10	2.73E+01	1.85E+01	0.00E+00	8.76E+00	8.76E+00
11	5.44E+01	2.58E+01	0.00E+00	2.86E+01	2.86E+01
12	1.16E+02	3.29E+01	0.00E+00	8.26E+01	8.26E+01
13	2.89E+02	5.75E+01	0.00E+00	2.31E+02	2.31E+02
14	1.28E+02	6.55E+00	0.00E+00	1.22E+02	1.22E+02
15	1.29E+02	4.34E+00	0.00E+00	1.25E+02	1.25E+02
16	8.09E+00	4.10E+00	0.00E+00	3.99E+00	3.99E+00
17	7.60E+00	4.24E+00	0.00E+00	3.36E+00	3.36E+00
18	7.55E+00	4.29E+00	0.00E+00	3.26E+00	3.26E+00
19	8.27E+00	5.03E+00	0.00E+00	3.23E+00	3.23E+00
20	8.85E+00	5.11E+00	0.00E+00	3.74E+00	3.74E+00
21	9.85E+00	5.16E+00	0.00E+00	4.69E+00	4.69E+00
22	1.08E+01	5.19E+00	0.00E+00	5.64E+00	5.64E+00
23	1.39E+01	5.22E+00	0.00E+00	8.72E+00	8.72E+00
24	1.96E+01	5.25E+00	0.00E+00	1.43E+01	1.43E+01
25	2.54E+01	5.26E+00	0.00E+00	2.02E+01	2.02E+01
26	3.55E+01	5.27E+00	0.00E+00	3.02E+01	3.02E+01
27	6.48E+01	5.27E+00	0.00E+00	5.95E+01	5.95E+01

Lu-176

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.07E+00	2.70E+00	1.43E+00	9.08E-03	7.11E-03
2	6.19E+00	4.00E+00	2.18E+00	1.81E-02	1.71E-02
3	7.14E+00	5.16E+00	1.94E+00	3.55E-02	3.49E-02
4	7.28E+00	5.30E+00	1.92E+00	5.66E-02	5.62E-02
5	7.23E+00	5.02E+00	2.11E+00	9.05E-02	9.02E-02
6	7.70E+00	5.24E+00	2.29E+00	1.70E-01	1.69E-01
7	8.71E+00	7.18E+00	1.05E+00	4.87E-01	4.87E-01
8	1.11E+01	9.13E+00	0.00E+00	1.95E+00	1.95E+00
9	1.58E+01	1.19E+01	0.00E+00	3.92E+00	3.92E+00
10	2.82E+01	1.73E+01	0.00E+00	1.09E+01	1.09E+01
11	5.66E+01	2.26E+01	0.00E+00	3.40E+01	3.40E+01
12	1.14E+02	2.62E+01	0.00E+00	8.80E+01	8.80E+01
13	1.63E+02	1.85E+01	0.00E+00	1.45E+02	1.45E+02
14	1.46E+02	7.43E+00	0.00E+00	1.38E+02	1.38E+02
15	3.02E+01	6.46E+00	0.00E+00	2.37E+01	2.37E+01
16	1.15E+03	1.31E+01	0.00E+00	1.14E+03	1.14E+03
17	6.21E+01	3.62E+00	0.00E+00	5.85E+01	5.85E+01
18	3.83E+01	4.19E+00	0.00E+00	3.41E+01	3.41E+01
19	3.12E+01	4.66E+00	0.00E+00	2.65E+01	2.65E+01
20	5.69E+01	5.47E+00	0.00E+00	5.15E+01	5.15E+01
21	1.73E+02	6.58E+00	0.00E+00	1.66E+02	1.66E+02
22	5.83E+02	8.43E+00	0.00E+00	5.74E+02	5.74E+02
23	7.47E+03	1.49E+01	0.00E+00	7.46E+03	7.46E+03
24	2.97E+03	3.43E+00	0.00E+00	2.96E+03	2.96E+03
25	2.00E+03	3.02E+00	0.00E+00	2.00E+03	2.00E+03
26	2.07E+03	3.06E+00	0.00E+00	2.06E+03	2.06E+03
27	3.19E+03	3.12E+00	0.00E+00	3.18E+03	3.18E+03

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Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.13E+00	2.62E+00	1.93E+00	1.86E-02	1.85E-02
2	6.26E+00	3.62E+00	2.61E+00	3.48E-02	3.48E-02
3	7.04E+00	4.36E+00	2.62E+00	5.77E-02	5.77E-02
4	6.93E+00	4.51E+00	2.35E+00	7.45E-02	7.45E-02
5	6.85E+00	4.73E+00	2.04E+00	8.33E-02	8.33E-02
6	7.08E+00	5.28E+00	1.71E+00	1.00E-01	1.00E-01
7	7.74E+00	6.75E+00	8.17E-01	1.68E-01	1.68E-01
8	1.00E+01	9.61E+00	3.02E-08	4.39E-01	4.39E-01
9	1.54E+01	1.40E+01	0.00E+00	1.38E+00	1.38E+00
10	2.65E+01	2.15E+01	0.00E+00	4.98E+00	4.98E+00
11	4.61E+01	2.86E+01	0.00E+00	1.75E+01	1.75E+01
12	7.38E+01	3.07E+01	0.00E+00	4.31E+01	4.31E+01
13	3.12E+01	1.01E+01	0.00E+00	2.11E+01	2.11E+01
14	9.80E+02	3.83E+02	0.00E+00	5.97E+02	5.97E+02
15	1.09E+03	1.29E+02	0.00E+00	9.60E+02	9.60E+02
16	8.74E+01	5.64E+00	0.00E+00	8.17E+01	8.17E+01
17	9.59E+02	3.58E+01	0.00E+00	9.23E+02	9.23E+02
18	3.12E+03	1.00E+02	0.00E+00	3.02E+03	3.02E+03
19	2.75E+02	5.22E+00	0.00E+00	2.70E+02	2.70E+02
20	6.14E+01	1.05E+00	0.00E+00	6.03E+01	6.03E+01
21	4.45E+01	9.50E-01	0.00E+00	4.35E+01	4.35E+01
22	4.48E+01	9.82E-01	0.00E+00	4.38E+01	4.38E+01
23	5.23E+01	1.04E+00	0.00E+00	5.12E+01	5.12E+01
24	6.94E+01	1.07E+00	0.00E+00	6.83E+01	6.83E+01
25	8.86E+01	1.09E+00	0.00E+00	8.75E+01	8.75E+01
26	1.24E+02	1.10E+00	0.00E+00	1.22E+02	1.22E+02
27	2.30E+02	1.10E+00	0.00E+00	2.29E+02	2.29E+02

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Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.13E+00	2.55E+00	2.24E+00	9.02E-03	8.49E-03
2	6.24E+00	3.53E+00	2.69E+00	1.71E-02	1.69E-02
3	7.08E+00	4.13E+00	2.91E+00	4.47E-02	4.46E-02
4	7.15E+00	3.87E+00	3.19E+00	8.20E-02	8.19E-02
5	6.68E+00	3.39E+00	3.17E+00	1.19E-01	1.19E-01
6	6.01E+00	3.77E+00	2.07E+00	1.74E-01	1.74E-01
7	6.68E+00	5.52E+00	8.96E-01	2.63E-01	2.63E-01
8	9.66E+00	8.61E+00	4.06E-01	6.39E-01	6.39E-01
9	1.37E+01	1.11E+01	6.27E-02	2.52E+00	2.52E+00
10	2.15E+01	1.29E+01	0.00E+00	8.66E+00	8.66E+00
11	5.50E+01	2.87E+01	0.00E+00	2.63E+01	2.63E+01
12	1.28E+02	5.07E+01	0.00E+00	7.76E+01	7.76E+01
13	1.15E+02	1.50E+01	0.00E+00	1.00E+02	1.00E+02
14	4.22E+02	3.45E+01	0.00E+00	3.87E+02	3.87E+02
15	1.29E+01	4.80E+00	0.00E+00	8.05E+00	8.05E+00
16	1.05E+01	5.47E+00	0.00E+00	5.02E+00	5.02E+00
17	1.04E+01	5.64E+00	0.00E+00	4.75E+00	4.75E+00
18	1.04E+01	5.71E+00	0.00E+00	4.72E+00	4.72E+00
19	1.06E+01	5.79E+00	0.00E+00	4.78E+00	4.78E+00
20	1.13E+01	5.93E+00	0.00E+00	5.33E+00	5.33E+00
21	1.22E+01	6.02E+00	0.00E+00	6.18E+00	6.18E+00
22	1.30E+01	6.06E+00	0.00E+00	6.95E+00	6.95E+00
23	1.53E+01	6.10E+00	0.00E+00	9.19E+00	9.19E+00
24	1.92E+01	6.13E+00	0.00E+00	1.31E+01	1.31E+01
25	2.32E+01	6.14E+00	0.00E+00	1.71E+01	1.71E+01
26	3.04E+01	6.15E+00	0.00E+00	2.42E+01	2.42E+01
27	5.19E+01	6.15E+00	0.00E+00	4.58E+01	4.58E+01

W-182

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.16E+00	2.36E+00	2.50E+00	2.14E-03	2.08E-03
2	6.40E+00	3.51E+00	2.88E+00	1.21E-02	1.21E-02
3	7.11E+00	4.27E+00	2.79E+00	3.82E-02	3.82E-02
4	7.11E+00	4.56E+00	2.49E+00	6.13E-02	6.13E-02
5	6.89E+00	4.55E+00	2.27E+00	7.32E-02	7.32E-02
6	6.62E+00	4.83E+00	1.72E+00	6.61E-02	6.61E-02
7	7.32E+00	6.57E+00	6.68E-01	8.62E-02	8.62E-02
8	1.12E+01	1.09E+01	0.00E+00	2.55E-01	2.55E-01
9	1.90E+01	1.83E+01	0.00E+00	7.23E-01	7.23E-01
10	3.11E+01	2.87E+01	0.00E+00	2.42E+00	2.42E+00
11	1.09E+02	9.54E+01	0.00E+00	1.35E+01	1.35E+01
12	1.03E+01	1.01E+01	0.00E+00	2.69E-01	2.69E-01
13	3.31E+02	1.32E+02	0.00E+00	1.99E+02	1.99E+02
14	3.06E+02	1.98E+01	0.00E+00	2.86E+02	2.86E+02
15	1.66E+01	9.93E+00	0.00E+00	6.67E+00	6.67E+00
16	1.53E+01	1.09E+01	0.00E+00	4.39E+00	4.39E+00
17	1.54E+01	1.11E+01	0.00E+00	4.26E+00	4.26E+00
18	1.55E+01	1.12E+01	0.00E+00	4.29E+00	4.29E+00
19	1.57E+01	1.13E+01	0.00E+00	4.40E+00	4.40E+00
20	1.65E+01	1.15E+01	0.00E+00	5.02E+00	5.02E+00
21	1.76E+01	1.16E+01	0.00E+00	5.90E+00	5.90E+00
22	1.84E+01	1.17E+01	0.00E+00	6.67E+00	6.67E+00
23	2.06E+01	1.18E+01	0.00E+00	8.88E+00	8.88E+00
24	2.45E+01	1.18E+01	0.00E+00	1.27E+01	1.27E+01
25	2.84E+01	1.18E+01	0.00E+00	1.66E+01	1.66E+01
26	3.54E+01	1.18E+01	0.00E+00	2.36E+01	2.36E+01
27	5.64E+01	1.18E+01	0.00E+00	4.46E+01	4.46E+01

