

## Now available on-line—CINDAS Microelectronics Packaging Materials Database (MPMD)

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The Microelectronics Packaging Materials Database (MPMD) is a searchable, browsable on-line database that contains data about thermal, mechanical, electrical and physical properties of microelectronics packaging materials. The MPMD database contains 1,080 materials, 405 properties and contains approximately 23,400 data curves.

The MPMD was developed under the sponsorship of the Semiconductor Research Corporation (SRC). The results of this research program were originally available only to SRC members. Now they are available to engineers and scientists worldwide.

## Search and Browse the Microelectronics Packaging Materials Data- base by

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Material Group

(Adhesives, Ceramics, Unfilled Epoxies, Semiconductors, etc.)

Material Name

(Silver-Filled Epoxy, Iron Aluminides Intermetallics, Germanium, etc.)

Property Group

(Electrical, Mechanical, Thermophysical, Optical, etc.)

Property Name

(Dielectric Constant, Leakage Conductance, Elastic Modulus, etc.)

## Access

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Costs of subscriptions to the CINDAS databases depend on the number of locations and the number of potential users at each location. Once subscribed, engineers, librarians, researchers, and scientists all have unlimited access to the databases by IP address/ranges.

## Interface Tools

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Save – data for further analysis.

Copy – graphs with ease into PowerPoint.

Project and Manipulate – the database content live.

## Interface Features

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Find – material group or property group by browsing, or material name or property name by searching.

View – the effects on a given property with changes in temperature or other independent variable.

Compare – multiple data curves of different materials on a single graph.

References – are available for every graph and description in the show text feature.

## Complete Packages

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The most complete package for research and applications includes:

ASMD – Aerospace Structural Metals Database

HPAD – High Performance Alloys Database

AHAD – Aerospace and High Performance Alloys Database

TPMD – Thermophysical Properties of Matter Database

MPMD – Microelectronics Packaging Materials Database

The CINDAS databases give the composition and describe the test conditions of each material. They also present specific conditions for each desired material plotted on a graph.

Learn more at <https://cindasdata.com/resources>

## Searching and Browsing: Microelectronics Packaging Materials Database (MPMD) 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 Microelectronics Packaging Materials Database contains 1,080 materials in 25 material groups and 405 properties in 13 property groups.*

MPMD (version 8, data updated 2010.4) [Start Over](#) | [Help](#)

**Browse By:**  
Material Group  
[Dropdown menu]

or  
Property Group  
[Dropdown menu]

**Search By:**  
Material Name  
[Text input]   
e.g., ni inco, nickel incoy

or  
Property Name  
[Text input]   
e.g., electric, electric resistivity

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Select Property Group: Mechanical Properties - Stress

(13 property groups)

Select Property Name: [Dropdown menu]

- Biaxial Stress
- Biaxial Stress, Yield
- Compressive Lower Yield Stress
- Compressive Stress
- Compressive Stress in Pa
- Compressive Stress, True
- Critical Resolved Shear Stress
- Cure Stress
- Elastic Flexural Limit
- Film Stress
- Flexural Stress
- Flow Stress
- In Plane Shear Stress
- Residual Stress
- Rupture Stress, Normalized to F(T,U)
- Shear Stress
- Shear Stress in Pa
- Shear Stress, Resolved
- Stress Relaxation
- Tensile Flow Stress
- Tensile Stress
- Tensile Stress in Pa
- Tensile Stress, True
- Tensile Stress, True in Pa
- Tensile Upper Yield Stress
- Thermal Stress
- Transverse Rupture Stress

## Customizing Information

Select: The independent variable.

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Select Property Group: Mechanical Properties - Stress  
(13 property groups)

Select Property Name: Biaxial Stress  
(27 properties)

Property Range  
Biaxial Stress (MPa) -156.37 - 5488.0

Select an Independent Variable, and then click the Show Graph or Show Text button.

Independent Variable	Minimum	Maximum
<input checked="" type="radio"/> Annealing Temperature (K)	230.4	1538.0
<input checked="" type="radio"/> Film Thickness (micron)	0.04	0.45
<input checked="" type="radio"/> Temperature (K)	238.16	769.6

