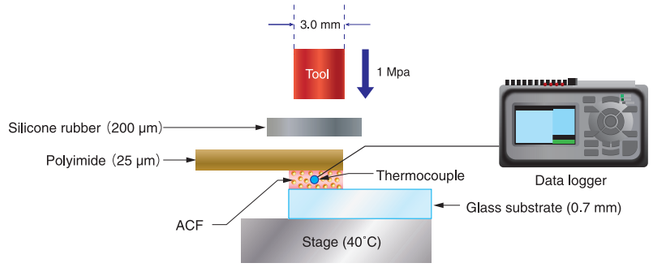
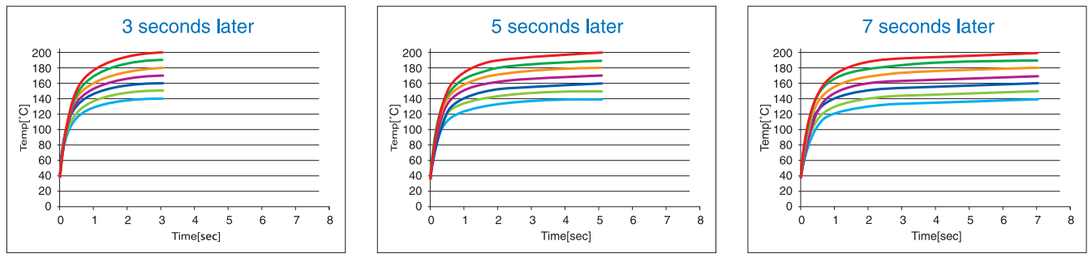
Example 2 Management and Analysis of Calorific Value during the ACF Attachment Process

STEP-1 Measuring the temperature profile

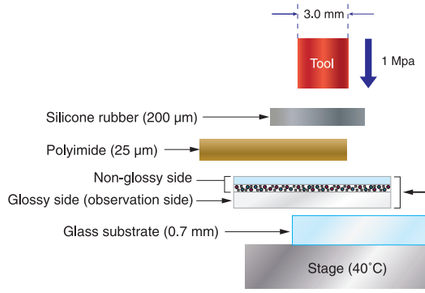


Measure the temperature profile as shown in the left figure.

* The charts below show the temperature profile inside the AFC between the adhering substances (polyimide and glass substrate).



STEP-2 Creating color samples for THERMOSCALE



THERMOSCALE (90 μm)

◎ Place THERMOSCALE instead of a combination of ACF and a thermocouple in the configuration for STEP-1.

◎ Place THERMOSCALE so that the non-glossy side faces the heat source side.

Create a color sample for each temperature profile using THERMOSCALE 200C.

Examples of Color Patterns on THERMOSCALE 200C for Each Temperature Profile

Time to reach / Reached temperature	140˚C	150˚C	160˚C	170˚C	180˚C	190˚C	200˚C
3 seconds later							
5 seconds later							
7 seconds later							

* The colors may differ from the actual sample colors from those in a printout of this PDF proposal data made at your facility. *Note: The above sample colors were produced by Fujifilm under test conditions. Calibration must be performed under actual usage conditions to verify temperature correspondence.
* Use THERMOSCALE at the recommended room temperature (15˚C–30˚C) and humidity (35%RH–80%RH).

Data provided by courtesy of Dexerials Corporation.

Benefits of THERMOSCALE

The time to check the calorific value can be significantly reduced before starting work or when switching the implementation target by creating color samples in advance.

