

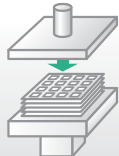
Pressure Measurement Film

# PRESCALE

Application Examples

[No.16]

## Measured Object



Stacking or laminating machines for multilayer ceramic devices

## Uses

Checking mold contact in stacking or laminating machines

Checking pressure uniformity in stacking or laminating machines

## Benefits

Higher yield of molded parts

Higher quality

Defect analysis

## Industry

**Manufacture of multilayer ceramic condensers, ceramic substrates and packages, PCBs, electronic components for automobiles and mobile phones**

## Applications

**Checking mold contact evenness and pressure uniformity of laminating or stacking machines**

## Challenges

Multilayer ceramic devices are manufactured by overlaying numerous paste-covered green sheets on which electrodes are printed, and then contact bonding the sheets together using a stacking machine. This process requires extremely high precision, to avoid changes in electrical characteristics due to problems of poor adhesion or non-uniform thickness, and to avoid electrical connection failures due to displacement of the electrode pattern. In addition, when the sheets are thin, non-contact areas tend to occur during stacking, making it necessary to check the mold contact even more stringently. Furthermore, as multilayer products become larger and larger over time, ensuring a uniform pressure balance is increasingly difficult. For this reason, adjusting the displacement and inclination of the stacking machine molds to ensure a uniform pressure balance before sheet stacking, has become an issue of the highest priority.

## Measurement

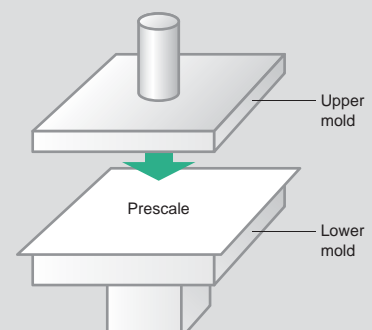
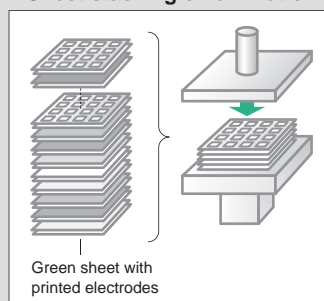
**Product used: (Super Low Pressure LLW, Low Pressure LW, Medium Pressure MW & MS)**

■ Laminating machine



Hi-stacker Dry Laminator II  
\* Photo courtesy of NIKKISO Co., Ltd.

### Sheet stacking or lamination



- (1) When switching product type / when performing a routine check / when a defect occurs, insert a piece of Prescale, cut to the appropriate size, between the molds of the stacking machine.
- (2) Check the evenness of the Prescale's coloring to determine whether the pressure applied to the molds is uniform, whether there is any displacement or inclination, or uneven pressure between the molds.
- (3) If there is uneven pressure, adjust the machine and then insert another piece of Prescale to check the pressure balance once again.

## Results (images)

### [Not Good]

Mold contact is biased to one side.



The contact at the center of the mold is weak.



### [Good]

The pressure is applied uniformly over the mold.



## Benefits of Prescale

- Higher yield, higher quality, and higher precision
- Less time needed to analyze defects
- Less deviation between individual products

### Without using Prescale

Stacking mold contact cannot be checked or adjusted, **resulting in lower yield and higher deviation between individual products**. In addition, **analysis is time-consuming when a defect occurs**.

### With Prescale

Stacking mold contact can be checked and adjusted, **resulting in higher yield and less deviation between individual products**. In addition, **less time is required for analysis when a defect occurs**.

\*Note that the specifications and performance data described in this catalog are subject to change without notice for the purpose of improvement. Since the images provided are used for illustration purposes, they may differ slightly from actual products.

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<http://www.fujifilm.com/products/prescale/>

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