

HITACHI
Inspire the Next

NEXTADSC

VISIBLY BETTER

The image shows a scientist in a white lab coat interacting with a computer monitor. The monitor displays a software interface for thermal analysis. A window titled 'RealView' shows a live camera feed of a sample inside a DSC pan. The main window shows a graph of heat flow versus temperature, with a green curve representing the data. The x-axis is labeled 'Temp. °C' and ranges from 100 to 2200. The y-axis ranges from -2500 to -1500. Below the monitor, two Hitachi DSC instruments are shown. The background features a geometric pattern.

THERMAL ANALYSIS

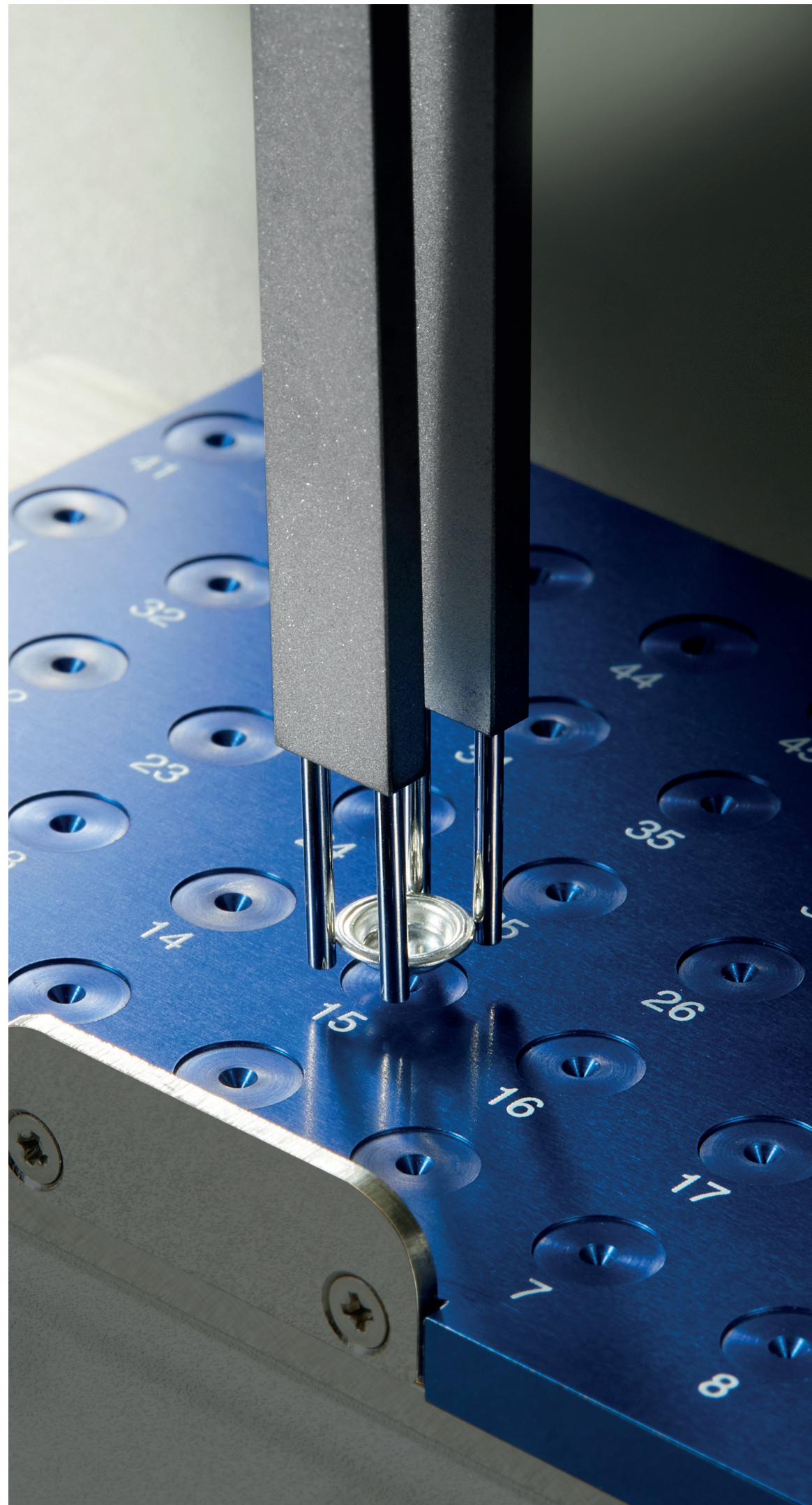
Seeing is believing

Differential scanning calorimetry is an established and trusted method for material characterization. Today's advanced material development and quality control call for DSC instruments with the ability to detect and resolve thermal events in trace amounts of material within complex compounds. Hitachi's NEXTA DSC range has been developed to deliver the world-class sensitivity and baseline repeatability needed to prevent important thermal events from being lost in the noise.