Contact:
FUJIFILM
Fujifilm Corporation

(Contact about ACF)
Dexerials Corporation
http://www.dexerials.jp

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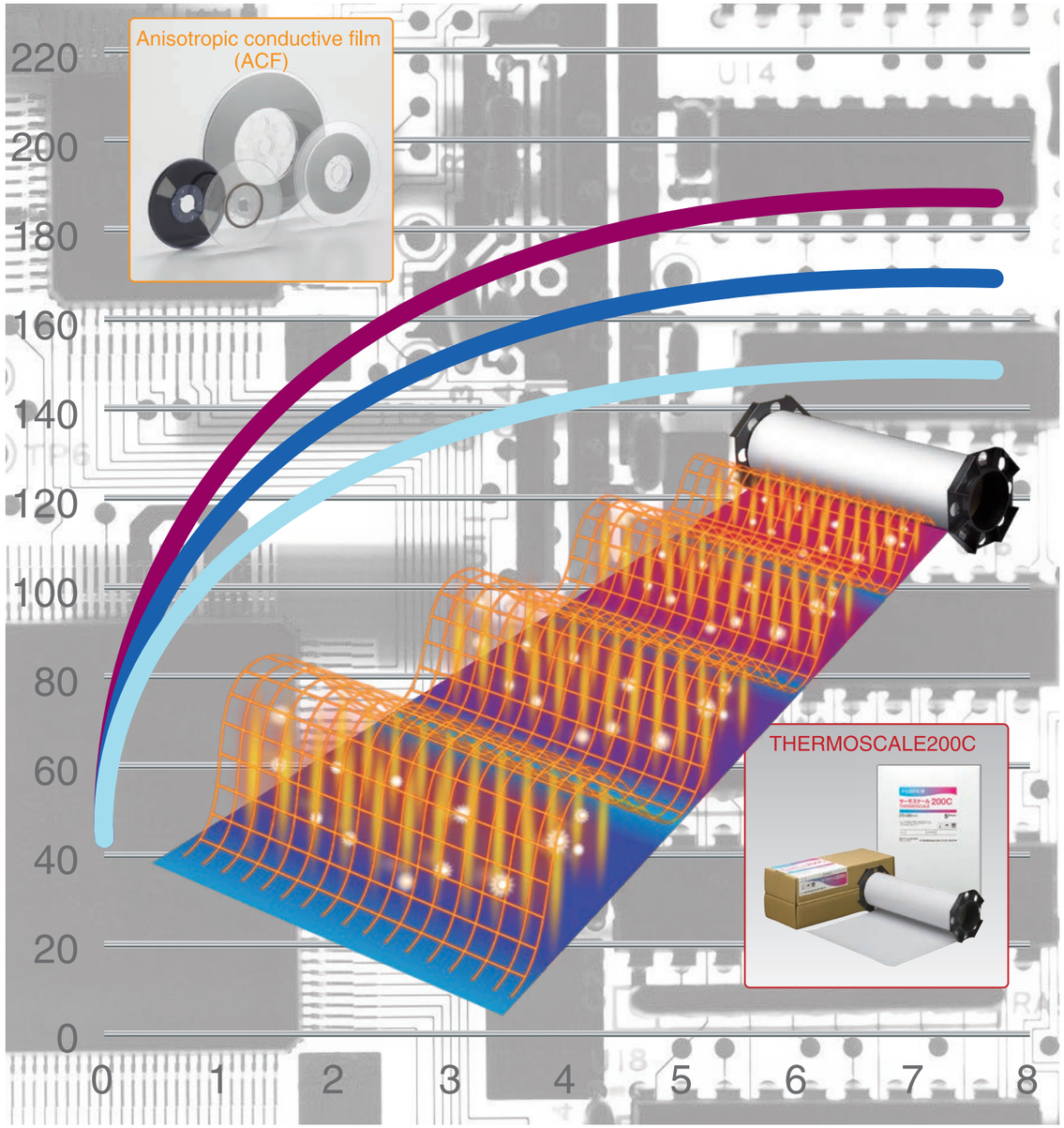
FUJIFILM

THERMOSCALE

Utilizing THERMOSCALE when Attaching the Anisotropic Conductive Film (ACF)

Proposal Ver.1



Fujifilm Corporation

THERMOSCALE Benefits

THERMOSCALE 200C, which can visualize heat distribution, allows you to specify facility conditions for the anisotropic conductive film (ACF)* attachment process or to analyze attachment failure, so contributing to quality management.