W-183

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.16E+00	2.44E+00	1.47E+00	1.20E-03	1.11E-03
2	6.41E+00	3.65E+00	2.75E+00	6.18E-03	6.18E-03
3	7.12E+00	4.18E+00	2.91E+00	1.98E-02	1.98E-02
4	7.04E+00	4.04E+00	2.96E+00	3.15E-02	3.15E-02
5	6.83E+00	3.82E+00	2.97E+00	3.88E-02	3.88E-02
6	6.65E+00	4.06E+00	2.54E+00	4.82E-02	4.82E-02
7	7.42E+00	6.03E+00	1.28E+00	1.08E-01	1.08E-01
8	1.16E+01	1.11E+01	7.95E-02	4.37E-01	4.37E-01
9	1.87E+01	1.72E+01	0.00E+00	1.51E+00	1.51E+00
10	4.17E+01	3.50E+01	0.00E+00	6.67E+00	6.67E+00
11	6.17E+01	4.13E+01	0.00E+00	2.04E+01	2.04E+01
12	2.42E+02	1.61E+02	0.00E+00	8.09E+01	8.09E+01
13	1.62E+02	5.80E+01	0.00E+00	1.04E+02	1.04E+02
14	8.14E+01	4.76E+00	0.00E+00	7.66E+01	7.66E+01
15	4.45E+00	3.17E+00	0.00E+00	1.28E+00	1.28E+00
16	4.65E+00	3.26E+00	0.00E+00	1.39E+00	1.39E+00
17	4.79E+00	3.29E+00	0.00E+00	1.50E+00	1.50E+00
18	4.88E+00	3.30E+00	0.00E+00	1.58E+00	1.58E+00
19	5.02E+00	3.32E+00	0.00E+00	1.70E+00	1.70E+00
20	5.46E+00	3.35E+00	0.00E+00	2.11E+00	2.11E+00
21	5.99E+00	3.37E+00	0.00E+00	2.62E+00	2.62E+00
22	6.41E+00	3.38E+00	0.00E+00	3.03E+00	3.03E+00
23	7.56E+00	3.39E+00	0.00E+00	4.17E+00	4.17E+00
24	9.49E+00	3.40E+00	0.00E+00	6.09E+00	6.09E+00
25	1.15E+01	3.41E+00	0.00E+00	8.06E+00	8.06E+00
26	1.49E+01	3.41E+00	0.00E+00	1.15E+01	1.15E+01
27	2.53E+01	3.41E+00	0.00E+00	2.18E+01	2.18E+01

W-184

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.20E+00	2.38E+00	2.34E+00	1.74E-03	1.69E-03
2	6.46E+00	3.57E+00	2.88E+00	9.45E-03	9.45E-03
3	7.16E+00	4.22E+00	2.91E+00	2.80E-02	2.80E-02
4	7.28E+00	4.52E+00	2.71E+00	4.28E-02	4.28E-02
5	7.16E+00	4.70E+00	2.40E+00	5.63E-02	5.63E-02
6	6.75E+00	5.06E+00	1.63E+00	5.66E-02	5.66E-02
7	7.32E+00	6.56E+00	6.75E-01	7.87E-02	7.87E-02
8	1.19E+01	1.17E+01	0.00E+00	1.87E-01	1.87E-01
9	1.95E+01	1.90E+01	0.00E+00	5.09E-01	5.09E-01
10	4.45E+01	4.22E+01	0.00E+00	2.35E+00	2.35E+00
11	8.62E+01	8.00E+01	0.00E+00	6.13E+00	6.13E+00
12	3.40E+00	3.36E+00	0.00E+00	4.57E-02	4.57E-02
13	4.06E+00	4.01E+00	0.00E+00	4.57E-02	4.57E-02
14	4.27E+00	4.18E+00	0.00E+00	9.03E-02	9.03E-02
15	4.39E+00	4.24E+00	0.00E+00	1.56E-01	1.56E-01
16	4.46E+00	4.25E+00	0.00E+00	2.02E-01	2.02E-01
17	4.49E+00	4.26E+00	0.00E+00	2.30E-01	2.30E-01
18	4.51E+00	4.26E+00	0.00E+00	2.49E-01	2.49E-01
19	4.54E+00	4.26E+00	0.00E+00	2.75E-01	2.75E-01
20	4.63E+00	4.27E+00	0.00E+00	3.56E-01	3.56E-01
21	4.73E+00	4.28E+00	0.00E+00	4.51E-01	4.51E-01
22	4.80E+00	4.28E+00	0.00E+00	5.25E-01	5.25E-01
23	5.01E+00	4.28E+00	0.00E+00	7.28E-01	7.28E-01
24	5.34E+00	4.28E+00	0.00E+00	1.06E+00	1.06E+00
25	5.69E+00	4.28E+00	0.00E+00	1.41E+00	1.41E+00
26	6.29E+00	4.28E+00	0.00E+00	2.01E+00	2.01E+00
27	8.10E+00	4.28E+00	0.00E+00	3.82E+00	3.82E+00

W-186

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.19E+00	2.43E+00	2.18E+00	1.68E-03	1.64E-03
2	6.49E+00	3.63E+00	2.85E+00	9.14E-03	9.14E-03
3	7.24E+00	4.35E+00	2.87E+00	2.54E-02	2.54E-02
4	7.30E+00	4.53E+00	2.73E+00	3.74E-02	3.74E-02
5	7.14E+00	4.78E+00	2.32E+00	4.47E-02	4.47E-02
6	6.71E+00	5.16E+00	1.50E+00	5.34E-02	5.34E-02
7	7.28E+00	6.58E+00	6.30E-01	6.92E-02	6.92E-02
8	1.18E+01	1.16E+01	0.00E+00	1.50E-01	1.50E-01
9	2.20E+01	2.16E+01	0.00E+00	3.68E-01	3.68E-01
10	3.23E+01	3.03E+01	0.00E+00	1.98E+00	1.98E+00
11	4.15E+01	3.50E+01	0.00E+00	6.54E+00	6.54E+00
12	1.78E+01	1.73E+01	0.00E+00	5.48E-01	5.48E-01
13	2.95E+03	2.51E+03	0.00E+00	4.40E+02	4.40E+02
14	9.45E+00	3.94E+00	0.00E+00	5.51E+00	5.51E+00
15	5.88E+00	7.91E-01	0.00E+00	5.09E+00	5.09E+00
16	6.24E+00	5.36E-01	0.00E+00	5.71E+00	5.71E+00
17	6.62E+00	4.59E-01	0.00E+00	6.16E+00	6.16E+00
18	6.89E+00	4.26E-01	0.00E+00	6.47E+00	6.47E+00
19	7.31E+00	3.90E-01	0.00E+00	6.92E+00	6.92E+00
20	8.77E+00	3.29E-01	0.00E+00	8.44E+00	8.44E+00
21	1.06E+01	2.91E-01	0.00E+00	1.03E+01	1.03E+01
22	1.21E+01	2.76E-01	0.00E+00	1.18E+01	1.18E+01
23	1.62E+01	2.57E-01	0.00E+00	1.59E+01	1.59E+01
24	2.32E+01	2.45E-01	0.00E+00	2.30E+01	2.30E+01
25	3.05E+01	2.40E-01	0.00E+00	3.02E+01	3.02E+01
26	4.33E+01	2.37E-01	0.00E+00	4.30E+01	4.30E+01
27	8.17E+01	2.36E-01	0.00E+00	8.15E+01	8.15E+01

Re - 185

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.19E+00	2.43E+00	2.54E+00	7.54E-03	7.54E-03
2	6.47E+00	3.75E+00	2.70E+00	2.14E-02	2.14E-02
3	6.97E+00	4.57E+00	2.34E+00	6.03E-02	6.03E-02
4	6.72E+00	4.52E+00	2.08E+00	1.20E-01	1.20E-01
5	6.63E+00	4.59E+00	1.88E+00	1.69E-01	1.69E-01
6	6.62E+00	5.17E+00	1.22E+00	2.27E-01	2.27E-01
7	7.51E+00	6.60E+00	5.32E-01	3.85E-01	3.85E-01
8	1.25E+01	1.16E+01	0.00E+00	9.23E-01	9.23E-01
9	2.21E+01	1.92E+01	0.00E+00	2.91E+00	2.91E+00
10	4.26E+01	3.16E+01	0.00E+00	1.11E+01	1.11E+01
11	8.91E+01	4.98E+01	0.00E+00	3.93E+01	3.93E+01
12	1.45E+02	5.53E+01	0.00E+00	8.99E+01	8.99E+01
13	6.63E+01	1.37E+01	0.00E+00	5.27E+01	5.27E+01
14	8.55E+01	2.17E+01	0.00E+00	6.38E+01	6.38E+01
15	2.62E+03	1.53E+02	0.00E+00	2.47E+03	2.47E+03
16	1.06E+02	8.16E+00	0.00E+00	9.76E+01	9.76E+01
17	6.03E+01	1.23E+01	0.00E+00	4.79E+01	4.79E+01
18	5.43E+01	1.41E+01	0.00E+00	4.01E+01	4.01E+01
19	5.09E+01	1.56E+01	0.00E+00	3.53E+01	3.53E+01
20	5.05E+01	1.77E+01	0.00E+00	3.29E+01	3.29E+01
21	5.43E+01	1.89E+01	0.00E+00	3.54E+01	3.54E+01
22	5.83E+01	1.94E+01	0.00E+00	3.89E+01	3.89E+01
23	7.04E+01	2.00E+01	0.00E+00	5.03E+01	5.03E+01
24	9.12E+01	2.04E+01	0.00E+00	7.08E+01	7.08E+01
25	1.13E+02	2.05E+01	0.00E+00	9.24E+01	9.24E+01
26	1.51E+02	2.06E+01	0.00E+00	1.31E+02	1.31E+02
27	2.67E+02	2.07E+01	0.00E+00	2.47E+02	2.47E+02

Re - 187

Energy Grp. No.	cross section (barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.23E+00	2.46E+00	2.45E+00	5.68E-03	5.68E-03
2	6.53E+00	3.75E+00	2.76E+00	1.62E-02	1.62E-02
3	6.97E+00	4.45E+00	2.47E+00	4.55E-02	4.55E-02
4	6.70E+00	4.36E+00	2.25E+00	9.09E-02	9.09E-02
5	6.61E+00	4.37E+00	2.11E+00	1.28E-01	1.28E-01
6	6.64E+00	5.06E+00	1.40E+00	1.83E-01	1.83E-01
7	7.63E+00	6.72E+00	5.67E-01	3.45E-01	3.45E-01
8	1.29E+01	1.20E+01	0.00E+00	8.49E-01	8.49E-01
9	2.31E+01	2.04E+01	0.00E+00	2.70E+00	2.70E+00
10	4.50E+01	3.45E+01	0.00E+00	1.05E+01	1.05E+01
11	9.44E+01	5.61E+01	0.00E+00	3.83E+01	3.83E+01
12	1.15E+02	3.92E+01	0.00E+00	7.53E+01	7.53E+01
13	5.96E+01	8.37E+00	0.00E+00	5.12E+01	5.12E+01
14	4.14E+01	7.36E+00	0.00E+00	3.40E+01	3.40E+01
15	1.07E+01	8.01E+00	0.00E+00	2.70E+00	2.70E+00
16	1.24E+01	8.50E+00	0.00E+00	3.86E+00	3.86E+00
17	1.35E+01	8.72E+00	0.00E+00	4.79E+00	4.79E+00
18	1.43E+01	8.84E+00	0.00E+00	5.43E+00	5.43E+00
19	1.54E+01	8.99E+00	0.00E+00	6.39E+00	6.39E+00
20	1.89E+01	9.32E+00	0.00E+00	9.62E+00	9.62E+00
21	2.32E+01	9.58E+00	0.00E+00	1.36E+01	1.36E+01
22	2.67E+01	9.70E+00	0.00E+00	1.70E+01	1.70E+01
23	3.63E+01	9.88E+00	0.00E+00	2.64E+01	2.64E+01
24	5.24E+01	1.00E+01	0.00E+00	4.24E+01	4.24E+01
25	6.89E+01	1.01E+01	0.00E+00	5.88E+01	5.88E+01
26	9.71E+01	1.01E+01	0.00E+00	8.70E+01	8.70E+01
27	1.80E+02	1.01E+01	0.00E+00	1.70E+02	1.70E+02

