

PRESCALE

The only film that could measure the pressure visually by the color density

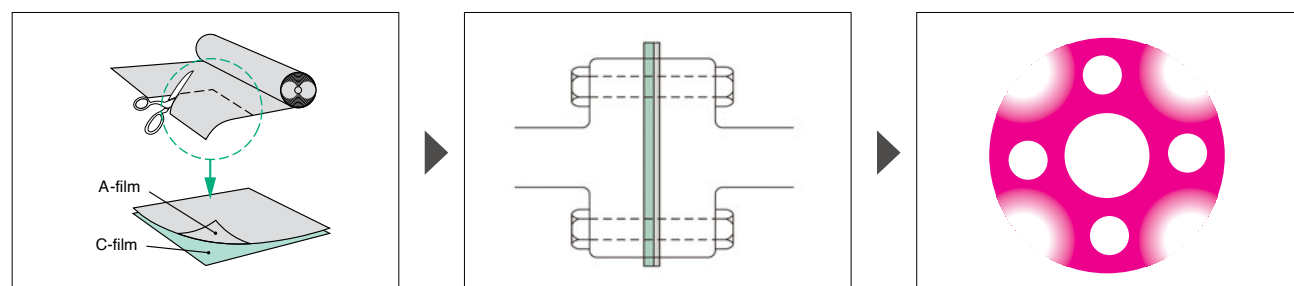


"Prescale" is a film that could easily measure the distribution and the amount of pressure. It was created by using the Fujifilm's advanced technology of coating a thin film and it visualizes the pressure distribution of the whole surface by changing its color to red according to the applied pressure. There are nine types of rolls so as to cover the wide range of pressure.

There is also a product "Presheet" in which the Prescale is cut into a sheet in advance.

How to Use

Just cut and insert the film to the surface you need to measure



(1) Cut the Prescale Film into the required shape. With the Two-sheet film, make sure the coated sides on A-Film and C-Film face each other.

(2) Insert cut Prescale Film into area to be measured and apply pressure.

(3) Remove film and observe pressure distribution.

Type of Prescale

There are 9 types of Prescale and 6 types of Presheet according to the pressure range. Please select the appropriate prescale.

Product (Code)	Pressure range [MPa] 1MPa≒10.2kgf/cm ²										Roll Type Product size W(mm)×L(m)	Sheet Type Product size W(mm)×L(mm)	Type
	0.006 0.87~7.3	0.05 7.25	0.2 29	0.5 73	0.6 87	2.5 363	10 1,450	50 7,250	130 18,850	300 43,500			
	Pressure range [psi] 1psi≒6895pa												
Super high pressure (HHS)											270 × 10	270 × 200 (5 sheets)	Mono-sheet
High pressure (HS)											270 × 10	270 × 200 (5 sheets)	Mono-sheet
Medium pressure (MS)											270 × 10	270 × 200 (5 sheets)	Mono-sheet
Medium pressure (MW)											270 × 10	—	Two-sheet
Low pressure (LW)											270 × 10	270 × 200 (5 sheets)	Two-sheet
Super low pressure (LLW)											270 × 6	270 × 200 (5 sheets)	Two-sheet
Ultra super low pressure (LLLW)											270 × 5	270 × 200 (5 sheets)	Two-sheet
Extreme low pressure (4LW)											320 × 3	—	Two-sheet
Ultra extreme low(5LW)											320 × 2	—	Two-sheet

Notes: W in the product codes indicates two-sheet type, S indicates mono-sheet type

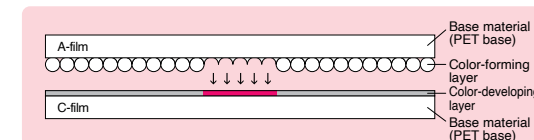
How It Works

Two-sheet type (5LW~MW)

Composed of two kinds of films: A-film and C-film

- **A-film:** Base material (PET base) coated with a color-forming material (microcapsules)
- **C-film:** Base material (PET base) coated with a color-developing material

The coated sides of each film (color-forming and color-developing) must face each other. These are the sides with the matt finish. When pressure is applied, the microcapsules are broken and the color-forming material transfers to the color-developing material and reacts, thereby generating a red color.

