

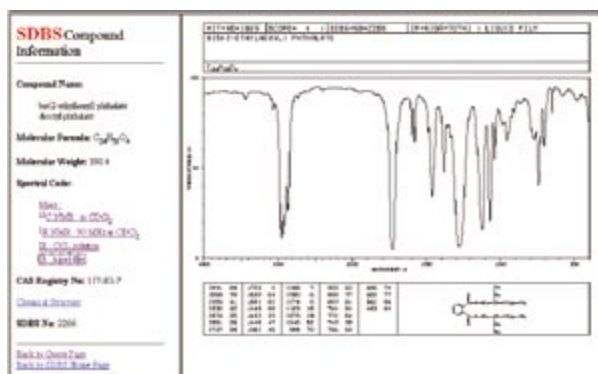
# Spectrum database for organic compounds (SDBS)

Metrology Institute of Japan

<http://www.aist.go.jp/RIODB/SDBS/menu-e.html>

## Outline of the database

This is a comprehensive spectrum database containing approximately 32,200 organic compounds. A total of six kinds of spectrum are covered – the  $^1\text{H}$  magnetic nuclear resonance (NMR) spectrum,  $^{13}\text{C}$  NMR spectrum, Fourier transform infrared spectrum (FT-IR), mass (MS) spectrum, Raman spectrum, and electronic spin resonance (ESR) spectrum. A total of 103,600 items are stored. The



An example of FT-IR spectrum of SDBS

study of database construction commenced in the 1970s, and this database was introduced in 1982 as a substantial spectrum database. As one of the activities of the RIO-DB, since 1997, this database has been opened to the public at no cost via the Internet. Thanks to the abundant data and the ease of search, people throughout the world are showing considerable interest in this site. SDBS is a symbol of the activities of many research staff promoted for over 30 years, and to refine this valuable resource, we are currently collecting and disclosing new data.

## Features of the database

- Many spectra, primarily common organic compounds, are accumulated.
- Two or more spectra are available for each compound.
- The spectrum retrieval system is simple.
- In addition to the name of the compound, search is possible by the CAS number.
- The spectra are, in principle, of original data measured and evaluated by the researchers.
- In addition to the registration of new data, the contents are always reviewed and corrected, if necessary.

# Cyclopedia of strata, rock units and volcanoes (Stratigraphic name database)

Institute of Geology and Geoinformation

<http://www.aist.go.jp/RIODB/strata/welcomej.html>

## Outline of the database

This database contains a large number of data (over 10,000 items) for retrieval on the name of the strata, rock units and volcanoes distributed in Japan to obtain definitions and descriptions. This database can be used in proposals of new strata in accordance with the stratigraphic code and in reading geological papers. Reference can be made not only by the names you want to search but also on the location maps of geological units or volcanoes.

## Features of the database

In addition to the “database for retrieval of strata and rock units”, this data base includes sub-databases such as “Quaternary volcanoes in Japan”, “Igneous rocks in Japan”, and “Metamorphic rocks in Japan” which individually allows the direct retrieval of specific rocks of volcanoes. Also included is a set of documents on the Cenozoic stratigraphy and geologic history of Japan that has not been distributed to the public so far, even though earnestly desired for years, can now be downloaded from this site at no cost. Originally, these were supposed to be used by experts, but are now accepted more extensively. “Quaternary volcanoes in Japan” is especially noteworthy for ease of retrieval on the map, its beautiful photographs and simple



An output of Chokai volcano from the Quaternary volcanoes of Japan

explanations, and has been used for school education. “Igneous rocks in Japan” and “Metamorphic rocks in Japan” will be more familiar by including new photographs of rocks and outcrops. The database is described only in Japanese version at present. An English version will be issued in response to occasional overseas inquiries such as from the Smithsonian Institution.

## Brain image database

Neuroscience Research Institute

<http://www.aist.go.jp/RIODB/brain/welcome.html>

### Outline of the database

This database offers head and brain MRI images of two Japanese monkeys, a rhesus monkey, and a male adult human generated from scans obtained with 3 Tesla appa-



An example of human brain image

ratus at Tsukuba North MRI facility of AIST. As for one Japanese monkey, images at three-months intervals starting from 307 days after birth (still continuing) are shown.

### Features of the database

MRI images are a bundle of serial scans at a direction. To obtain section or surface images in different directions, dedicated software is usually necessary. With this database, an image-generating program is incorporated in the server. You can then see arbitrary sections, surface images and their combinations of Japanese monkeys, rhesus monkeys, and human beings with an ordinary Web browser. Determination of viewpoint or cutting plane is quite simple and plain with mouse operation of pointer, buttons and pull-down menus. As for one Japanese monkey, you can select the age at which it was scanned. This function allows you to see changes in the brain with growth. Spatial observation from arbitrary directions is possible, and changes over time are also examined. This is really a four-dimensional image database.

## Ceramic color database

Materials Research Institute for Sustainable Development (Chubu center)

<http://www.aist.go.jp/RIODB/ccdb/index.html>

### Outline of the database

Several hundred thousand glazed test pieces produced over 80 years of research in ceramic ware, from the establishment of the Imperial Ceramic Experimental Institute (1919), are stored at the Chubu center. From world-famous valuable specimens, those of greater importance are selected for incorporation into the database.