Au-197

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.30E+00	2.77E+00	2.34E+00	1.30E-02	1.29E-02
2	7.05E+00	4.34E+00	2.69E+00	1.92E-02	1.92E-02
3	6.90E+00	4.32E+00	2.53E+00	4.59E-02	4.59E-02
4	5.97E+00	3.74E+00	2.16E+00	6.91E-02	6.91E-02
5	5.39E+00	3.51E+00	1.80E+00	8.12E-02	8.12E-02
6	5.91E+00	4.51E+00	1.28E+00	1.17E-01	1.17E-01
7	8.00E+00	7.29E+00	4.78E-01	2.28E-01	2.28E-01
8	1.21E+01	1.16E+01	1.11E-02	5.16E-01	5.16E-01
9	1.56E+01	1.39E+01	0.00E+00	1.67E+00	1.67E+00
10	3.68E+01	2.90E+01	0.00E+00	7.81E+00	7.81E+00
11	3.32E+01	1.99E+01	0.00E+00	1.33E+01	1.33E+01
12	5.44E+01	2.32E+01	0.00E+00	3.12E+01	3.12E+01
13	1.24E+01	1.13E+01	0.00E+00	1.16E+00	1.16E+00
14	1.36E+03	1.57E+02	0.00E+00	1.21E+03	1.21E+03
15	4.08E+01	3.37E+00	0.00E+00	3.75E+01	3.75E+01
16	3.00E+01	4.33E+00	0.00E+00	2.56E+01	2.56E+01
17	2.89E+01	4.72E+00	0.00E+00	2.42E+01	2.42E+01
18	2.88E+01	4.89E+00	0.00E+00	2.39E+01	2.39E+01
19	2.90E+01	4.91E+00	0.00E+00	2.41E+01	2.41E+01
20	3.11E+01	4.95E+00	0.00E+00	2.62E+01	2.62E+01
21	3.49E+01	4.98E+00	0.00E+00	2.99E+01	2.99E+01
22	3.83E+01	5.00E+00	0.00E+00	3.33E+01	3.33E+01
23	4.86E+01	5.05E+00	0.00E+00	4.35E+01	4.35E+01
24	6.64E+01	5.11E+00	0.00E+00	6.13E+01	6.13E+01
25	8.53E+01	5.15E+00	0.00E+00	8.01E+01	8.01E+01
26	1.19E+02	5.21E+00	0.00E+00	1.13E+02	1.13E+02
27	2.19E+02	5.30E+00	0.00E+00	2.14E+02	2.14E+02

Pb

Energy Grp. No.	cross section(barn)				
	total	elastic scattering	inelastic	absorption	capture
1	5.66E+00	3.18E+00	2.07E+00	3.68E-04	3.68E-04
2	7.61E+00	5.71E+00	1.90E+00	7.50E-04	7.50E-04
3	6.74E+00	6.01E+00	7.35E-01	1.33E-03	1.33E-03
4	5.45E+00	5.01E+00	4.33E-01	1.98E-03	1.98E-03
5	4.92E+00	4.66E+00	2.55E-01	2.91E-03	2.91E-03
6	5.11E+00	5.08E+00	2.93E-02	4.15E-03	4.15E-03
7	8.28E+00	8.27E+00	0.00E+00	3.79E-03	3.79E-03
8	1.07E+01	1.07E+01	0.00E+00	2.97E-03	2.97E-03
9	1.12E+01	1.12E+01	0.00E+00	3.65E-03	3.65E-03
10	1.12E+01	1.12E+01	0.00E+00	9.10E-04	9.10E-04
11	1.12E+01	1.12E+01	0.00E+00	1.91E-03	1.91E-03
12	1.12E+01	1.12E+01	0.00E+00	3.88E-03	3.88E-03
13	1.12E+01	1.12E+01	0.00E+00	6.89E-03	6.89E-03
14	1.12E+01	1.12E+01	0.00E+00	1.22E-02	1.22E-02
15	1.12E+01	1.12E+01	0.00E+00	1.86E-02	1.86E-02
16	1.12E+01	1.12E+01	0.00E+00	2.30E-02	2.30E-02
17	1.12E+01	1.12E+01	0.00E+00	2.57E-02	2.57E-02
18	1.12E+01	1.12E+01	0.00E+00	2.75E-02	2.75E-02
19	1.12E+01	1.12E+01	0.00E+00	3.00E-02	3.00E-02
20	1.12E+01	1.12E+01	0.00E+00	3.78E-02	3.78E-02
21	1.12E+01	1.12E+01	0.00E+00	4.72E-02	4.72E-02
22	1.12E+01	1.12E+01	0.00E+00	5.45E-02	5.45E-02
23	1.13E+01	1.12E+01	0.00E+00	7.48E-02	7.48E-02
24	1.13E+01	1.12E+01	0.00E+00	1.09E-01	1.09E-01
25	1.13E+01	1.12E+01	0.00E+00	1.44E-01	1.44E-01
26	1.14E+01	1.12E+01	0.00E+00	2.05E-01	2.05E-01

Th-232

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.10E+00	3.24E+00	1.67E+00	3.13E-01	3.24E-01	1.06E-02	3.08E+00	9.64E-01
2	7.63E+00	4.65E+00	2.82E+00	1.41E-01	1.66E-01	2.50E-02	2.50E+00	3.53E-01
3	7.09E+00	4.23E+00	2.70E+00	1.14E-01	1.66E-01	5.26E-02	2.23E+00	2.53E-01
4	6.61E+00	3.97E+00	2.47E+00	8.54E-02	1.72E-01	8.67E-02	2.11E+00	1.80E-01
5	6.49E+00	4.18E+00	2.18E+00	6.05E-03	1.38E-01	1.32E-01	2.07E+00	1.25E-02
6	6.98E+00	5.02E+00	1.78E+00	0.00E+00	1.76E-01	1.76E-01	0.00E+00	0.00E+00
7	9.26E+00	8.01E+00	1.06E+00	0.00E+00	1.90E-01	1.90E-01	0.00E+00	0.00E+00
8	1.22E+01	1.16E+01	1.13E-01	0.00E+00	4.22E-01	4.22E-01	0.00E+00	0.00E+00
9	1.41E+01	1.32E+01	0.00E+00	0.00E+00	9.00E-01	9.00E-01	0.00E+00	0.00E+00
10	1.88E+01	1.64E+01	0.00E+00	0.00E+00	2.39E+00	2.39E+00	0.00E+00	0.00E+00
11	3.20E+01	2.12E+01	0.00E+00	0.00E+00	1.08E+01	1.08E+01	0.00E+00	0.00E+00
12	4.23E+01	2.74E+01	0.00E+00	0.00E+00	1.49E+01	1.49E+01	0.00E+00	0.00E+00
13	4.95E+01	1.24E+01	0.00E+00	0.00E+00	3.71E+01	3.71E+01	0.00E+00	0.00E+00
14	1.09E+01	1.07E+01	0.00E+00	0.00E+00	1.75E-01	1.75E-01	0.00E+00	0.00E+00
15	1.16E+01	1.12E+01	0.00E+00	0.00E+00	3.99E-01	3.99E-01	0.00E+00	0.00E+00
16	1.19E+01	1.13E+01	0.00E+00	0.00E+00	5.99E-01	5.99E-01	0.00E+00	0.00E+00
17	1.21E+01	1.14E+01	0.00E+00	0.00E+00	7.28E-01	7.28E-01	0.00E+00	0.00E+00
18	1.23E+01	1.15E+01	0.00E+00	0.00E+00	8.11E-01	8.11E-01	0.00E+00	0.00E+00
19	1.24E+01	1.15E+01	0.00E+00	0.00E+00	9.31E-01	9.31E-01	0.00E+00	0.00E+00
20	1.29E+01	1.16E+01	0.00E+00	0.00E+00	1.31E+00	1.31E+00	0.00E+00	0.00E+00
21	1.34E+01	1.17E+01	0.00E+00	0.00E+00	1.74E+00	1.74E+00	0.00E+00	0.00E+00
22	1.38E+01	1.17E+01	0.00E+00	0.00E+00	2.08E+00	2.08E+00	0.00E+00	0.00E+00
23	1.47E+01	1.18E+01	0.00E+00	0.00E+00	2.98E+00	2.98E+00	0.00E+00	0.00E+00
24	1.62E+01	1.18E+01	0.00E+00	0.00E+00	4.45E+00	4.45E+00	0.00E+00	0.00E+00
25	1.77E+01	1.18E+01	0.00E+00	0.00E+00	5.94E+00	5.94E+00	0.00E+00	0.00E+00
26	2.03E+01	1.18E+01	0.00E+00	0.00E+00	8.52E+00	8.52E+00	0.00E+00	0.00E+00
27	2.80E+01	1.18E+01	0.00E+00	0.00E+00	1.62E+01	1.62E+01	0.00E+00	0.00E+00