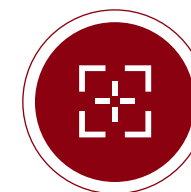
There are two models in the range:

- | The DSC600, which offers uncompromised DSC analysis with ultimate sensitivity and resolution making it perfect for advanced materials development and failure analysis
- | The DSC200 which offers leading technology for routine applications without limitations and is ideal for a wide range of applications, including product shipping and receipt inspections, quality assurance and quality control

While performance is core to the NEXTA DSC, intuitive controlling software, a dual cooling system and Hitachi's innovative RealView option make this range a real asset to materials development labs and quality control departments in a range of industries, including electronics, automotive and aerospace, consumer goods, academia and pharmaceuticals.



World-class performance for advanced applications



WORLD-CLASS SENSITIVITY

New sensor and furnace designs deliver low-noise, high-sensitivity and excellent resolution to detect the smallest thermal events that could otherwise be lost in the noise.



SUPERIOR BASELINE REPEATABILITY

A baseline repeatability of $\pm 5 \mu\text{W}$, thanks to innovative furnace technologies, means you get results you can trust, time after time.



VERSATILE AND ADVANCED

The NEXTA DSC instruments are delivered with all software modules as standard, including more advanced DSC techniques, giving excellent value for money.



EASY TO USE

Powerful and advanced capability, packaged with features like dual cooling and intuitive software, ensures measurements are easy to make and simple to share with others.



SAFETY BUILT-IN

Built-in safety features, including an automated furnace cover with safety sensor, fans to ensure the outside doesn't get too hot and an anti-overheating mechanism, safeguard operators when using the instrument.



APPLICATION-SPECIFIC OPTIONS

Data analysis, record keeping, troubleshooting and reporting are all made easy with the DSC easy report creation. This both saves you time and allows you to easily share clear results that are ready to use.



PROVEN EXPERTISE

For over 45 years, Hitachi High-Tech has pioneered the use of high-performance and reliable analyzers for volume production use and has developed a full range of analytical instruments.

Choose the NEXTA DSC for your application

The advanced DSC600 model is designed for material development laboratories, whereas the standard DSC200 model is ideal for quality control.

Model	DSC600	DSC200
Temperature range	-150°C ~ 725°C	
DSC dynamic range	±100 mW	±200 mW
RMS noise / sensitivity	0.05 µW / 0.1 µW	0.1 µW/ 0.2 µW
Time constant (resolution)	<3.0 seconds or <1.1 second with the enhanced peak function activated	<6.5 seconds or <5.0 second with the enhanced peak function activated
Baseline repeatability	±5 µW	
Programmable rate	0.01°C ~ 100°C / min	
Purge gas control	Mass flow controller, 2 lines for air and inert gas	
Cooling options	Dual cooling capability included as standard (options for air cooling, electrical cooling and liquid Nitrogen)	
RealView	RealView ready (-50°C ~ 300°C)	

Available options

AUTO-SAMPLER WITH AUTOMATED SAFETY LID

The auto-sampler option allows for automatic analysis of up to 50 samples at once. The new auto-sampler is 2.8x faster than the previous version. This is especially useful in high-throughput situations and means the operator can work on other activities while analysis is taking place. The unique four-finger holder design deftly handles your samples, moving them into position quickly and reliably. And the included automated lid will only open once the instrument has cooled sufficiently.

SAMPLE PAN SEALER

There are two options for sealing your samples. There is a manual sample pan sealer and also an automated sample pan sealer that speeds up the sample pan preparation. The automated sample sealer ensures your samples are prepared correctly for analysis every time, regardless of the operator, improving the repeatability of your results.

