II. S(α,β) DATA FOR USE WITH THE MTn CARD

Table G .1 lists all the S(α,β) data libraries that are maintained. The number(s) in parentheses following the description in words [Beryllium Metal (4009)] specify the nuclides for which the S(α,β) data are valid. For example, lwtr.01t provides scattering data only for ^{1}H; ^{16}O would still be represented by the default free-gas treatment. The entries in each of the columns of Table G .1 are described as follows:

ZAID	The table identification to be specified on MTn cards. The portion of the ZAID before the decimal point provides a shorthand alphanumeric description of the material. The two digits after the decimal point differentiate among different tables for the same material. The final character in the ZAID is a "t" which indicates a thermal S(α,β) table.
Source	There are currently three evaluated sources of MCNP S(α,β) tables: (1) ENDF5–Indicates that the data were processed from evaluations distributed by the National Nuclear Data Center at Brookhaven National Laboratory as part of ENDF/B-V. Note that these evaluations were carried over from ENDF/B-III.[5] (2) LANL89–Initial work on cold moderator scattering data performed at Los Alamos National Laboratory.[6,7] (3) ENDF6.3–Indicates that the data were processed from evaluations distributed by the National Nuclear Data Center at Brookhaven National Laboratory as part of ENDF/B-VI, Release 3.[8]
Library	Name of the library that contains the data table for this ZAID.
Date Processed	Date that the data table was processed by the NJOY code.
Temperature	The temperature of the data in degrees Kelvin.
Number of Angles	The number of equally-likely discrete secondary cosines provided at each combination of incident and secondary energy for inelastic scattering and for each incident energy for incoherent elastic scattering.
Number of Energies	The number of secondary energies provided for each incident energy for inelastic scattering.
Elastic Scattering Data	There are three options: (1) none–no elastic scattering data for this material. (2) coh–coherent elastic scattering data provided for this material (Bragg scattering). (3) inco–incoherent elastic scattering data provided for this material.

Table G .1
Thermal *S*(α,β) Cross-Section Libraries

ZAID	Source	Library Name	Date of Processing	Temp (K)	Num of Angles	Num of Energies	Elastic Data
Beryllium Metal (4009)							
be.01t	endf5	tmccs	10/24/85	300	8	20	coh
be.04t	endf5	tmccs	10/24/85	600	8	20	coh
be.05t	endf5	tmccs	10/24/85	800	8	20	coh
be.06t	endf5	tmccs	10/24/85	1200	8	20	coh
be.60t	endf6.3	sab2002	09/13/99	294	16	64	coh
be.61t	endf6.3	sab2002	09/13/99	400	16	64	coh
be.62t	endf6.3	sab2002	09/13/99	600	16	64	coh
be.63t	endf6.3	sab2002	09/14/99	800	16	64	coh
be.64t	endf6.3	sab2002	09/14/99	1000	16	64	coh
be.65t	endf6.3	sab2002	09/14/99	1200	16	64	coh
be.69t	endf6.3	sab2002	09/17/99	77	16	64	coh
Benzene (1001, 6000, 6012)							
benz.01t	endf5	tmccs	09/08/86	300	8	32	none
benz.02t	endf5	tmccs	09/08/86	400	8	32	none
benz.03t	endf5	tmccs	09/08/86	500	8	32	none
benz.04t	endf5	tmccs	09/08/86	600	8	32	none
benz.05t	endf5	tmccs	09/08/86	800	8	32	none
benz.60t	endf6.3	sab2002	09/14/99	294	16	64	none
benz.61t	endf6.3	sab2002	09/14/99	400	16	64	none
benz.62t	endf6.3	sab2002	09/14/99	600	16	64	none
benz.63t	endf6.3	sab2002	09/14/99	800	16	64	none
Beryllium Oxide (4009, 8016)							
beo.01t	endf5	tmccs	09/08/86	300	8	32	coh
beo.04t	endf5	tmccs	09/08/86	600	8	32	coh
beo.05t	endf5	tmccs	09/08/86	800	8	32	coh
beo.06t	endf5	tmccs	09/08/86	1200	8	32	coh
beo.60t	endf6.3	sab2002	09/14/99	294	16	64	coh
beo.61t	endf6.3	sab2002	09/14/99	400	16	64	coh
beo.62t	endf6.3	sab2002	09/14/99	600	16	64	coh
beo.63t	endf6.3	sab2002	09/14/99	800	16	64	coh
beo.64t	endf6.3	sab2002	09/14/99	1000	16	64	coh
beo.65t	endf6.3	sab2002	09/14/99	1200	16	64	coh
Ortho Deuterium (1002)							
dortho.01t	lanl89	therxs	05/30/89	20	8	8	none
dortho.60t	endf6.3	sab2002	09/16/99	19	16	64	none
Para Deuterium (1002)							
dpara.01t	lanl89	therxs	05/30/89	20	8	8	none
dpara.60t	endf6.3	sab2002	09/16/99	19	16	64	none