Pa-233

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.04E+00	3.76E+00	7.18E-01	1.32E+00	1.33E+00	1.09E-02	3.37E+00	4.45E+00
2	7.46E+00	4.82E+00	1.78E+00	8.31E-01	8.64E-01	3.28E-02	2.81E+00	2.34E+00
3	6.97E+00	3.96E+00	2.07E+00	8.50E-01	9.35E-01	8.51E-02	2.56E+00	2.17E+00
4	6.49E+00	3.53E+00	2.23E+00	5.62E-01	7.27E-01	1.64E-01	2.45E+00	1.38E+00
5	6.58E+00	3.84E+00	2.36E+00	8.74E-02	3.85E-01	2.98E-01	2.40E+00	2.09E-01
6	7.44E+00	4.63E+00	2.51E+00	2.00E-03	3.10E-01	3.08E-01	2.33E+00	4.65E-03
7	9.75E+00	6.83E+00	2.62E+00	0.00E+00	2.92E-01	2.92E-01	0.00E+00	0.00E+00
8	1.21E+01	9.87E+00	1.25E+00	0.00E+00	1.01E+00	1.01E+00	0.00E+00	0.00E+00
9	1.40E+01	1.05E+01	0.00E+00	0.00E+00	3.49E+00	3.49E+00	0.00E+00	0.00E+00
10	1.90E+01	1.09E+01	0.00E+00	0.00E+00	8.10E+00	8.10E+00	0.00E+00	0.00E+00
11	3.07E+01	1.11E+01	0.00E+00	0.00E+00	1.96E+01	1.96E+01	0.00E+00	0.00E+00
12	4.94E+01	1.13E+01	0.00E+00	0.00E+00	3.81E+01	3.81E+01	0.00E+00	0.00E+00
13	7.56E+01	1.21E+01	0.00E+00	0.00E+00	6.35E+01	6.35E+01	0.00E+00	0.00E+00
14	1.56E+02	1.10E+01	0.00E+00	0.00E+00	1.45E+02	1.45E+02	0.00E+00	0.00E+00
15	1.38E+02	1.05E+01	0.00E+00	0.00E+00	1.28E+02	1.28E+02	0.00E+00	0.00E+00
16	1.31E+03	1.74E+01	0.00E+00	0.00E+00	1.30E+03	1.30E+03	0.00E+00	0.00E+00
17	1.72E+02	4.82E+00	0.00E+00	0.00E+00	1.67E+02	1.67E+02	0.00E+00	0.00E+00
18	4.16E+01	6.43E+00	0.00E+00	0.00E+00	3.52E+01	3.52E+01	0.00E+00	0.00E+00
19	3.35E+01	7.16E+00	0.00E+00	0.00E+00	2.63E+01	2.63E+01	0.00E+00	0.00E+00
20	2.27E+01	7.73E+00	0.00E+00	0.00E+00	1.49E+01	1.49E+01	0.00E+00	0.00E+00
21	1.82E+01	8.01E+00	0.00E+00	0.00E+00	1.01E+01	1.01E+01	0.00E+00	0.00E+00
22	1.89E+01	8.10E+00	0.00E+00	0.00E+00	1.08E+01	1.08E+01	0.00E+00	0.00E+00
23	2.27E+01	8.22E+00	0.00E+00	0.00E+00	1.45E+01	1.45E+01	0.00E+00	0.00E+00
24	3.10E+01	8.30E+00	0.00E+00	0.00E+00	2.27E+01	2.27E+01	0.00E+00	0.00E+00
25	4.04E+01	8.33E+00	0.00E+00	0.00E+00	3.21E+01	3.21E+01	0.00E+00	0.00E+00
26	5.70E+01	8.37E+00	0.00E+00	0.00E+00	4.87E+01	4.87E+01	0.00E+00	0.00E+00
27	1.06E+02	8.46E+00	0.00E+00	0.00E+00	9.73E+01	9.73E+01	0.00E+00	0.00E+00

U-233

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.33E+00	3.09E+00	7.13E-01	2.10E+00	2.11E+00	1.24E-02	3.50E+00	7.35E+00
2	7.51E+00	4.16E+00	1.73E+00	1.60E+00	1.62E+00	2.07E-02	2.98E+00	4.76E+00
3	7.31E+00	3.91E+00	1.51E+00	1.86E+00	1.89E+00	3.09E-02	2.72E+00	5.06E+00
4	6.40E+00	3.37E+00	1.12E+00	1.87E+00	1.91E+00	4.03E-02	2.61E+00	4.89E+00
5	6.30E+00	3.52E+00	8.81E-01	1.84E+00	1.89E+00	5.16E-02	2.56E+00	4.72E+00
6	7.15E+00	4.54E+00	6.86E-01	1.82E+00	1.92E+00	1.01E-01	2.53E+00	4.62E+00
7	9.38E+00	6.53E+00	5.38E-01	2.12E+00	2.32E+00	1.93E-01	2.51E+00	5.33E+00
8	1.30E+01	9.80E+00	8.44E-02	2.79E+00	3.09E+00	3.06E-01	2.50E+00	6.97E+00
9	1.67E+01	1.12E+01	0.00E+00	4.92E+00	5.50E+00	5.82E-01	2.50E+00	1.23E+01
10	2.13E+01	1.02E+01	0.00E+00	9.96E+00	1.10E+01	1.05E+00	2.51E+00	2.50E+01
11	3.55E+01	1.15E+01	0.00E+00	2.10E+01	2.41E+01	3.08E+00	2.51E+00	5.26E+01
12	5.75E+01	1.34E+01	0.00E+00	3.90E+01	4.41E+01	5.10E+00	2.50E+00	9.76E+01
13	1.35E+02	1.33E+01	0.00E+00	1.05E+02	1.21E+02	1.59E+01	2.50E+00	2.63E+02
14	1.23E+02	1.24E+01	0.00E+00	9.47E+01	1.11E+02	1.59E+01	2.50E+00	2.36E+02
15	3.70E+02	1.45E+01	0.00E+00	2.68E+02	3.56E+02	8.73E+01	2.50E+00	6.70E+02
16	5.16E+02	1.10E+01	0.00E+00	4.25E+02	5.05E+02	7.99E+01	2.50E+00	1.06E+03
17	2.27E+02	1.13E+01	0.00E+00	1.97E+02	2.15E+02	1.86E+01	2.50E+00	4.92E+02
18	1.73E+02	1.16E+01	0.00E+00	1.49E+02	1.61E+02	1.21E+01	2.50E+00	3.73E+02
19	1.48E+02	1.20E+01	0.00E+00	1.26E+02	1.36E+02	9.78E+00	2.50E+00	3.16E+02
20	1.51E+02	1.25E+01	0.00E+00	1.29E+02	1.39E+02	9.86E+00	2.50E+00	3.22E+02
21	1.78E+02	1.29E+01	0.00E+00	1.53E+02	1.65E+02	1.24E+01	2.50E+00	3.82E+02
22	2.03E+02	1.31E+01	0.00E+00	1.74E+02	1.90E+02	1.60E+01	2.50E+00	4.34E+02
23	2.58E+02	1.35E+01	0.00E+00	2.19E+02	2.45E+02	2.59E+01	2.50E+00	5.46E+02
24	3.61E+02	1.39E+01	0.00E+00	3.18E+02	3.48E+02	2.97E+01	2.50E+00	7.94E+02
25	4.74E+02	1.42E+01	0.00E+00	4.23E+02	4.60E+02	3.75E+01	2.49E+00	1.05E+03
26	6.71E+02	1.45E+01	0.00E+00	6.04E+02	6.56E+02	5.26E+01	2.49E+00	1.50E+03
27	1.26E+03	1.47E+01	0.00E+00	1.14E+03	1.24E+03	9.88E+01	2.49E+00	2.85E+03

U-234

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.52E+00	3.45E+00	1.14E+00	1.82E+00	1.84E+00	1.86E-02	3.36E+00	6.11E+00
2	8.11E+00	4.54E+00	2.19E+00	1.35E+00	1.39E+00	3.79E-02	2.88E+00	3.89E+00
3	8.19E+00	4.47E+00	2.19E+00	1.45E+00	1.53E+00	7.43E-02	2.66E+00	3.87E+00
4	8.00E+00	4.41E+00	2.06E+00	1.38E+00	1.52E+00	1.45E-01	2.57E+00	3.55E+00
5	7.92E+00	4.74E+00	1.70E+00	1.16E+00	1.47E+00	3.07E-01	2.51E+00	2.93E+00
6	8.77E+00	6.38E+00	1.25E+00	8.56E-01	1.15E+00	2.94E-01	2.46E+00	2.10E+00
7	1.09E+01	9.23E+00	1.27E+00	1.09E-01	3.98E-01	2.89E-01	2.41E+00	2.64E-01
8	1.34E+01	1.27E+01	9.93E-02	1.72E-02	5.85E-01	5.67E-01	2.38E+00	4.09E-02
9	1.55E+01	1.41E+01	0.00E+00	9.39E-03	1.38E+00	1.37E+00	2.37E+00	2.23E-02
10	2.26E+01	1.92E+01	0.00E+00	1.24E-03	3.42E+00	3.42E+00	2.37E+00	2.93E-03
11	4.85E+01	3.58E+01	0.00E+00	0.00E+00	1.27E+01	1.27E+01	0.00E+00	0.00E+00
12	6.56E+01	2.61E+01	0.00E+00	0.00E+00	3.94E+01	3.94E+01	0.00E+00	0.00E+00
13	9.48E+00	9.23E+00	0.00E+00	0.00E+00	2.42E-01	2.42E-01	0.00E+00	0.00E+00
14	5.38E+02	8.41E+01	0.00E+00	0.00E+00	4.54E+02	4.54E+02	0.00E+00	0.00E+00
15	1.30E+01	8.78E+00	0.00E+00	0.00E+00	4.26E+00	4.26E+00	0.00E+00	0.00E+00
16	1.55E+01	1.04E+01	0.00E+00	0.00E+00	5.10E+00	5.10E+00	0.00E+00	0.00E+00
17	1.73E+01	1.11E+01	0.00E+00	0.00E+00	6.20E+00	6.20E+00	0.00E+00	0.00E+00
18	1.85E+01	1.15E+01	0.00E+00	0.00E+00	7.01E+00	7.01E+00	0.00E+00	0.00E+00
19	2.02E+01	1.19E+01	0.00E+00	0.00E+00	8.29E+00	8.29E+00	0.00E+00	0.00E+00
20	2.58E+01	1.30E+01	0.00E+00	0.00E+00	1.28E+01	1.28E+01	0.00E+00	0.00E+00
21	3.24E+01	1.38E+01	0.00E+00	0.00E+00	1.86E+01	1.86E+01	0.00E+00	0.00E+00
22	3.74E+01	1.42E+01	0.00E+00	0.00E+00	2.32E+01	2.32E+01	0.00E+00	0.00E+00
23	5.06E+01	1.49E+01	0.00E+00	0.00E+00	3.57E+01	3.57E+01	0.00E+00	0.00E+00
24	7.12E+01	1.53E+01	0.00E+00	0.00E+00	5.59E+01	5.59E+01	0.00E+00	0.00E+00
25	9.17E+01	1.55E+01	0.00E+00	0.00E+00	7.61E+01	7.61E+01	0.00E+00	0.00E+00
26	1.26E+02	1.57E+01	0.00E+00	0.00E+00	1.11E+02	1.11E+02	0.00E+00	0.00E+00
27	2.29E+02	1.59E+01	0.00E+00	0.00E+00	2.13E+02	2.13E+02	0.00E+00	0.00E+00

