Now available on-line—CINDAS Cryogenic and Low Temperatures Database (CLTD)

The CLTD web-based database, released in May 2021, was developed based on suggestions and input from current customers. It offers material characteristics in the cryogenic and low temperature ranges. It consists of thermophysical, mechanical, electrical and other properties of over 2,000 materials in the temperature range from 0 K to 273 K.

The user friendly interface enables CLTD subscribers to quickly select and compare the attributes of the alloys and other materials for which they are looking.

CLTD Users

Universities	Course Material Aid
Technical Schools	Project Reference & Guide
Government Agencies	New Material Research
Aerospace Industry	Turbine Design
Automotive Industry	Developing Engines & Frame
Industrial Suppliers	Manufacturing/Machinery
Research Corporations	Research & Development

And many others...

About the Data

Initial data is from both NIST data resources as well as CINDAS data. More data will be added as it becomes available. This is an optimal source for cryogenic and low temperature data.

Search and Browse the Cryogenic and Low Temperatures Database by

Material Group
(Alloys, Ceramics, Compounds, Elements, Mixtures, Oxides, etc.)
Material Name
(Al+Mg, Boron Nitride, CaSiO, Helium, BrF, CdO, etc.)
Property Group
(Mechanical, Thermophysical, Thermoradiative, etc.)
Property Name
(Density, Thermal Expansion, Thermal Conductivity, Specific Heat, etc.)

Property Groups

The CLTD contains approximately 250 different properties. The majority are thermophysical and mechanical properties. These properties are separated into 14 easy-to-navigate property groups. Alternatively, you can search the property names by using keywords which would bring you directly to the property you're interested in.

Thermophysical

Thermoradiative

Electrical and Nuclear

Mechanical Properties

> Modulus, Strength, Stress, Hardness, Fatigue, Crack Growth, Impact Energy, Strain, Area Reduction, Deformation and others

Plus others...

Searching and Browsing:
Cryogenic and Low Temperatures Database (CLTD)
Finding Information

Search: Enter the full or partial name of the property or material.

Browse: Use the drop-down menu to find the property or material.

The Cryogenic and Low Temperatures Database contains 2,019 materials in 54 material groups and 247 properties in 14 property groups.

Customizing Information

Select: The independent variable.

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Viewing Information

The CLTD allows the user to view a property of multiple materials on one graph.

Step 1: Select Materials.

Step 2: Select Data Curves or Test Conditions.

Note: At any time, the user can click on the "Show Text" button to see the values of the data points, text description, references, etc.

Select Materials ?

Select one or more materials from the list below. Hold the control key to select multiple materials. Available data curves will be displayed on the right. Then proceed to Step 2.
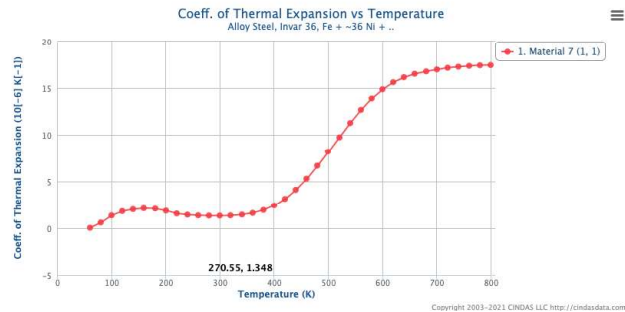
```
M3: A Graphite, C
M4: Al(2)Au Intermetallic
M5: Al + Cu Alloys
M6: Al + Cu + .. Alloys
M7: Alloy Steel, Invar 36, Fe + ~36 Ni + ..
```
(Listing 402 materials)

Select Data Curves/Test Conditions ?

Select between one and twenty data curve descriptions from the list below to view graphs. Hold the Control key to select multiple data curves.
Key: Selected Material: (Set, Curve) - Remarks

```
1. M7 (1, 1) - C1: calculated values
2. M7 (2, 1) - C1: Bal. Fe, 36 Ni, 0.003 C, Annealed and quenched
3. M7 (2, 2) - C2: Similar to the above specimen
4. M7 (2, 3) - C3: Similar to the above specimen
5. M7 (2, 4) - C4: Similar to the above specimen
```

Coeff. of Thermal Expansion vs Temperature
Alloy Steel, Invar 36, Fe + ~36 Ni + ..

270.55, 1.348

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Learn how to use advanced features in the **Help** section.

Results: Graphic and Numeric

- 23,285 data curves

- Color-coded data curves

- Multiple curves of different materials per graph

- Hovering cursor to show X and Y values of each data point

- Unit conversion package
  - Contains both English and SI units
  - Shows all typically used units for the variables
  - Allows both X-axis and Y-axis selection

Select Materials ?

Select one or more materials from the list below. Hold the control key to select multiple materials. Available data curves will be displayed on the right. Then proceed to Step 2.
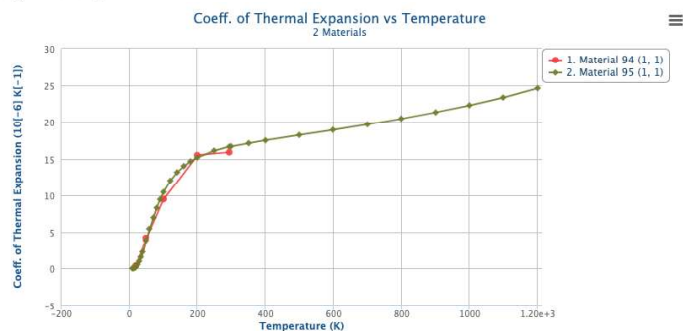
```
M90: Copper Alloy, Russian Alloy BrOF 10-1, Cu + Sn + ..
M91: Copper Alloy, Russian Alloy M2, Cu + Ni
M92: Copper Alloy, Russian Alloys, Cu + Al + ..
M93: Copper Alloy, Russian Alloys, Cu + Zn + ..
M94: Copper + Beryllium + .. Alloys, Cu + Be + ..
```
(Listing 402 materials)

Select Data Curves/Test Conditions ?

Select between one and twenty data curve descriptions from the list below to view graphs. Hold the Control key to select multiple data curves.
Key: Selected Material: (Set, Curve) - Remarks

```
1. M94 (1, 1) - Cu + 2 Be + 0.5 Others, Provisional Values from CINDAS
2. M95 (1, 1) - C1: CINDAS evaluated data
3. M95 (2, 1) - cold drawn; vac ann for 4 hr at 573 K; ref temp = 19.9 K
4. M95 (3, 1) - ann at 770 K for several hr; reference temp = 60 K
5. M95 (4, 1) - Grade 1 copper, total metallic impurity level of less than 10 ppm
```

Coeff. of Thermal Expansion vs Temperature
2 Materials

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Show Text

Within the Cryogenic and Low Temperatures Database, you can show the graph and text associated with it.

We Are Confident in Our Products

The CINDAS LLC databases are quick, efficient, and frequently updated, and are currently used by a growing list of universities, corporations and research facilities. Please visit www.cindasdata.com for a demo.

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