

CINDU-9  
OCT.1969

INDC-  
-314

INDC(NDU)-15/D

# CINDU

**CATALOGUE  
OF NUMERICAL NEUTRON DATA  
AVAILABLE FROM THE  
IAEA NUCLEAR DATA SECTION**

= SUPERSEDES CINDU-8 =



---

IAEA NUCLEAR DATA SECTION, KÄRNTNER RING 11, A-1010 VIENNA

CINDU - 9

            
            
OCT 1969

CATALOGUE OF NUMERICAL NEUTRON DATA  
AVAILABLE FROM THE IAEA NUCLEAR DATA SECTION

---

Supersedes CINDU-8

IAEA Nuclear Data Section, Kärntnerring 11, P.O.Box 590, A-1011 Vienna

---

W.M. Good, P.M. Attree, H.I. Bak, T.A. Byer, F. Hirschbichler,  
L. Hjaerne, V.A. Konshin, A. Koster, H.D. Lemmel, A. Lorenz, F. Manero

## F O R E W O R D

This catalogue indexes the neutron data sets held at the IAEA Nuclear Data Section.\* A list of data files in which these data sets are contained is given on page v. This issue of CINDU supersedes all previous ones which may therefore be discarded.

CINDU is produced in a slightly modified CINDA format and should be read with the help of the introduction to CINDA. Tables of abbreviations for references and laboratories mentioned in this issue are given on the verso of the front cover. The catalogue serves as a reference to all the experimental and calculated numerical data which are stored at the IAEA Nuclear Data Section, and each set of data is referred to by an accession-number, e.g. DASTAR-01036. The bibliographic references for each experiment are blocked together with the relevant data index entry. All of the indexed data are available on request, and should be ordered by their accession-number.

This issue of CINDU is distributed to data centres, members of the International Nuclear Data Committee, INDC Liaison Officers, local data committees, correspondents to the IAEA Nuclear Data Section, and others who have expressed their interest. CINDU is issued periodically and can be supplied on request.

Entries which have been added or changed since the issue of CINDU-8 are marked with an asterisk at the right-hand side of the page.

---

\* Note: Beginning with CINDU-8, not only DASTAR data are indexed but also any other available files of experimental or evaluated neutron data.

DATA FILES  
Indexed in this Issue

- \* DASTAR, the Data Storage And Retrieval System of the IAEA Nuclear Data Section. This includes:
  - 1) experimental neutron data obtained from the IAEA service area which includes countries in Eastern Europe, Asia, Australia, Africa, Central and South America
  - 2) selected experimental neutron data from the USSR, West Europe and North America (for instance the Chalk River Thermal-Scattering-Law file)
  - 3) evaluated data, if these are not part of an evaluated data library (for instance a number of USSR evaluations).
  
- \* KEDAK, the Karlsruhe file of evaluated neutron data for fast reactor materials.
  
- \* Parts of the UKAEA Nuclear Data Library, which contains neutron data evaluated at Aldermaston, Winfrith, and other institutes.
  
- \* The Bologna file of evaluated capture cross-sections for fission product isotopes.
  
- \* Obninsk evaluations. These are included in the DASTAR file.

Special information on evaluated data can be found on the pink pages at the end of this issue.