The following data are presented for individual pieces, and information retrieval is possible.

- Name of glaze (Traditional name, names of constituents and raw materials, names of color and properties)
- Firing temperature
- Firing atmosphere
- Color (Munsell)
- Surface condition
- Seger formula (Chemical composition)
- Coloration element
- Recipe
- Images

### Features of the database

High-level study results accumulated over a long period of ceramic ware research, which played a vital role in leading the Japanese ceramics industry, are compiled in the database. Glazes with colors or compositions not known so far to the public are included in a huge amount



reference number	glaze name 1 (traditional)	glaze name 2 (type)	glaze name 3 (surface,color)
01-06-00-11-07	Turquoise blue glaze	Tinted glaze	Blue glaze
firing temperature (Max/min Glaze)	firing type	Munsell color order system	surface appearance
1140	oxidation	L* 67 B* 8.7 a* 3.7	glossy
Seger formula			
K <sub>2</sub> O	Al <sub>2</sub> O <sub>3</sub>		
Li <sub>2</sub> O	SiO <sub>2</sub>		
Na <sub>2</sub> O	B <sub>2</sub> O <sub>3</sub>		
CaO			
SnO			

An example of data sheet (Turquoise blue glaze)

of test pieces. The construction of the database allows retrieval by parameters such as chemical composition or color, and browsing in list form.

This database can be conveniently used by companies, research staff and glaze-associated firms dealing with color development, design, glass and crystallization as well as ceramic ware. It is noteworthy that, recently, this database has been used effectively for the research and development of non-toxic, environment-friendly glazes.

## Network Database System for Thermophysical Property Data

Material Properties and Metrological Statistics Division, Metrology Institute of Japan  
<http://www.aist.go.jp/RIODB/TPDB/DBGV/support/English/>

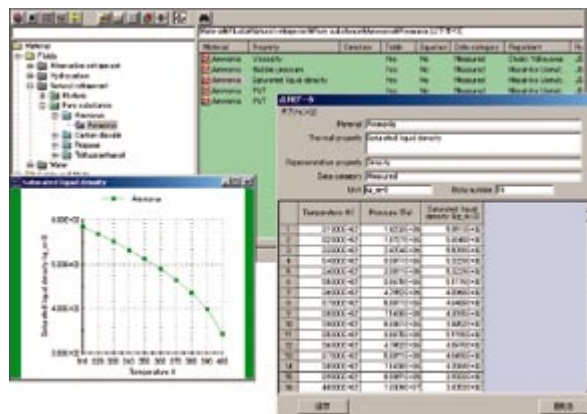
### Outline of the database

Thermophysical property data such as thermal conductivity, thermal diffusivity, specific heat capacity, thermal expansion coefficient and emissivity of materials are fundamental information in supporting science and technology. We are currently developing a “network database system for thermophysical property data” through which individual thermophysical property databases that are constructed and maintained by individual research laboratories can be referred to in a consolidated fashion.

Basic and functional materials including metals, ceramics, semi-conductors, polymers, carbon materials and fluids are primarily covered. Property data such as thermal conductivity, thermal diffusivity, specific heat capacity, thermal expansion coefficient, emissivity, density, viscosity, surface tension, electrical conductivity, and dielectric constants are stored. Recently, thermophysical property data of thin films and up-to-date data of boundary thermal resistance have been added.

### Features of the database

The thermophysical property data are displayed in graph form, so that they can be visually observed. By



Network database system for thermophysical property data

clicking the graph, detailed information such as numerical data and references can be obtained. Two or more plots of data can be displayed on the same graph by drag and drop manipulation. Data-to-data computation is possible for the items displayed in the graph. For example, thermal diffusivity is calculated from the thermal conductivity, specific heat capacity, and density.

## Relational Information System for Chemical Accidents Database (RISCAD)

Research Center for Explosion Safety

[http://www.aist.go.jp/RIODB/RISCAD/PHP\\_EN/index.php](http://www.aist.go.jp/RIODB/RISCAD/PHP_EN/index.php)

### Outline of the database

Relational Information System for Chemical Accidents Database is based on the accident data such as explosives, high pressure gas, chemical substance and chemical plants of related accident data which have been accumulated in the AIST, and has developed in collaboration by AIST and the Japan Science and Technology Agency (JST) as the Database Development Program of JST. It holds the chemical accident records from 1949 and it has been updated from time to time. The number of the records is 4,164 as of June 2004.

### Features of the database

The feature of RISCAD is that the accident data is linked relationally with the additional information such as the accident progress flowcharts, hazard information of related chemical substances and the chemical progress flowcharts which are organized in chronological order. To be more serviceable for prevention of the accidents, it is available to search by date, time, place of the accident occurrence like the common accident database. It also has the keyword search function from the final event, activity, equipment, probable causes, and damage conditions classified by experts in the chemical accident analysis.



Relational Information System for Chemical Accidents Database

Furthermore, searching by human damage such as number of fatalities, injuries, the classification of related chemical substances and explosives is available. The search results can be displayed as a list, then the details of the accidents, the additional information, and the hazard information of related substances can be displayed as well. Additionally, the search results can be shown dynamically as a graph on the Web browser. And the search function to get the hazard information from the name of the chemical substance has been newly added.