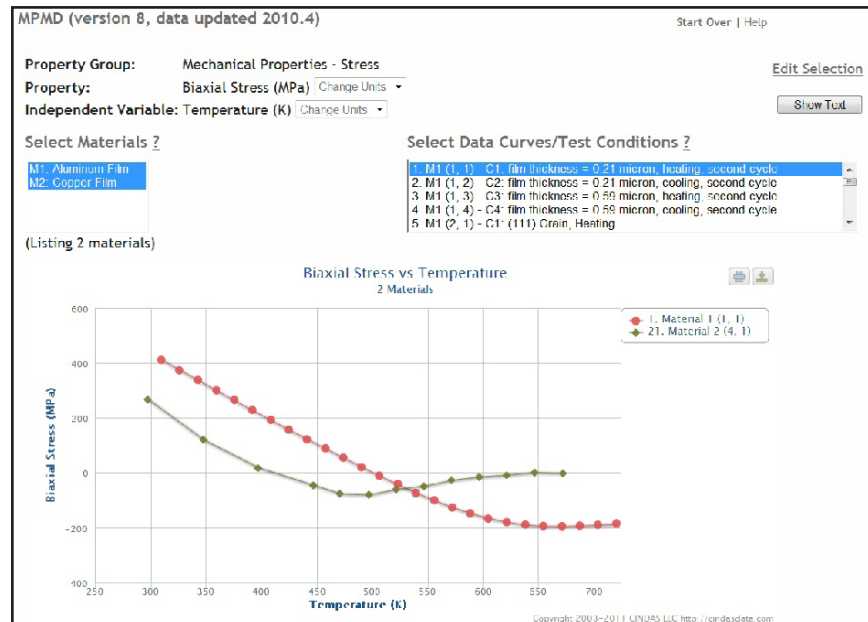
## Viewing Information

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

Step 1: Select Materials.

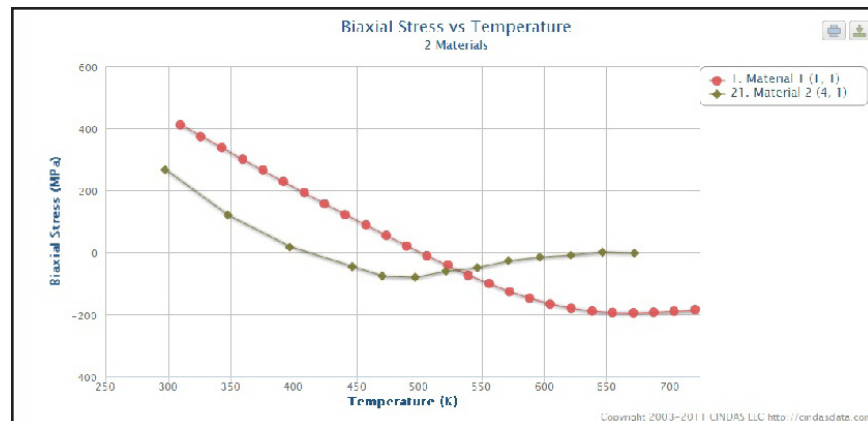
Step 2: Select Data Curves or Test Conditions.

*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.*



## Results: Graphic and Numeric

- Approximately 23,400 data curves
- Color-coded data curves
- Multiple curves of different materials per graph
- Hovering cursor to show X and Y values at 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



## Material Groups

The MPMD has 1,080 materials classified into 25 material groups. The MPMD can be searched by material or property name. If the full name is used to search, the search will bring the user directly to that material. If a partial name is used, the search will return the closest matches.

Material Groups	Number
Adhesives	30
Ceramics - High K Oxides	33
Ceramics - Nitrides, Silicides, Carbides,...	30
Ceramics - Others	19
Ceramics - Oxides	34
Cermets	3
Coating and Unfilled Epoxies	25
Composites - Laminates	156
Composites - Laminates (Glass/Epoxy)	75
Composites - Others	60
Composites - Thermal Management	47
Compounds, Molding	55
Elements	33
Encapsulants and Underfill Materials	26
Intermetallics, Aluminides	66
Intermetallics, Beryllides	35
Intermetallics, Miscellaneous	50
Intermetallics, Silicides	30
Liquids & Gases	5
Metal Alloys	50
Polymers - Others	23
Polymers - Polyimides	54
Semiconductors & Optical/Sensor Materials	43
Solders - Lead Free	57
Solders - Lead	41

## Property Groups

The MPMD contains 405 different properties. These properties are separated into 13 easy-to-navigate property groups. Alternatively, you can search the property names by using keywords which would bring you directly to the property you are seeking.

Property Type	Number
Thermophysical	39
Thermoradiative	10
Electrical	40
Mechanical: Creep	7
Mechanical: Fatigue	9
Mechanical: Hardness	9
Mechanical: Modulus	52
Mechanical: Strain	40
Mechanical: Strength	44
Mechanical: Stress	29
Mechanical: Others	41
Optical	20
Other	63

## We Are Confident in Our Products

The MPMD is quick, efficient, and frequently updated, and is currently used by a growing list of universities, corporations and research facilities. Please visit [www.cindasdata.com](http://www.cindasdata.com) for a demo.