## I N T R O D U C T I O N

### General Information on Neutron Data Compilation

1. In the overall activity of neutron data\* compilation, the IAEA Nuclear Data Section shares the responsibility of data collection and dissemination with three other centres. These centres and their distribution of labour between them are as follows:
  - The Brookhaven National Neutron Cross-Section Center, formerly Sigma Center, services the USA and Canada;
  - The ENEA Neutron Data Compilation Centre at Saclay (France) services countries in Western Europe and Japan;
  - The Informacionnyj Centr po Jadernym Dannym (Nuclear Data Information Centre) in Obninsk services the USSR;
  - The IAEA Nuclear Data Section in Vienna services all other countries in Eastern Europe, Asia, Africa, South and Central America, Australia and New Zealand.
2. These principal data centres have a constant liaison in working toward an international neutron data system.
3. Producers of neutron data (by experiment, theory or evaluation) are invited to effectively publish their numerical results by sending them to their appropriate centre, which will make them available to the other centres.
4. Neutron data can be obtained by addressing a request to the appropriate centre (see 1. above).
5. CINDA, a world-wide index to the literature on microscopic neutron data, is regularly published jointly by the USAEC Division of Technical Information Extension Oak Ridge, the ENEA Neutron Data Compilation Centre Saclay, the USSR Informacionnyj Centr po Jadernym Dannym Obninsk, and the IAEA Nuclear Data Section. Printed current retrievals on specific isotopes and quantities can be provided upon request. (Note: CINDA is an international and fairly complete literature index. - CINDU is a data index to the IAEA data files, which are not complete.)

---

\* Neutron Data is defined here as measured or deduced microscopic neutron cross-sections, related fission, capture and scattering parameters, resonance and reaction parameters, as well as any other quantities which are included in CINDA.

To Users of the Compilation Facilities  
at the IAEA Nuclear Data Section

1. Scientists in Eastern Europe, Asia, Africa, South and Central America, Australia and New Zealand are members of the IAEA service area for neutron data collection (compare page vi). Neutron data resulting from experiment, theory or evaluation which are produced in the IAEA area, receive international distribution when they are submitted to the IAEA Nuclear Data Section. When so submitted, data should be accompanied by descriptions of error analysis, normalization procedures, etc., as well as pertinent bibliography.
2. Unless otherwise specified by the author, it will be assumed that data submitted to the IAEA Nuclear Data Section may be freely released. Data status (e.g. preliminary) can be attached to the data being sent in; the disseminated data will then be labelled as such until further notification by the author.
3. Data can be submitted to the IAEA Nuclear Data Section via the media of printed lists, punched cards (in either IBM BCD or EBCDIC formats), or magnetic tape (IBM compatible tape in either 7-track BCD or 9-track EBCDIC format).
4. Authors will receive proof-copies of their data as they are entered in the data file.
5. Data stored at the centre will, under normal circumstances, not be destroyed, even if they are superseded.
6. The Nuclear Data Section will provide data on request in the formats specified in 3. above and can provide graphical plots in a variety of scales. The Nuclear Data Section will also try to make available, on request, any other neutron data not included in this issue of CINDU.

## NOTES ON DASTAR

The following page shows an example of a DASTAR-table which is referenced on page 21 of this catalogue. The documentation refers, in this case, to an article published in the Chinese Journal of Physics.

In each DASTAR-table, the numerical data are preceded by comment lines which define the data and give brief information on parameters, methods, calibration, accuracy, origin of the data, description of quantities, data formats, etc. The table shown is in its "first version". Often, the author revises his data after publication or after receiving the DASTAR proof-copy. The revised DASTAR table will then be labelled as "second version". Anyone who had received the first version in the meantime, will receive any later version automatically.

There are many DASTAR-tables referenced in CINDU which supersede published data or which have been published in graphical form only; this illustrates how the data centre can make results rapidly available in numerical form, which often cannot be conveniently published. Thus, the DASTAR-CINDU system is functioning as a computerized publicizing medium.

For data entered into DASTAR, the standard publication practice is employed of returning a proof-copy to the author for his comments and corrections. Data referred to in CINDU can be quoted in other publications as:

W.H. Kao et al: DASTAR-01036, 1. Version,  
Nuclear Data Section, IAEA, Vienna, Austria.  
(See the example of this DASTAR table given  
on the following page.)



