

Nuclear Data

KERNDATEN

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Nuclear Data

For measurements within the scope of this Procedures' Manual, actual nuclear data have to be used which can be received from the following sources:

Laboratoire National Henri Becquerel (LNHB), Tables of radionuclides

<http://www.lnhb.fr/nuclear-data/nuclear-data-table/>

Laboratoire National Henri Becquerel (LNHB), Nucléide-Lara

<http://www.lnhb.fr/Laraweb/>

The data sources mentioned above have the advantage that they offer metrologically traceable nuclear data. Furthermore, additional data collection sometimes linked between each other are available online.

International Atomic Energy Agency (IAEA): Nuclear Data Services

<http://www-nds.iaea.org/>

National Nuclear Data Center on Brookhaven National Laboratory

<https://www.nndc.bnl.gov/nudat3/>

Bay Area Nuclear Data Group am Lawrence Berkeley National Laboratory

<https://nucleardata.berkeley.edu/databases/>

Gamma-ray Spectrometry Center of the Idaho National Laboratory

<https://gammaray.inl.gov/SitePages/Home.aspx>

Nucleonica GmbH, Karlsruhe, with user-registration (for a fee)

<http://www.nucleonica.com>

For mobile applications, the IAEA offers the app "Isotope Browser" for the operating systems Android and iOS amongst others.

Especially for the allocation for background peaks arising by neutron activation of nuclei in detectors or in components of a gamma ray spectrometer, the following data sources are available:

International Atomic Energy Agency (IAEA): Evaluated Gamma-ray Activation File (EGAF)

<https://www-nds.iaea.org/pgaa/egaf.html>

Brookhaven National Nuclear Data Center: Thermal Neutron Capture Gammas by Energy

<https://www.nndc.bnl.gov/capgam/>

Corrections of deviations of measurement results due to self attenuation require mass attenuation coefficients. These are available for each element in table on the website of the NIST Physical Measurement Laboratory (PML).

<http://www.nist.gov/pml/data/xcom/index.cfm>

Note:

In 2011, the term 'emission probability' which is used in elder procedures of this Procedures' Manual was replaced in the international metrological vocabulary by the term 'emissions intensity'. This is substantiated that values greater than one can occur; probabilities however can never be greater than one due to mathematics.

At data election, the term 'transition probability' used in data collections may not confused by the term 'emission intensity'. The transition probabilities are used if e. g. coincidence summation corrections are determined to compensate count rate losses by summation effects.

Disclaimer of warranty

The German Federal Ministry for Environment, Climate Action, Nature Conservation and Nuclear Safety as well as the German Federal Coordinating Offices and the Drafting Committee for this Procedures' Manual assume no liability for the accuracy of the nuclear data from the sources listed above.