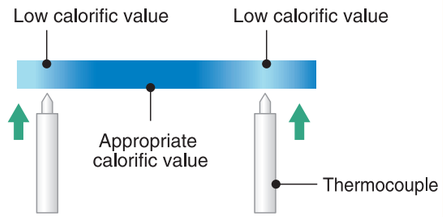
* Anisotropic conductive film (ACF) is abbreviated as ACF below.

Purposes

◎ Identify calorific value distribution in the ACF attachment section.

◎ Reduce the time to check the calorific value in the ACF attachment section.

	Thermocouple	THERMOSCALE
Measurement area	Points	Distribution
Setting	Time-consuming	Easy
Measurement point check	Time-consuming	Easy
Temperature	Quantified	Only a relative comparison using changes in color



Application Examples

❶ Verification of board design and analysis of attachment failure

➡ **Identify cold areas in the ACF attachment section.**

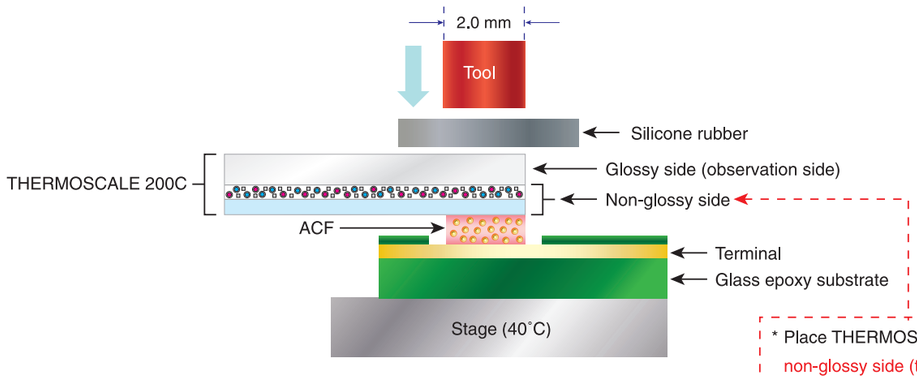
❷ Management and analysis of calorific value at the ACF attachment process

➡ **Quickly investigate the calorific value in the ACF attachment section before starting work.**

Example 1 Verification of Board Design and Analysis of Attachment Failure　Example of Measuring Calorific Value Distribution on the Film On Board (FPC/PWB)

STEP-1 Visualizing cold areas at the PWB terminal

Laminate the ACF onto the attachment area of the PWB, and after temporarily securing them in such a way that the non-glossy side* of THERMOSCALE touches the ACF, carry out thermocompression bonding.



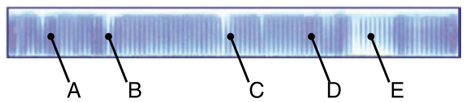
Thermocompression bonding method for checks of temperature unevenness

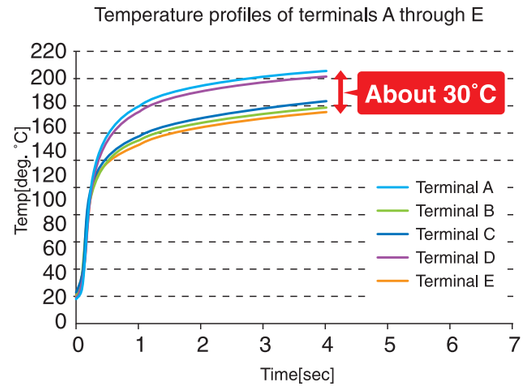
* Place THERMOSCALE with the non-glossy side (the ACF side) face down in order that the color patterns may be easily seen.

After thermocompression bonding, identify cold areas at the PWB terminal by checking color differences on THERMOSCALE.

Color pattern result on THERMOSCALE

STEP-2 Checking the actual temperature of cold areas using the thermocouple





A temperature difference of about 30˚C was measured between the deep-colored and light-colored areas on THERMOSCALE.

■ Benefits of THERMOSCALE

1. **Cold areas can be reliably found in a short period of time without having to install thermocouples at several points.**
2. **Because the temperature can be specified for cold areas after checking the resulting colors on THERMOSCALE, unsuccessful attachments due to unexpectedly insufficient ACF hardening can be avoided.**