UV CURING UNIT

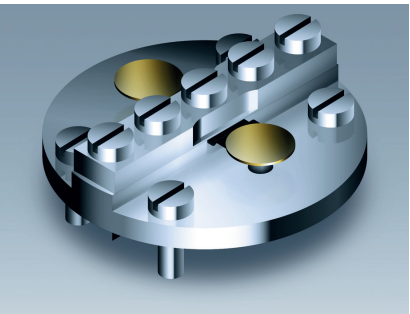
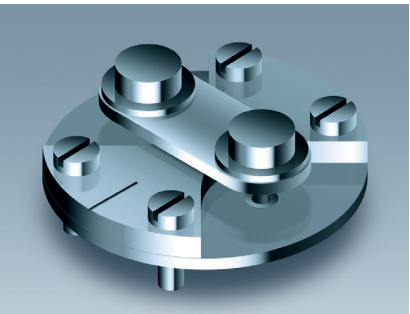
This unit allows you to easily optimize your UV curing process. Firstly, you can measure the heat generated by the exothermic UV reaction and how long the UV curing process takes under varying irradiation levels. You can then run a standard DSC scan to see how the material properties have changed after curing. With a high-output UV light source and wavelength-selective filters, this allows you to fine-tune your UV processes.

The technology behind world-class performance

These are the main technological developments behind the world-class performance of the NEXTA DSC range.

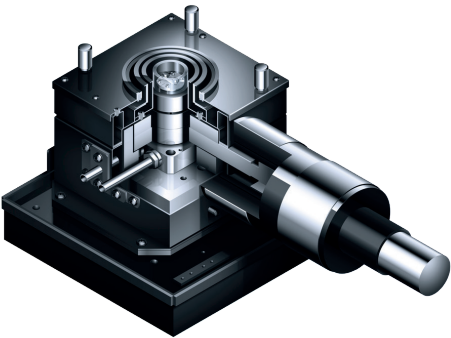
UNIQUE SENSOR DESIGN FOR IMPROVED BASELINE REPEATABILITY, SENSITIVITY AND RESOLUTION

The sensors within the two models differ slightly. The DSC600 includes a proprietary thermopile-type sensor with three thermocouples for sample and reference positions, that achieves a sensitivity of 0.1 µW or better. The DSC600 also delivers the higher resolution of the two models, with a time constant down to one second with enhanced peak function activated meaning that there is no tradeoff between sensitivity and resolution. This ability to detect thermal transitions within minute levels of material is what makes the DSC600 ideal for new material development and failure analysis investigations. The sensor within the DSC200 has also been redesigned with a new holder to improve calorimetric and temperature precision. With a sensitivity of 0.2 µW and a time constant down to five seconds with enhanced peak function activated, the DSC200 is able to resolve minute thermal processes within complex materials, such as polymers. Both sensors benefit from an advanced heat-flow centric design, which helps with repeatability and stability.



INNOVATIVE FURNACE DESIGN INCLUDING DUAL COOLING SYSTEM

In both the NEXTA DSC600 and NEXTA DSC200, the furnace has been completely reconfigured with low heat-capacity, triple layer insulation to improve baseline reproducibility. This, together with the sensor innovation, gives a baseline repeatability of ±5 µW. The furnace also allows for a dual cooling system which eliminates the need for manual switching of the cooling system and allows for a simple post-sale upgrade if your requirements change. Both LN2 and electrical cooling systems can be connected to the instrument at the same time, allowing for easy switching between the two. This is useful when analyzing materials such as rubber and elastomer that have phase transitions below -100°C. You simply select the temperature range and the software chooses the cooling system automatically.



GET MORE FROM YOUR NEXTA DSC WITH REALVIEW

Our optional innovative RealView camera system allows you to see the changes in your sample in real time down to a temperature of -50°C. The high-resolution images collected are linked to precise temperature and time measurement data which are saved so you can review at any time. Using the NEXTA TA software, you can quantify the colors using LAB, CMYK and RGB standards. Seeing what happens to your sample in real time is invaluable when researching new materials, troubleshooting or understanding unexpected behavior.

Powerful technology made easy-to-use with NEXTA TA software

We've developed the NEXTA TA software to accommodate different user levels. A guidance function will walk non-experts through a measurement and calibration aligned with standard test methods (such as JIS, ISO, ASTM), or your own customized test methods which can be easily programmed into the software. Take routine measurements at speed by setting up common measurement conditions in advance that users can quickly select for analysis.