U-235

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.40E+00	3.91E+00	5.31E-01	1.63E+00	1.64E+00	1.04E-02	3.56E+00	5.80E+00
2	7.77E+00	4.80E+00	1.78E+00	1.16E+00	1.18E+00	2.56E-02	2.96E+00	3.43E+00
3	7.44E+00	4.37E+00	1.76E+00	1.27E+00	1.32E+00	4.60E-02	2.71E+00	3.43E+00
4	6.87E+00	3.91E+00	1.63E+00	1.26E+00	1.33E+00	6.83E-02	2.62E+00	3.29E+00
5	6.78E+00	4.00E+00	1.44E+00	1.24E+00	1.34E+00	1.03E-01	2.56E+00	3.18E+00
6	7.69E+00	5.18E+00	1.21E+00	1.16E+00	1.31E+00	1.53E-01	2.50E+00	2.89E+00
7	9.80E+00	7.48E+00	7.21E-01	1.32E+00	1.60E+00	2.75E-01	2.45E+00	3.24E+00
8	1.33E+01	1.06E+01	7.15E-02	1.95E+00	2.62E+00	6.62E-01	2.42E+00	4.74E+00
9	1.65E+01	1.17E+01	3.11E-04	3.54E+00	4.84E+00	1.30E+00	2.42E+00	8.56E+00
10	2.37E+01	1.22E+01	0.00E+00	8.27E+00	1.15E+01	3.24E+00	2.42E+00	2.00E+01
11	4.00E+01	1.25E+01	0.00E+00	1.87E+01	2.75E+01	8.83E+00	2.42E+00	4.52E+01
12	7.38E+01	1.27E+01	0.00E+00	4.02E+01	6.11E+01	2.09E+01	2.42E+00	9.73E+01
13	9.48E+01	1.20E+01	0.00E+00	4.64E+01	8.28E+01	3.64E+01	2.42E+00	1.12E+02
14	7.72E+01	1.11E+01	0.00E+00	3.85E+01	6.61E+01	2.76E+01	2.42E+00	9.31E+01
15	3.38E+01	1.18E+01	0.00E+00	1.41E+01	2.20E+01	7.93E+00	2.42E+00	3.40E+01
16	3.36E+01	1.25E+01	0.00E+00	1.67E+01	2.12E+01	4.47E+00	2.42E+00	4.03E+01
17	9.02E+01	1.31E+01	0.00E+00	5.78E+01	7.71E+01	1.93E+01	2.42E+00	1.40E+02
18	1.22E+02	1.29E+01	0.00E+00	9.06E+01	1.09E+02	1.80E+01	2.42E+00	2.19E+02
19	7.84E+01	1.29E+01	0.00E+00	5.87E+01	6.54E+01	6.70E+00	2.42E+00	1.42E+02
20	9.90E+01	1.37E+01	0.00E+00	7.65E+01	8.53E+01	8.77E+00	2.42E+00	1.85E+02
21	1.84E+02	1.44E+01	0.00E+00	1.42E+02	1.69E+02	2.73E+01	2.42E+00	3.44E+02
22	2.47E+02	1.45E+01	0.00E+00	1.88E+02	2.33E+02	4.52E+01	2.42E+00	4.54E+02
23	2.62E+02	1.49E+01	0.00E+00	2.07E+02	2.47E+02	4.02E+01	2.42E+00	5.01E+02
24	3.95E+02	1.53E+01	0.00E+00	3.24E+02	3.79E+02	5.48E+01	2.42E+00	7.85E+02
25	5.48E+02	1.54E+01	0.00E+00	4.57E+02	5.33E+02	7.59E+01	2.42E+00	1.10E+03
26	8.13E+02	1.55E+01	0.00E+00	6.82E+02	7.97E+02	1.15E+02	2.42E+00	1.65E+03
27	1.58E+03	1.56E+01	0.00E+00	1.34E+03	1.57E+03	2.30E+02	2.42E+00	3.23E+03

U-236

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.59E+00	3.45E+00	1.14E+00	1.55E+00	1.56E+00	1.86E-02	3.45E+00	5.33E+00
2	7.62E+00	4.54E+00	2.19E+00	8.59E-01	8.97E-01	3.80E-02	2.93E+00	2.51E+00
3	7.59E+00	4.47E+00	2.19E+00	8.52E-01	9.26E-01	7.43E-02	2.69E+00	2.29E+00
4	7.40E+00	4.41E+00	2.13E+00	7.14E-01	8.59E-01	1.45E-01	2.59E+00	1.85E+00
5	7.59E+00	4.74E+00	2.04E+00	5.12E-01	8.19E-01	3.07E-01	2.53E+00	1.30E+00
6	8.48E+00	6.36E+00	1.77E+00	6.03E-02	3.54E-01	2.94E-01	2.48E+00	1.50E-01
7	1.07E+01	9.21E+00	1.19E+00	0.00E+00	2.89E-01	2.89E-01	0.00E+00	0.00E+00
8	1.33E+01	1.27E+01	9.89E-02	0.00E+00	5.57E-01	5.57E-01	0.00E+00	0.00E+00
9	1.65E+01	1.52E+01	0.00E+00	0.00E+00	1.23E+00	1.23E+00	0.00E+00	0.00E+00
10	2.60E+01	2.29E+01	0.00E+00	0.00E+00	3.15E+00	3.15E+00	0.00E+00	0.00E+00
11	4.40E+01	3.36E+01	0.00E+00	0.00E+00	1.04E+01	1.04E+01	0.00E+00	0.00E+00
12	6.25E+01	2.95E+01	0.00E+00	0.00E+00	3.30E+01	3.30E+01	0.00E+00	0.00E+00
13	1.23E+01	9.78E+00	0.00E+00	0.00E+00	2.49E+00	2.49E+00	0.00E+00	0.00E+00
14	2.62E+02	2.99E+01	0.00E+00	0.00E+00	2.32E+02	2.32E+02	0.00E+00	0.00E+00
15	9.77E+00	8.58E+00	0.00E+00	0.00E+00	1.20E+00	1.20E+00	0.00E+00	0.00E+00
16	9.97E+00	8.98E+00	0.00E+00	0.00E+00	9.87E-01	9.87E-01	0.00E+00	0.00E+00
17	1.01E+01	9.10E+00	0.00E+00	0.00E+00	9.89E-01	9.89E-01	0.00E+00	0.00E+00
18	1.02E+01	9.15E+00	0.00E+00	0.00E+00	1.01E+00	1.01E+00	0.00E+00	0.00E+00
19	1.03E+01	9.21E+00	0.00E+00	0.00E+00	1.05E+00	1.05E+00	0.00E+00	0.00E+00
20	1.05E+01	9.31E+00	0.00E+00	0.00E+00	1.22E+00	1.22E+00	0.00E+00	0.00E+00
21	1.08E+01	9.37E+00	0.00E+00	0.00E+00	1.45E+00	1.45E+00	0.00E+00	0.00E+00
22	1.10E+01	9.40E+00	0.00E+00	0.00E+00	1.65E+00	1.65E+00	0.00E+00	0.00E+00
23	1.16E+01	9.43E+00	0.00E+00	0.00E+00	2.21E+00	2.21E+00	0.00E+00	0.00E+00
24	1.26E+01	9.46E+00	0.00E+00	0.00E+00	3.16E+00	3.16E+00	0.00E+00	0.00E+00
25	1.36E+01	9.48E+00	0.00E+00	0.00E+00	4.16E+00	4.16E+00	0.00E+00	0.00E+00
26	1.54E+01	9.50E+00	0.00E+00	0.00E+00	5.91E+00	5.91E+00	0.00E+00	0.00E+00
27	2.08E+01	9.59E+00	0.00E+00	0.00E+00	1.12E+01	1.12E+01	0.00E+00	0.00E+00

U-238

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.47E+00	3.47E+00	1.21E+00	9.45E-01	9.48E-01	3.59E-03	3.53E+00	3.34E+00
2	7.80E+00	4.72E+00	2.50E+00	5.65E-01	5.79E-01	1.42E-02	2.96E+00	1.67E+00
3	7.46E+00	4.39E+00	2.49E+00	5.43E-01	5.83E-01	3.96E-02	2.68E+00	1.46E+00
4	7.03E+00	4.02E+00	2.57E+00	3.67E-01	4.39E-01	7.18E-02	2.57E+00	9.44E-01
5	7.08E+00	4.57E+00	2.36E+00	4.09E-02	1.49E-01	1.08E-01	2.51E+00	1.03E-01
6	8.08E+00	6.12E+00	1.84E+00	2.02E-03	1.17E-01	1.15E-01	2.44E+00	4.94E-03
7	1.03E+01	9.06E+00	1.13E+00	7.10E-05	1.30E-01	1.30E-01	2.36E+00	1.68E-04
8	1.32E+01	1.27E+01	9.62E-02	5.91E-05	3.73E-01	3.73E-01	2.33E+00	1.37E-04
9	1.62E+01	1.53E+01	0.00E+00	3.06E-05	8.65E-01	8.65E-01	2.32E+00	7.10E-05
10	2.20E+01	1.96E+01	0.00E+00	3.15E-04	2.34E+00	2.34E+00	2.32E+00	7.30E-04
11	5.19E+01	4.01E+01	0.00E+00	1.51E-08	1.18E+01	1.18E+01	2.32E+00	3.50E-08
12	1.08E+02	6.18E+01	0.00E+00	1.30E-08	4.64E+01	4.64E+01	2.32E+00	3.01E-08
13	8.40E+01	2.69E+01	0.00E+00	2.08E-08	5.72E+01	5.72E+01	2.32E+00	4.81E-08
14	1.26E+02	1.49E+01	0.00E+00	3.57E-08	1.11E+02	1.11E+02	2.32E+00	8.28E-08
15	9.02E+00	8.51E+00	0.00E+00	5.40E-08	5.05E-01	5.05E-01	2.32E+00	1.25E-07
16	9.17E+00	8.69E+00	0.00E+00	6.65E-08	4.84E-01	4.84E-01	2.32E+00	1.54E-07
17	9.26E+00	8.76E+00	0.00E+00	7.43E-08	5.01E-01	5.01E-01	2.32E+00	1.72E-07
18	9.32E+00	8.80E+00	0.00E+00	7.93E-08	5.15E-01	5.15E-01	2.32E+00	1.84E-07
19	9.35E+00	8.84E+00	0.00E+00	0.00E+00	5.09E-01	5.09E-01	0.00E+00	0.00E+00
20	9.52E+00	8.88E+00	0.00E+00	0.00E+00	6.37E-01	6.37E-01	0.00E+00	0.00E+00
21	9.67E+00	8.91E+00	0.00E+00	0.00E+00	7.62E-01	7.62E-01	0.00E+00	0.00E+00
22	9.79E+00	8.92E+00	0.00E+00	0.00E+00	8.66E-01	8.66E-01	0.00E+00	0.00E+00
23	1.01E+01	8.94E+00	0.00E+00	0.00E+00	1.16E+00	1.16E+00	0.00E+00	0.00E+00
24	1.06E+01	8.95E+00	0.00E+00	0.00E+00	1.66E+00	1.66E+00	0.00E+00	0.00E+00
25	1.11E+01	8.95E+00	0.00E+00	0.00E+00	2.18E+00	2.18E+00	0.00E+00	0.00E+00
26	1.21E+01	8.95E+00	0.00E+00	0.00E+00	3.10E+00	3.10E+00	0.00E+00	0.00E+00
27	1.48E+01	8.94E+00	0.00E+00	0.00E+00	5.86E+00	5.86E+00	0.00E+00	0.00E+00

