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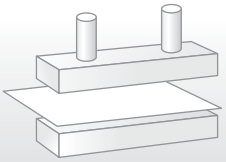
PRESCALE

Pressure Measurement Film

PRESCALE Application Examples [No.23]

Measured Object



Heat sealing for lithium ion batteries

Uses

Preparing bonding (heat sealing) equipment for sealing aluminum laminate films

Benefits

- Quality improvement
- Standardization of setting specifications

Industry

Lithium ion battery

Examples of relevant products

Smartphones
Tablet PCs

EVs
HEVs

Applications

To check the balance of the heat bar when bonding aluminum laminate films used in the manufacture of lithium polymer batteries

Challenges

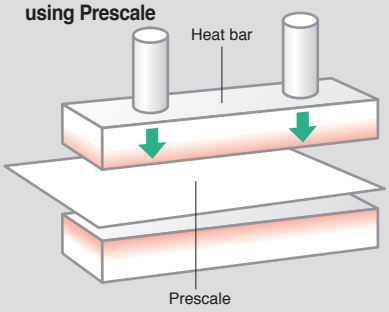
When sealing gelatinous electrolytes inside lithium polymer batteries, an aluminum laminate film is affixed to the casing exterior using heat bars that apply both pressure and heat. If the heat bar is improperly balanced during the bonding process, defective adhesion of the aluminum film may result, causing electrolyte leakage and personal injury risks. Therefore, checking heat bar balances is necessary when performing set-up of the heat sealing equipment.

Measure-ment

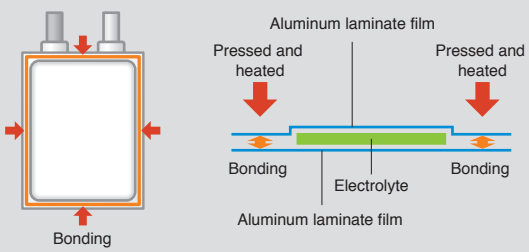
Product used: Prescale (Ultra Super Low Pressure LLLW, Super Low Pressure LLW)

After the gelatinous electrolyte is injected into the casing, pressure and heat is applied to the aluminum laminate film using heat bars to seal the casing. However, before the assembly line begins operation, a Prescale film is inserted between the heat bar and its base plate where heat/pressure is applied. The Prescale film pressure test result is compared to a standardized sample to determine the heat bar pressure balance. When the Prescale test result indicates the pressure balance is unacceptable for achieving the desired seal, the heat bar is adjusted. The pressure test is then repeated until the acceptable standard is achieved.

■ Pressure distribution measurement using Prescale



■ Lithium polymer battery



Results (images)

[Defective]

The heat bar is not parallel and pressure is inconsistent across the base plate.

Pressure is high on the upper side

Pressure is high on the left side

[Acceptable]

The heat bar is parallel and pressure adjustment is optimal.

Benefits of Prescale

- **As seal quality improves, defects caused by improper pressure mounting during the heat sealing and pressure mounting process of aluminum laminate films are reduced.**
- **Standardized adjustment and settings of heat sealing and the pressure mounting equipment is achievable, significantly reducing line operator set-up time.**
- **Correlation of Prescale results with corrective actions taken by operators, maintenance teams or quality control assists in resolving heat sealing defects.**

Without using Prescale

There is an increased probability of defective adhesion when the heat bar pressure balance is not checked and/or adjusted.

With Prescale

The pressure balance can be quickly optimized and **quality improved**.

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

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

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