Table G .1 (Cont.)
Thermal *S*(α,β) Cross-Section Libraries

ZAID	Source	Library Name	Date of Processing	Temp (K)	Num of Angles	Num of Energies	Elastic Data
Graphite (6000, 6012)							
grph.01t	endf5	tmccs	09/08/86	300	8	32	coh
grph.04t	endf5	tmccs	09/08/86	600	8	32	coh
grph.05t	endf5	tmccs	09/08/86	800	8	32	coh
grph.06t	endf5	tmccs	09/08/86	1200	8	32	coh
grph.07t	endf5	tmccs	09/08/86	1600	8	32	coh
grph.08t	endf5	tmccs	09/08/86	2000	8	32	coh
grph.60t	endf6.3	sab2002	09/14/99	294	16	64	coh
grph.61t	endf6.3	sab2002	09/14/99	400	16	64	coh
grph.62t	endf6.3	sab2002	09/14/99	600	16	64	coh
grph.63t	endf6.3	sab2002	09/14/99	800	16	64	coh
grph.64t	endf6.3	sab2002	09/14/99	1000	16	64	coh
grph.65t	endf6.3	sab2002	09/14/99	1200	16	64	coh
Hydrogen in Zirconium Hydride (1001)							
h/zr.01t	endf5	tmccs	10/22/85	300	8	20	inco
h/zr.02t	endf5	tmccs	10/22/85	400	8	20	inco
h/zr.04t	endf5	tmccs	10/22/85	600	8	20	inco
h/zr.05t	endf5	tmccs	10/22/85	800	8	20	inco
h/zr.06t	endf5	tmccs	10/22/85	1200	8	20	inco
h/zr.60t	endf6.3	sab2002	09/14/99	294	16	64	inco
h/zr.61t	endf6.3	sab2002	09/14/99	400	16	64	inco
h/zr.62t	endf6.3	sab2002	09/14/99	600	16	64	inco
h/zr.63t	endf6.3	sab2002	09/14/99	800	16	64	inco
h/zr.64t	endf6.3	sab2002	09/14/99	1000	16	64	inco
h/zr.65t	endf6.3	sab2002	09/14/99	1200	16	64	inco
Ortho Hydrogen (1001)							
hortho.01t	lanl89	therxs	03/03/89	20	8	8	none
hortho.60t	endf6.3	sab2002	01/21/03	19	16	64	none
hortho.61t	endf6.3	sab2002	06/14/00	20	16	64	none
hortho.62t	endf6.3	sab2002	06/14/00	21	16	64	none
hortho.63t	endf6.3	sab2002	06/14/00	22	16	64	none
hortho.64t	endf6.3	sab2002	06/14/00	23	16	64	none
hortho.65t	endf6.3	sab2002	06/14/00	24	16	64	none
hortho.66t	endf6.3	sab2002	06/14/00	25	16	64	none