Np-237

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.46E+00	3.29E+00	7.98E-01	2.17E+00	2.18E+00	8.17E-03	3.77E+00	8.17E+00
2	7.78E+00	3.97E+00	2.21E+00	1.58E+00	1.60E+00	2.05E-02	3.27E+00	5.18E+00
3	7.48E+00	3.82E+00	1.93E+00	1.68E+00	1.73E+00	4.34E-02	3.05E+00	5.13E+00
4	6.99E+00	3.76E+00	1.54E+00	1.62E+00	1.69E+00	7.15E-02	2.95E+00	4.79E+00
5	6.89E+00	4.17E+00	1.09E+00	1.52E+00	1.64E+00	1.17E-01	2.89E+00	4.39E+00
6	7.72E+00	5.55E+00	1.02E+00	8.73E-01	1.14E+00	2.67E-01	2.83E+00	2.47E+00
7	9.63E+00	7.78E+00	1.10E+00	6.50E-02	7.56E-01	6.91E-01	2.78E+00	1.81E-01
8	1.25E+01	1.06E+01	3.33E-01	1.19E-02	1.64E+00	1.63E+00	2.75E+00	3.26E-02
9	1.59E+01	1.19E+01	0.00E+00	1.03E-02	3.98E+00	3.97E+00	2.74E+00	2.83E-02
10	2.36E+01	1.28E+01	0.00E+00	2.36E-02	1.08E+01	1.07E+01	2.74E+00	6.47E-02
11	4.05E+01	1.35E+01	0.00E+00	5.72E-02	2.69E+01	2.69E+01	2.74E+00	1.57E-01
12	7.36E+01	1.49E+01	0.00E+00	9.16E-02	5.87E+01	5.86E+01	2.74E+00	2.51E-01
13	1.11E+02	1.33E+01	0.00E+00	7.39E-03	9.78E+01	9.78E+01	2.74E+00	2.02E-02
14	1.02E+02	1.13E+01	0.00E+00	9.01E-03	9.09E+01	9.09E+01	2.74E+00	2.47E-02
15	3.49E+01	1.26E+01	0.00E+00	1.38E-03	2.23E+01	2.23E+01	2.74E+00	3.78E-03
16	5.26E+02	1.50E+01	0.00E+00	1.73E-02	5.11E+02	5.11E+02	2.74E+00	4.75E-02
17	1.32E+02	1.17E+01	0.00E+00	8.88E-03	1.21E+02	1.21E+02	2.74E+00	2.43E-02
18	3.80E+01	1.29E+01	0.00E+00	1.56E-03	2.51E+01	2.51E+01	2.74E+00	4.27E-03
19	3.29E+01	1.37E+01	0.00E+00	1.29E-03	1.92E+01	1.92E+01	2.74E+00	3.54E-03
20	4.00E+02	1.50E+01	0.00E+00	1.53E-02	3.85E+02	3.85E+02	2.74E+00	4.19E-02
21	9.00E+01	1.43E+01	0.00E+00	4.06E-03	7.57E+01	7.57E+01	2.74E+00	1.11E-02
22	6.26E+01	1.55E+01	0.00E+00	3.13E-03	4.72E+01	4.72E+01	2.74E+00	8.58E-03
23	7.22E+01	1.65E+01	0.00E+00	4.79E-03	5.57E+01	5.57E+01	2.74E+00	1.31E-02
24	1.07E+02	1.71E+01	0.00E+00	8.53E-03	9.02E+01	9.01E+01	2.74E+00	2.34E-02
25	1.47E+02	1.74E+01	0.00E+00	1.26E-02	1.30E+02	1.30E+02	2.74E+00	3.45E-02
26	2.17E+02	1.76E+01	0.00E+00	1.97E-02	1.99E+02	1.99E+02	2.74E+00	5.39E-02
27	4.18E+02	1.77E+01	0.00E+00	4.00E-02	4.01E+02	4.01E+02	2.74E+00	1.10E-01

Pu-238

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.45E+00	3.03E+00	8.00E-01	2.58E+00	2.59E+00	7.02E-03	3.67E+00	9.47E+00
2	7.29E+00	3.68E+00	1.03E+00	2.56E+00	2.58E+00	1.25E-02	3.24E+00	8.31E+00
3	7.02E+00	3.81E+00	8.97E-01	2.28E+00	2.31E+00	2.18E-02	3.03E+00	6.92E+00
4	6.95E+00	4.00E+00	7.78E-01	2.16E+00	2.18E+00	2.13E-02	2.94E+00	6.34E+00
5	7.15E+00	4.33E+00	7.11E-01	2.07E+00	2.11E+00	3.93E-02	2.89E+00	5.97E+00
6	7.87E+00	5.39E+00	6.28E-01	1.80E+00	1.85E+00	5.79E-02	2.83E+00	5.08E+00
7	9.69E+00	8.08E+00	6.75E-01	8.00E-01	9.31E-01	1.31E-01	2.78E+00	2.23E+00
8	1.42E+01	1.31E+01	7.89E-02	6.39E-01	1.02E+00	3.81E-01	2.76E+00	1.76E+00
9	2.01E+01	1.77E+01	0.00E+00	1.46E+00	2.43E+00	9.75E-01	2.75E+00	4.02E+00
10	3.29E+01	2.67E+01	0.00E+00	2.42E+00	6.24E+00	3.82E+00	2.75E+00	6.66E+00
11	6.10E+01	3.81E+01	0.00E+00	4.66E+00	2.29E+01	1.83E+01	2.75E+00	1.28E+01
12	2.23E+01	1.28E+01	0.00E+00	1.14E+00	9.50E+00	8.36E+00	2.75E+00	3.13E+00
13	5.06E+01	1.30E+01	0.00E+00	1.93E+00	3.76E+01	3.56E+01	2.75E+00	5.30E+00
14	1.53E+01	9.66E+00	0.00E+00	9.05E-01	5.61E+00	4.71E+00	2.75E+00	2.49E+00
15	7.69E+01	9.50E+00	0.00E+00	2.15E+00	6.74E+01	6.52E+01	2.75E+00	5.92E+00
16	1.02E+01	9.56E+00	0.00E+00	2.71E-02	6.23E-01	5.96E-01	2.75E+00	7.46E-02
17	1.01E+01	9.60E+00	0.00E+00	2.34E-02	4.87E-01	4.64E-01	2.75E+00	6.43E-02
18	1.01E+01	9.62E+00	0.00E+00	2.27E-02	4.54E-01	4.31E-01	2.75E+00	6.25E-02
19	2.64E+01	1.46E+01	0.00E+00	3.18E-01	1.18E+01	1.15E+01	2.75E+00	8.73E-01
20	4.12E+01	1.56E+01	0.00E+00	7.10E-01	2.56E+01	2.49E+01	2.75E+00	1.95E+00
21	6.45E+01	1.66E+01	0.00E+00	1.35E+00	4.78E+01	4.65E+01	2.75E+00	3.71E+00
22	8.86E+01	1.73E+01	0.00E+00	2.03E+00	7.13E+01	6.93E+01	2.75E+00	5.58E+00
23	1.64E+02	1.86E+01	0.00E+00	4.19E+00	1.46E+02	1.42E+02	2.75E+00	1.15E+01
24	3.04E+02	1.98E+01	0.00E+00	8.21E+00	2.84E+02	2.76E+02	2.75E+00	2.26E+01
25	4.46E+02	2.04E+01	0.00E+00	1.23E+01	4.26E+02	4.14E+02	2.75E+00	3.39E+01
26	6.83E+02	2.08E+01	0.00E+00	1.92E+01	6.62E+02	6.43E+02	2.75E+00	5.27E+01
27	1.36E+03	2.11E+01	0.00E+00	3.89E+01	1.34E+03	1.30E+03	2.75E+00	1.07E+02

Pu-239

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.51E+00	3.62E+00	5.31E-01	2.21E+00	2.21E+00	6.47E-04	4.04E+00	8.93E+00
2	7.87E+00	4.45E+00	1.64E+00	1.78E+00	1.78E+00	2.02E-03	3.47E+00	6.17E+00
3	7.54E+00	4.02E+00	1.58E+00	1.93E+00	1.94E+00	5.92E-03	3.21E+00	6.19E+00
4	7.07E+00	3.74E+00	1.40E+00	1.91E+00	1.92E+00	1.15E-02	3.10E+00	5.92E+00
5	6.97E+00	3.99E+00	1.19E+00	1.77E+00	1.79E+00	2.09E-02	3.04E+00	5.36E+00
6	7.83E+00	5.30E+00	8.16E-01	1.63E+00	1.71E+00	7.67E-02	2.97E+00	4.85E+00
7	9.76E+00	7.58E+00	4.74E-01	1.52E+00	1.70E+00	1.83E-01	2.91E+00	4.43E+00
8	1.28E+01	1.04E+01	2.36E-01	1.68E+00	2.16E+00	4.87E-01	2.88E+00	4.83E+00
9	1.57E+01	1.19E+01	4.98E-02	2.24E+00	3.76E+00	1.52E+00	2.87E+00	6.45E+00
10	2.33E+01	1.35E+01	0.00E+00	5.18E+00	9.79E+00	4.61E+00	2.87E+00	1.49E+01
11	4.53E+01	1.57E+01	0.00E+00	1.55E+01	2.97E+01	1.42E+01	2.87E+00	4.46E+01
12	9.05E+01	1.50E+01	0.00E+00	3.89E+01	7.55E+01	3.66E+01	2.87E+00	1.12E+02
13	1.52E+02	1.06E+01	0.00E+00	8.51E+01	1.41E+02	5.62E+01	2.87E+00	2.44E+02
14	5.15E+01	8.60E+00	0.00E+00	2.57E+01	4.29E+01	1.72E+01	2.87E+00	7.39E+01
15	2.64E+01	9.52E+00	0.00E+00	1.45E+01	1.69E+01	2.38E+00	2.87E+00	4.17E+01
16	3.95E+01	9.92E+00	0.00E+00	2.27E+01	2.96E+01	6.95E+00	2.87E+00	6.51E+01
17	4.94E+01	1.02E+01	0.00E+00	2.89E+01	3.93E+01	1.04E+01	2.87E+00	8.30E+01
18	5.70E+01	1.03E+01	0.00E+00	3.37E+01	4.67E+01	1.30E+01	2.87E+00	9.70E+01
19	7.22E+01	1.06E+01	0.00E+00	4.41E+01	6.17E+01	1.76E+01	2.84E+00	1.25E+02
20	2.92E+02	1.21E+01	0.00E+00	1.86E+02	2.80E+02	9.32E+01	2.87E+00	5.35E+02
21	2.24E+03	1.64E+01	0.00E+00	1.34E+03	2.22E+03	8.88E+02	2.87E+00	3.84E+03
22	4.02E+03	1.01E+01	0.00E+00	2.38E+03	4.01E+03	1.63E+03	2.87E+00	6.83E+03
23	9.87E+02	6.87E+00	0.00E+00	6.14E+02	9.80E+02	3.66E+02	2.87E+00	1.76E+03
24	7.29E+02	7.71E+00	0.00E+00	5.03E+02	7.22E+02	2.18E+02	2.87E+00	1.45E+03
25	8.58E+02	7.91E+00	0.00E+00	6.13E+02	8.50E+02	2.37E+02	2.87E+00	1.76E+03
26	1.15E+03	8.03E+00	0.00E+00	8.48E+02	1.15E+03	2.99E+02	2.87E+00	2.44E+03
27	2.13E+03	8.10E+00	0.00E+00	1.60E+03	2.12E+03	5.17E+02	2.87E+00	4.60E+03