DASTAR-01036      1.VERSION      ENTRY DATE    691010  
C EXPERIMENT = 16-SULFUR TOTAL NEUTRON CROSS-SECTIONS BETWEEN 5.36 AND 6.28 MEV.  
C AUTHORS    = W.H.KAO ET AL., NATIONAL TSING HUA UNIV., HSINCHU, TAIWAN, 1967.  
C METHOD      = TRANSMISSION MEASUREMENT USING TIME-OF-FLIGHT SPECTROMETER WITH  
C              THE OVERALL ENERGY RESOLUTION OF ABOUT 261 KEV.  
C N-SOURCE   = MONOENERGETIC NEUTRONS FROM D(D,N)HE3 REACTION AT 3-MEV VDG.  
C DETECTOR   = NE-213 LIQUID SCINTILLATOR WITH RCA-7264 PM TUBE.  
C SAMPLE     = POWDER SAMPLE WAS TIGHTLY PACKED IN A THIN-WALLED AL-CONTAINER OF  
C              7.85 CM IN DIAMETER AND 1.0 CM IN THICKNESS. DENSITY OF S = 1.723  
C              GM/CC.  
C ERROR      = APPROXIMATELY 11 PERCENT FOR THE SIGMA VALUES GIVEN BELOW.  
C RESULTS    = NUCLEAR RADIUS  $R = 3.83 \pm 0.04$  FM FOR SULFUR WAS DEDUCED FROM  
C              POTENTIAL CROSS-SECTION FORMULA USING THE SIGMA VALUES AT 3.85  
C              AND 4.2 MEV GIVEN BY MACHWE (PR 114 1563, 1959). THE SIGMA FOR  
C              POTENTIAL ELASTIC SCATTERING CALCULATED USING THIS R-VALUE RANGES  
C              FROM 1.10 TO 1.28 BARNS FOR THE PRESENT E-REGION.  
C DATA FROM CHP S 53, TABLE I, 0/67.  
C 1.VARIABLE = NEUTRON ENERGY IN MEV.  
C 2.VARIABLE = SIGMA TOTAL IN BARNS.

DESCRIPTION OF FORMAT

00024 DATA LINES      02 VARIABLES/DATA LINE

FORMAT(2F11.2)

5.36	2.52	0001
5.40	2.49	0002
5.44	2.47	0003
5.48	2.43	0004
5.52	2.43	0005
5.56	2.40	0006
5.60	2.35	0007
5.64	2.36	0008
5.68	2.38	0009
5.72	2.33	0010
5.76	2.32	0011
5.80	2.34	0012
5.83	2.42	0013
5.86	2.47	0014
5.89	2.46	0015
5.93	2.43	0016
5.97	2.47	0017
6.02	2.47	0018
6.06	2.42	0019
6.10	2.43	0020
6.14	2.42	0021
6.19	2.31	0022
6.25	2.37	0023
6.28	2.41	0024

The numerical data that are entered into the DASTAR-system are referred to in this catalogue in four different ways:

- DASTAR-O1036: normal DASTAR-tables, kept on magnetic tape.
- DASTAR-P0006: supplementary information which is not kept on magnetic tape, and which is available only as a photocopy; the DASTAR-number starts with a "P"; see for instance bottom of page 6 of this catalogue.
- DASTAR-T0039: thermal-scattering-law data kept on a separate tape in their original format as received by the author; see for instance bottom of page 151.
- DASTAR: some single values are, at the moment, only given in the CINDU-catalogue, without a DASTAR-number, but with the word "DASTAR" in the reference column; see for instance bottom of page 5 of this catalogue.

Data from data files other than DASTAR are referred to by an accession-number preceded by a code for the relevant data file (see the last three items on the bottom of page 63):

- KEDAK\*420096: Karlsruhe library.
- UK\*-00719: Aldermaston-Winfrith library, DFN-number.
- BOL\*-514: Bologna library.

Anyone wishing to receive numerical data, needs only to order them by giving the DASTAR-(KEDAK, UK, or BOL-) accession-number and a statement, whether printed listings, punched cards, magnetic tapes, or graphical plots are desired.

#### Acknowledgements:

The IAEA Nuclear Data Section wishes to acknowledge the advice and cooperation of the data centres at Brookhaven, Saclay and Obninsk, and of the CINDA centres, the contributions of individual scientists, and, in particular, the efforts of the originators of CINDA, on which the present catalogue is based.