Table G .1 (Cont.)
Thermal *S*(α,β) Cross-Section Libraries

ZAID	Source	Library Name	Date of Processing	Temp (K)	Num of Angles	Num of Energies	Elastic Data
Para Hydrogen (1001)							
hpara.01t	lanl89	therxs	03/03/89	20	8	8	none
hpara.60t	endf6.3	sab2002	06/14/00	19	16	64	none
hpara.61t	endf6.3	sab2002	06/13/00	20	16	64	none
hpara.62t	endf6.3	sab2002	06/14/00	21	16	64	none
hpara.63t	endf6.3	sab2002	06/14/00	22	16	64	none
hpara.64t	endf6.3	sab2002	06/14/00	23	16	64	none
hpara.65t	endf6.3	sab2002	06/14/00	24	16	64	none
hpara.66t	endf6.3	sab2002	06/14/00	25	16	64	none
Deuterium in Heavy Water (1002)							
hwtr.01t	endf5	tmccs	10/22/85	300	8	20	none
hwtr.02t	endf5	tmccs	10/22/85	400	8	20	none
hwtr.03t	endf5	tmccs	10/22/85	500	8	20	none
hwtr.04t	endf5	tmccs	10/22/85	600	8	20	none
hwtr.05t	endf5	tmccs	10/22/85	800	8	20	none
hwtr.60t	endf6.3	sab2002	09/14/99	294	16	64	none
hwtr.61t	endf6.3	sab2002	01/20/03	400	16	64	none
hwtr.62t	endf6.3	sab2002	09/14/99	600	16	64	none
hwtr.63t	endf6.3	sab2002	09/14/99	800	16	64	none
hwtr.64t	endf6.3	sab2002	01/20/03	1000	16	64	none
Hydrogen in Liquid Methane (1001)							
lmeth.01t	lanl89	therxs	04/10/88	100	8	8	none
lmeth.60t	endf6.3	sab2002	09/17/99	100	16	64	none
Hydrogen in Light Water (1001)							
lwtr.01t	endf5	tmccs	10/22/85	300	8	20	none
lwtr.02t	endf5	tmccs	10/22/85	400	8	20	none
lwtr.03t	endf5	tmccs	10/22/85	500	8	20	none
lwtr.04t	endf5	tmccs	10/22/85	600	8	20	none
lwtr.05t	endf5	tmccs	10/22/85	800	8	20	none
lwtr.60t	endf6.3	sab2002	09/13/99	294	16	64	none
lwtr.61t	endf6.3	sab2002	09/13/99	400	16	64	none
lwtr.62t	endf6.3	sab2002	09/13/99	600	16	64	none
lwtr.63t	endf6.3	sab2002	09/13/99	800	16	64	none
lwtr.64t	endf6.3	sab2002	01/21/03	1000	16	64	none
Hydrogen in Polyethylene (1001)							
poly.01t	endf5	tmccs	10/22/85	300	8	20	inco
poly.60t	endf6.3	sab2002	09/14/99	294	16	64	inco
Hydrogen in Solid Methane (1001)							
smeth.01t	lanl89	therxs	04/10/88	22	8	8	inco
smeth.60t	endf6.3	sab2002	09/17/99	22	16	64	inco

Table G .1 (Cont.)
Thermal *S*(α,β) Cross-Section Libraries

ZAID	Source	Library Name	Date of Processing	Temp (K)	Num of Angles	Num of Energies	Elastic Data
Zirconium in Zirconium Hydride (40000, 40090, 40091, 40092, 40094, 40096)							
zr/h.01t	endf5	tmccs	09/08/86	300	8	32	inco
zr/h.02t	endf5	tmccs	09/08/86	400	8	32	inco
zr/h.04t	endf5	tmccs	09/08/86	600	8	32	inco
zr/h.05t	endf5	tmccs	09/08/86	800	8	32	inco
zr/h.06t	endf5	tmccs	09/08/86	1200	8	32	inco
zr/h.60t	endf6.3	sab2002	09/14/99	294	16	64	inco
zr/h.61t	endf6.3	sab2002	09/14/99	400	16	64	inco
zr/h.62t	endf6.3	sab2002	09/14/99	600	16	64	inco
zr/h.63t	endf6.3	sab2002	09/14/99	800	16	64	inco
zr/h.64t	endf6.3	sab2002	09/14/99	1000	16	64	inco
zr/h.65t	endf6.3	sab2002	09/14/99	1200	16	64	inco