Pu-240

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.39E+00	3.56E+00	9.98E-01	1.75E+00	1.75E+00	6.79E-03	4.04E+00	7.06E+00
2	7.52E+00	4.26E+00	1.65E+00	1.60E+00	1.61E+00	1.94E-02	3.47E+00	5.53E+00
3	7.34E+00	4.02E+00	1.65E+00	1.63E+00	1.67E+00	4.33E-02	3.22E+00	5.25E+00
4	6.97E+00	3.61E+00	1.65E+00	1.64E+00	1.71E+00	6.77E-02	3.11E+00	5.11E+00
5	7.01E+00	3.71E+00	1.60E+00	1.61E+00	1.71E+00	9.67E-02	3.04E+00	4.89E+00
6	7.65E+00	5.22E+00	1.51E+00	1.74E-01	9.17E-01	1.43E-01	2.97E+00	2.30E+00
7	9.88E+00	8.34E+00	1.24E+00	1.20E-01	3.07E-01	1.86E-01	2.91E+00	3.50E-01
8	1.33E+01	1.25E+01	1.30E-01	7.31E-02	6.23E-01	5.50E-01	2.88E+00	2.10E-01
9	1.65E+01	1.50E+01	0.00E+00	9.66E-02	1.48E+00	1.38E+00	2.87E+00	2.77E-01
10	2.33E+01	1.92E+01	0.00E+00	2.71E-01	4.17E+00	3.90E+00	2.87E+00	7.77E-01
11	4.14E+01	2.55E+01	0.00E+00	2.61E-01	1.59E+01	1.56E+01	2.87E+00	7.49E-01
12	1.36E+02	6.61E+01	0.00E+00	3.89E-01	7.02E+01	6.98E+01	2.87E+00	1.12E+00
13	2.75E+01	8.94E+00	0.00E+00	1.13E-01	1.85E+01	1.84E+01	2.87E+00	3.25E-01
14	1.31E+01	1.11E+01	0.00E+00	9.81E-04	1.98E+00	1.98E+00	2.87E+00	2.82E-03
15	4.67E+01	2.13E+01	0.00E+00	5.67E-03	2.54E+01	2.54E+01	2.87E+00	1.63E-02
16	2.97E+02	5.97E+01	0.00E+00	4.63E-02	2.37E+02	2.37E+02	2.87E+00	1.33E-01
17	2.85E+03	3.13E+02	0.00E+00	4.85E-01	2.54E+03	2.54E+03	2.87E+00	1.39E+00
18	6.14E+04	4.66E+03	0.00E+00	1.08E+01	5.67E+04	5.67E+04	2.87E+00	3.11E+01
19	3.55E+03	1.85E+02	0.00E+00	6.44E-01	3.37E+03	3.37E+03	2.87E+00	1.85E+00
20	3.13E+02	3.52E+00	0.00E+00	6.03E-02	3.09E+02	3.09E+02	2.87E+00	1.73E-01
21	1.66E+02	1.52E+00	0.00E+00	3.19E-02	1.64E+02	1.64E+02	2.87E+00	9.16E-02
22	1.52E+02	2.10E+00	0.00E+00	2.93E-02	1.50E+02	1.50E+02	2.87E+00	8.41E-02
23	1.58E+02	2.93E+00	0.00E+00	3.06E-02	1.55E+02	1.55E+02	2.87E+00	8.78E-02
24	1.96E+02	3.45E+00	0.00E+00	3.82E-02	1.92E+02	1.92E+02	2.87E+00	1.10E-01
25	2.44E+02	3.64E+00	0.00E+00	4.78E-02	2.40E+02	2.40E+02	2.87E+00	1.37E-01
26	3.34E+02	3.76E+00	0.00E+00	6.59E-02	3.30E+02	3.30E+02	2.87E+00	1.89E-01
27	6.13E+02	3.84E+00	0.00E+00	1.22E-01	6.09E+02	6.09E+02	2.87E+00	3.49E-01

Pu-241

Energy Grp. No.	cross section(barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.54E+00	2.98E+00	7.47E-01	2.10E+00	2.13E+00	2.92E-02	4.06E+00	8.54E+00
2	7.73E+00	4.06E+00	2.04E+00	1.54E+00	1.59E+00	5.54E-02	3.52E+00	5.42E+00
3	7.52E+00	3.89E+00	1.86E+00	1.69E+00	1.78E+00	8.38E-02	3.27E+00	5.53E+00
4	7.29E+00	3.92E+00	1.51E+00	1.75E+00	1.86E+00	1.07E-01	3.16E+00	5.55E+00
5	7.78E+00	4.24E+00	1.78E+00	1.64E+00	1.76E+00	1.17E-01	3.10E+00	5.08E+00
6	9.09E+00	5.39E+00	2.07E+00	1.50E+00	1.63E+00	1.31E-01	3.03E+00	4.54E+00
7	1.12E+01	7.84E+00	1.37E+00	1.74E+00	1.96E+00	2.12E-01	2.97E+00	5.17E+00
8	1.39E+01	1.07E+01	1.35E-01	2.51E+00	3.01E+00	4.97E-01	2.94E+00	7.37E+00
9	1.75E+01	1.19E+01	0.00E+00	4.47E+00	5.63E+00	1.16E+00	2.93E+00	1.31E+01
10	2.61E+01	1.27E+01	0.00E+00	1.04E+01	1.33E+01	2.98E+00	2.93E+00	3.04E+01
11	4.77E+01	1.35E+01	0.00E+00	2.61E+01	3.42E+01	8.11E+00	2.93E+00	7.66E+01
12	6.61E+01	1.28E+01	0.00E+00	4.44E+01	5.33E+01	8.93E+00	2.93E+00	1.30E+02
13	1.66E+02	1.38E+01	0.00E+00	1.21E+02	1.52E+02	3.12E+01	2.93E+00	3.54E+02
14	2.65E+02	9.35E+00	0.00E+00	2.17E+02	2.56E+02	3.86E+01	2.93E+00	6.37E+02
15	2.41E+01	8.30E+00	0.00E+00	1.41E+01	1.58E+01	1.69E+00	2.93E+00	4.13E+01
16	3.98E+01	1.06E+01	0.00E+00	2.67E+01	2.92E+01	2.42E+00	2.93E+00	7.84E+01
17	4.41E+01	1.09E+01	0.00E+00	2.99E+01	3.32E+01	3.31E+00	2.93E+00	8.76E+01
18	4.70E+01	1.10E+01	0.00E+00	3.15E+01	3.60E+01	4.44E+00	2.93E+00	9.25E+01
19	5.18E+01	1.12E+01	0.00E+00	3.47E+01	4.06E+01	5.89E+00	2.93E+00	1.02E+02
20	1.01E+02	1.21E+01	0.00E+00	6.34E+01	8.93E+01	2.58E+01	2.93E+00	1.86E+02
21	4.93E+02	1.38E+01	0.00E+00	3.22E+02	4.79E+02	1.57E+02	2.93E+00	9.44E+02
22	1.90E+03	1.29E+01	0.00E+00	1.32E+03	1.89E+03	5.70E+02	2.93E+00	3.87E+03
23	1.06E+03	9.81E+00	0.00E+00	7.88E+02	1.05E+03	2.61E+02	2.93E+00	2.31E+03
24	8.82E+02	1.05E+01	0.00E+00	6.75E+02	8.72E+02	1.97E+02	2.93E+00	1.98E+03
25	1.11E+03	1.08E+01	0.00E+00	8.27E+02	1.10E+03	2.74E+02	2.93E+00	2.43E+03
26	1.60E+03	1.11E+01	0.00E+00	1.16E+03	1.59E+03	4.37E+02	2.93E+00	3.39E+03
27	3.12E+03	1.12E+01	0.00E+00	2.18E+03	3.11E+03	9.26E+02	2.93E+00	6.40E+03

Pu-242

Energy Grp. No.	cross section (barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.49E+00	3.09E+00	1.10E+00	1.97E+00	1.97E+00	4.45E-03	3.92E+00	7.71E+00
2	7.43E+00	3.69E+00	1.98E+00	1.75E+00	1.76E+00	1.18E-02	3.40E+00	5.94E+00
3	7.16E+00	3.78E+00	1.87E+00	1.47E+00	1.51E+00	3.84E-02	3.15E+00	4.62E+00
4	6.97E+00	3.99E+00	1.61E+00	1.33E+00	1.37E+00	3.99E-02	3.04E+00	4.04E+00
5	7.10E+00	4.41E+00	1.20E+00	1.44E+00	1.49E+00	5.27E-02	2.97E+00	4.28E+00
6	7.74E+00	5.85E+00	1.22E+00	5.66E-01	6.68E-01	1.02E-01	2.91E+00	1.65E+00
7	9.49E+00	8.37E+00	9.34E-01	6.42E-02	1.90E-01	1.26E-01	2.85E+00	1.83E-01
8	1.38E+01	1.33E+01	1.18E-01	4.12E-02	3.91E-01	3.49E-01	2.81E+00	1.16E-01
9	1.94E+01	1.85E+01	0.00E+00	1.95E-02	9.07E-01	8.87E-01	2.81E+00	5.47E-02
10	3.16E+01	2.87E+01	0.00E+00	0.00E+00	2.89E+00	2.89E+00	0.00E+00	0.00E+00
11	3.80E+01	2.90E+01	0.00E+00	0.00E+00	8.95E+00	8.95E+00	0.00E+00	0.00E+00
12	8.22E+01	5.38E+01	0.00E+00	0.00E+00	2.84E+01	2.84E+01	0.00E+00	0.00E+00
13	1.26E+01	1.04E+01	0.00E+00	0.00E+00	2.27E+00	2.27E+00	0.00E+00	0.00E+00
14	2.12E+01	1.47E+01	0.00E+00	0.00E+00	6.44E+00	6.44E+00	0.00E+00	0.00E+00
15	2.09E+03	1.58E+02	0.00E+00	0.00E+00	1.93E+03	1.93E+03	0.00E+00	0.00E+00
16	1.83E+01	5.62E+00	0.00E+00	0.00E+00	1.27E+01	1.27E+01	0.00E+00	0.00E+00
17	1.52E+01	6.66E+00	0.00E+00	0.00E+00	8.59E+00	8.59E+00	0.00E+00	0.00E+00
18	1.46E+01	6.99E+00	0.00E+00	0.00E+00	7.56E+00	7.56E+00	0.00E+00	0.00E+00
19	1.37E+01	7.32E+00	0.00E+00	0.00E+00	6.33E+00	6.33E+00	0.00E+00	0.00E+00
20	1.40E+01	7.79E+00	0.00E+00	0.00E+00	6.18E+00	6.18E+00	0.00E+00	0.00E+00
21	1.44E+01	8.05E+00	0.00E+00	0.00E+00	6.40E+00	6.40E+00	0.00E+00	0.00E+00
22	1.50E+01	8.15E+00	0.00E+00	0.00E+00	6.85E+00	6.85E+00	0.00E+00	0.00E+00
23	1.68E+01	8.27E+00	0.00E+00	0.00E+00	8.51E+00	8.51E+00	0.00E+00	0.00E+00
24	2.00E+01	8.34E+00	0.00E+00	0.00E+00	1.17E+01	1.17E+01	0.00E+00	0.00E+00
25	2.34E+01	8.37E+00	0.00E+00	0.00E+00	1.51E+01	1.51E+01	0.00E+00	0.00E+00
26	2.96E+01	8.39E+00	0.00E+00	0.00E+00	2.12E+01	2.12E+01	0.00E+00	0.00E+00
27	4.81E+01	8.40E+00	0.00E+00	0.00E+00	3.97E+01	3.97E+01	0.00E+00	0.00E+00