However, the NEXTA DSC can be used for more advanced analysis too. This is useful for troubleshooting in production and evaluating the behavior of novel materials before they go into manufacturing.

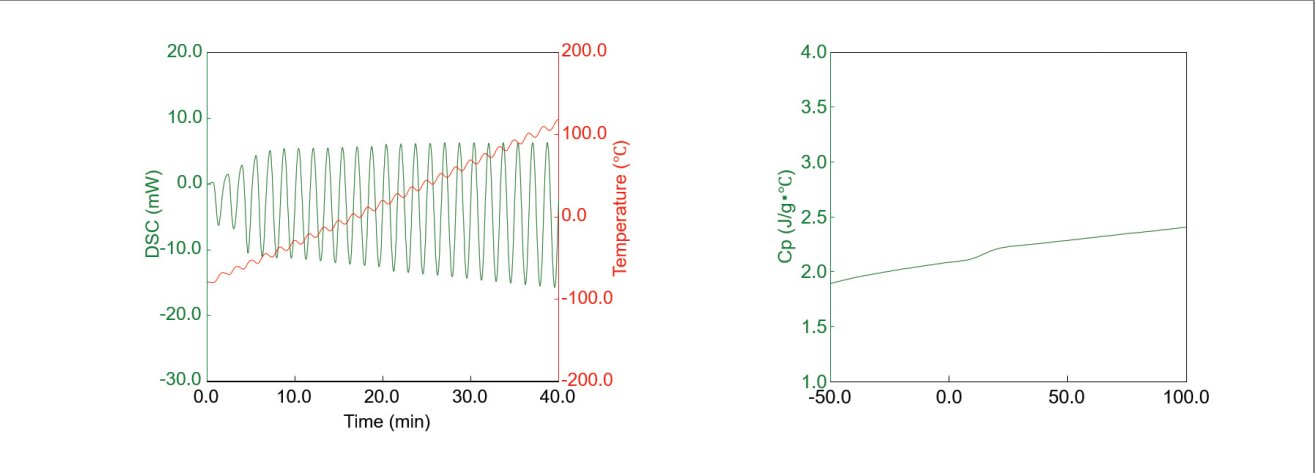
An example of this is temperature modulated DSC. This is an advanced analysis technique that applies an oscillating temperature profile where the average temperature increases over time. This simplifies specific heat capacity (Cp) determination and makes it easy to isolate thermal events that happen at the same temperature.

The temperature modulated DSC signal contains reversing heat flow information (glass transition and melting) and non-reversing heat flow information

(enthalpy relaxation, curing, evaporation, decomposition etc). As the results separate the non-reversing and reversing types of measurement, you can easily separate different thermal events, such as evaporation events.



Output from modulated DSC analysis



The output from modulated DSC converts the heat flow into three components and gives accurate specific heat capacity analysis.

Our Service

Hitachi High-Tech's global network of service hubs offers a full range of technical support to keep you up and running:



TELEPHONE HELP DESKS

Whenever you have a problem, we're ready to help.



ONLINE DIAGNOSTICS

In-depth and rapid support via our website.



TRAINING

To help you get the most out of your analyzer and its full range of features.



EXTENDED WARRANTIES

To give you extra peace of mind and avoid unplanned costs.



REPAIR SERVICE

We offer a fast and efficient repair service, recertification and maintenance through our service agreements to ensure your analyzer is maintained in excellent condition and avoids any unplanned costs.



What next?

Contact one of our experts today at contact@hitachi-hightech.com to discuss which analyzer within the DSC range best suits your production or research application.

MORE INFORMATION

To find out more about the DSC range, visit hhtas.net/DSC



Other products

We have been providing materials characterization instruments to a wide range of industries for over 45 years.

- | Thermal Analysis: We offer a range of other thermal analysis instruments including STA, DMA and TMA. All of which work on the NEXTA TA software platform allowing continuity across your analysis without extra training.
- | Bulk XRF: for rapid and powerful elemental analysis for a wide range of applications.
- | Microspot coatings XRF: for precise analysis of the smallest samples and features.

Hitachi High-Tech Analytical Science

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Science for
a better tomorrow