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The processed neutron activation cross-section data files of the FENDL project

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Abstract: This document summarises a neutron activation cross-section database which has been processed in two formats for input to MCNP Monte Carlo codes and to REAC transmutation codes. The data are available from the IAEA Nuclear Data Section online via INTERNET by FTP command.

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FENDL - the Fusion Evaluated Nuclear Data Library is produced by a cooperation organized by the IAEA Nuclear Data Section. As part of FENDL a neutron activation cross-section data library has been established under the acronym FENDL-PA/1.1 where A stands for activation and P for "point data", i.e. any resonance parameters contained in the original data file have been converted to cross-section data.

The FENDL activation file has been further processed for input to computer calculations, in two modes:

1. Continuous energy format as used by the Monte Carlo neutron/photon transport code MCNP: "FENDL/A-MCNP"
2. ASCII 175-group multigroup format as used by the transmutation code REAC*2/3: "FENDL/PA-175G"

These data files are indexed, together with the description of the processing, in the report:

F.M. Mann, D.E. Lessor, L.L. Carter:
Processing of FENDL-PA/1.1
Report WHC-EP-0727, Feb. 1994

The present database contains about 12 000 neutron activation reactions for more than 600 target nuclides and isomers.

The MCNP database has a size of 96 Megabytes, i.e. 193129 blocks (1 block = 512 bytes).

The 175-group database has a size of 26 Megabytes, i.e. 52875 blocks.

The files are available from the IAEA Nuclear Data Section online through INTERNET. The file transfer via INTERNET can be performed by FTP command to the address:

IAEAND.IAEA.OR.AT or
161.5.2.2.

The user should logon with the user name "FENDL". No password is required. After having logged on the user should go to the subdirectory "fendl/fendla/mann/MCNP" to obtain the MCNP compatible processed activation data. The subdirectory "fendl/fendla/mann/group" provides the multigroup data in REAC format in 175 group structure.

Cross-reference

For the same database in ENDF-6 point data form see "JONACS - Joint neutron activation cross-section file" as documented in IAEA-NDS-148 Rev. 1. This has also a VITAMIN J 175-group version, call "JONACS/J". FENDL/PA-175G and JONACS-J have the same group structure but were computed with a different weighting spectrum. JONACS/J is in ENDF-6 histogram format, whereas FENDL/PA-175G is in a format required for input to the REAC codes.

Note: JONACS is the IAEA internal name for the libraries that are called FENDL/A (activation data) and FENDL/D (decay data).