Am-241

Energy Grp. No.	cross section (barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	7.49E+00	3.85E+00	1.13E+00	2.50E+00	2.50E+00	1.59E-03	4.36E+00	1.09E+01
2	8.84E+00	4.45E+00	2.57E+00	1.81E+00	1.81E+00	4.66E-03	3.76E+00	6.79E+00
3	8.49E+00	4.18E+00	2.55E+00	1.74E+00	1.75E+00	1.11E-02	3.47E+00	6.05E+00
4	7.78E+00	3.75E+00	2.45E+00	1.56E+00	1.58E+00	2.00E-02	3.35E+00	5.22E+00
5	7.69E+00	4.16E+00	2.18E+00	1.31E+00	1.35E+00	3.60E-02	3.28E+00	4.29E+00
6	7.57E+00	5.51E+00	1.68E+00	2.86E-01	3.78E-01	9.18E-02	3.21E+00	9.21E-01
7	9.20E+00	7.78E+00	1.13E+00	1.07E-02	2.85E-01	2.74E-01	3.12E+00	3.33E-02
8	1.11E+01	9.66E+00	1.07E-01	1.63E-01	1.36E+00	1.20E+00	3.09E+00	5.05E-01
9	1.58E+01	1.13E+01	0.00E+00	7.59E-01	4.57E+00	3.81E+00	3.09E+00	2.35E+00
10	2.47E+01	1.24E+01	0.00E+00	1.38E+00	1.24E+01	1.10E+01	3.09E+00	4.27E+00
11	4.32E+01	1.31E+01	0.00E+00	1.11E+00	3.00E+01	2.89E+01	3.09E+00	3.42E+00
12	7.66E+01	1.36E+01	0.00E+00	7.22E-01	6.31E+01	6.24E+01	3.09E+00	2.23E+00
13	1.16E+02	1.37E+01	0.00E+00	5.84E-01	1.03E+02	1.02E+02	3.09E+00	1.81E+00
14	1.70E+02	1.15E+01	0.00E+00	9.05E-01	1.58E+02	1.57E+02	3.09E+00	2.80E+00
15	3.45E+02	1.08E+01	0.00E+00	9.39E-01	3.34E+02	3.33E+02	3.09E+00	2.90E+00
16	4.03E+02	1.61E+01	0.00E+00	2.46E+00	3.86E+02	3.84E+02	3.09E+00	7.61E+00
17	2.66E+03	2.43E+01	0.00E+00	1.77E+01	2.64E+03	2.62E+03	3.09E+00	5.48E+01
18	2.10E+02	5.79E+00	0.00E+00	1.24E+00	2.04E+02	2.03E+02	3.09E+00	3.82E+00
19	1.41E+02	7.52E+00	0.00E+00	7.30E-01	1.34E+02	1.33E+02	3.09E+00	2.26E+00
20	8.05E+02	9.52E+00	0.00E+00	3.62E+00	7.95E+02	7.92E+02	3.09E+00	1.12E+01
21	1.36E+03	1.29E+01	0.00E+00	9.10E+00	1.35E+03	1.34E+03	3.09E+00	2.81E+01
22	2.48E+03	7.05E+00	0.00E+00	1.77E+01	2.47E+03	2.45E+03	3.09E+00	5.46E+01
23	3.06E+02	9.32E+00	0.00E+00	2.14E+00	2.96E+02	2.94E+02	3.09E+00	6.62E+00
24	3.58E+02	1.00E+01	0.00E+00	1.96E+00	3.48E+02	3.46E+02	3.09E+00	6.06E+00
25	4.73E+02	1.00E+01	0.00E+00	2.56E+00	4.63E+02	4.61E+02	3.09E+00	7.90E+00
26	6.88E+02	1.00E+01	0.00E+00	3.84E+00	6.78E+02	6.74E+02	3.09E+00	1.19E+01
27	1.34E+03	1.00E+01	0.00E+00	7.62E+00	1.33E+03	1.33E+03	3.09E+00	2.35E+01

Am-243

Energy Grp. No.	cross section (barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.40E+00	3.86E+00	1.14E+00	1.40E+00	1.40E+00	1.59E-03	4.12E+00	5.77E+00
2	8.44E+00	4.46E+00	2.57E+00	1.40E+00	1.40E+00	4.68E-03	3.58E+00	5.02E+00
3	8.08E+00	4.12E+00	2.55E+00	1.40E+00	1.41E+00	1.11E-02	3.35E+00	4.70E+00
4	7.64E+00	3.77E+00	2.45E+00	1.40E+00	1.42E+00	2.00E-02	3.26E+00	4.56E+00
5	7.48E+00	4.10E+00	2.18E+00	1.16E+00	1.19E+00	3.61E-02	3.19E+00	3.69E+00
6	7.48E+00	5.53E+00	1.68E+00	1.77E-01	2.76E-01	9.89E-02	3.12E+00	5.53E-01
7	9.22E+00	7.78E+00	1.13E+00	1.04E-02	3.15E-01	3.04E-01	3.05E+00	3.19E-02
8	1.11E+01	1.03E+01	3.35E-02	1.40E-03	7.81E-01	7.79E-01	3.05E+00	4.26E-03
9	1.31E+01	1.11E+01	0.00E+00	3.70E-05	2.08E+00	2.08E+00	3.04E+00	1.12E-04
10	1.85E+01	1.21E+01	0.00E+00	0.00E+00	6.42E+00	6.42E+00	0.00E+00	0.00E+00
11	3.06E+01	1.29E+01	0.00E+00	0.00E+00	1.78E+01	1.78E+01	0.00E+00	0.00E+00
12	5.22E+01	1.33E+01	0.00E+00	0.00E+00	3.89E+01	3.89E+01	0.00E+00	0.00E+00
13	8.23E+01	1.28E+01	0.00E+00	0.00E+00	6.94E+01	6.94E+01	0.00E+00	0.00E+00
14	1.15E+02	1.10E+01	0.00E+00	0.00E+00	1.04E+02	1.04E+02	0.00E+00	0.00E+00
15	5.52E+01	1.23E+01	0.00E+00	0.00E+00	4.29E+01	4.29E+01	0.00E+00	0.00E+00
16	2.88E+03	6.32E+01	0.00E+00	0.00E+00	2.81E+03	2.81E+03	0.00E+00	0.00E+00
17	7.04E+02	8.23E+00	0.00E+00	0.00E+00	6.96E+02	6.96E+02	0.00E+00	0.00E+00
18	1.96E+02	4.69E+00	0.00E+00	0.00E+00	1.91E+02	1.91E+02	0.00E+00	0.00E+00
19	1.65E+02	5.14E+00	0.00E+00	0.00E+00	1.60E+02	1.60E+02	0.00E+00	0.00E+00
20	3.63E+01	6.49E+00	0.00E+00	0.00E+00	2.98E+01	2.98E+01	0.00E+00	0.00E+00
21	2.80E+01	7.03E+00	0.00E+00	0.00E+00	2.10E+01	2.10E+01	0.00E+00	0.00E+00
22	2.77E+01	7.19E+00	0.00E+00	0.00E+00	2.05E+01	2.05E+01	0.00E+00	0.00E+00
23	3.16E+01	7.38E+00	0.00E+00	0.00E+00	2.43E+01	2.43E+01	0.00E+00	0.00E+00
24	4.92E+01	7.50E+00	0.00E+00	0.00E+00	4.17E+01	4.17E+01	0.00E+00	0.00E+00
25	9.67E+01	7.56E+00	0.00E+00	0.00E+00	8.92E+01	8.92E+01	0.00E+00	0.00E+00
26	2.66E+02	7.58E+00	0.00E+00	0.00E+00	2.58E+02	2.58E+02	0.00E+00	0.00E+00
27	5.65E+02	7.59E+00	0.00E+00	0.00E+00	5.58E+02	5.58E+02	0.00E+00	0.00E+00

Cm-244

Energy Grp. No.	cross section (barn)							
	total	elastic scattering	inelastic	fission	absorption	capture	ν	ν *fission
1	6.53E+00	3.06E+00	9.30E-01	2.46E+00	2.47E+00	7.92E-03	4.25E+00	1.04E+01
2	7.53E+00	3.69E+00	1.39E+00	2.43E+00	2.45E+00	2.22E-02	3.77E+00	9.14E+00
3	7.48E+00	3.85E+00	1.39E+00	2.19E+00	2.24E+00	4.99E-02	3.54E+00	7.74E+00
4	7.15E+00	4.03E+00	1.20E+00	1.88E+00	1.92E+00	4.00E-02	3.44E+00	6.46E+00
5	7.19E+00	4.39E+00	1.09E+00	1.66E+00	1.72E+00	5.93E-02	3.38E+00	5.60E+00
6	7.67E+00	5.47E+00	9.99E-01	1.10E+00	1.20E+00	1.01E-01	3.32E+00	3.65E+00
7	9.33E+00	8.09E+00	8.30E-01	2.46E-01	4.08E-01	1.62E-01	3.27E+00	8.03E-01
8	1.42E+01	1.35E+01	1.09E-01	1.58E-01	5.79E-01	4.21E-01	3.24E+00	5.12E-01
9	2.07E+01	1.93E+01	0.00E+00	2.71E-01	1.38E+00	1.11E+00	3.23E+00	8.75E-01
10	3.43E+01	3.00E+01	0.00E+00	2.70E-01	4.33E+00	4.06E+00	3.23E+00	8.74E-01
11	3.52E+01	2.33E+01	0.00E+00	3.29E-01	1.18E+01	1.15E+01	3.23E+00	1.06E+00
12	3.41E+01	1.52E+01	0.00E+00	8.34E-01	1.89E+01	1.80E+01	3.23E+00	2.70E+00
13	4.16E+01	1.38E+01	0.00E+00	1.37E+00	2.78E+01	2.64E+01	3.23E+00	4.41E+00
14	5.91E+02	1.35E+02	0.00E+00	2.73E+01	4.56E+02	4.29E+02	3.23E+00	8.81E+01
15	9.36E+00	7.23E+00	0.00E+00	1.27E-01	2.14E+00	2.01E+00	3.23E+00	4.09E-01
16	9.80E+00	7.70E+00	0.00E+00	1.24E-01	2.10E+00	1.97E+00	3.23E+00	4.02E-01
17	1.01E+01	7.85E+00	0.00E+00	1.30E-01	2.21E+00	2.08E+00	3.23E+00	4.20E-01
18	1.02E+01	7.92E+00	0.00E+00	1.35E-01	2.30E+00	2.17E+00	3.23E+00	4.37E-01
19	1.05E+01	8.00E+00	0.00E+00	1.44E-01	2.46E+00	2.31E+00	3.23E+00	4.66E-01
20	1.12E+01	8.14E+00	0.00E+00	1.78E-01	3.04E+00	2.86E+00	3.23E+00	5.76E-01
21	1.20E+01	8.24E+00	0.00E+00	2.22E-01	3.80E+00	3.58E+00	3.23E+00	7.17E-01
22	1.27E+01	8.28E+00	0.00E+00	2.58E-01	4.43E+00	4.17E+00	3.23E+00	8.35E-01
23	1.45E+01	8.34E+00	0.00E+00	3.61E-01	6.20E+00	5.84E+00	3.23E+00	1.17E+00
24	1.75E+01	8.38E+00	0.00E+00	5.31E-01	9.15E+00	8.62E+00	3.23E+00	1.72E+00
25	2.06E+01	8.39E+00	0.00E+00	7.07E-01	1.22E+01	1.15E+01	3.23E+00	2.28E+00
26	2.59E+01	8.40E+00	0.00E+00	1.01E+00	1.75E+01	1.64E+01	3.23E+00	3.27E+00
27	4.16E+01	8.40E+00	0.00E+00	1.93E+00	3.32E+01	3.13E+01	3.23E+00	6.22E+00