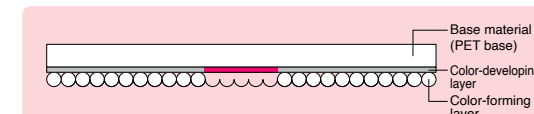


Mono-sheet type (MS~HHS)

Measurement is possible with a single sheet of film.

- **A color-developing material and color-forming material (microcapsules) are coated, one above the other, on a single base material (PET base).**

When pressure is applied, the microcapsules are broken and the color-developing material absorbs the color-forming material and reacts, thereby generating a red color.

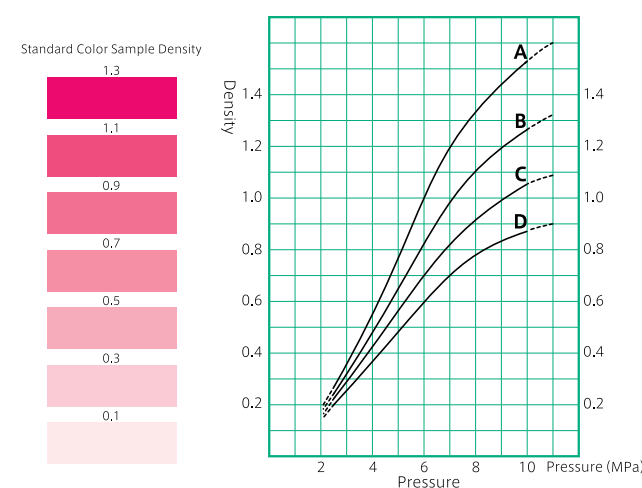


Prescale Color Chart (LW)

Can get the value of pressure by referring to the color chart.

Continuous pressure

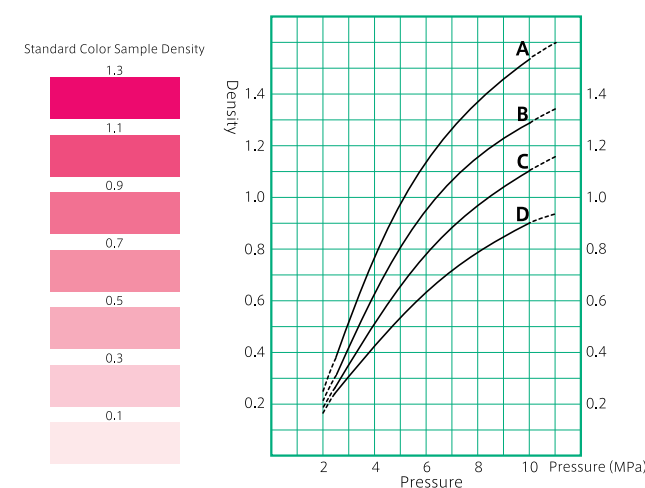
Measurement pressure range: Low pressure (2.5~10MPa)
Pressurized condition: Time to reach the pressure 2min.
Time of retention at the pressure 2 min.



As the pressure indicated by the broken line may exceed the permissible error range, please use the data for reference purpose only.

Momentary pressure

Measurement pressure range: Low pressure (2.5~10MPa)
Pressurized condition : Time to reach the pressure 5 sec.
Time of retention at the pressure 5 sec.



As the pressure indicated by the broken line may exceed the permissible error range, please use the data for reference purpose only.

- * Select the curve A, B or C according to the condition (temperature and humidity) it is used
- * For continuous pressure of 5LW, 4LW and LLLW, time to reach pressure is set 5 seconds and time of retention at the pressure is set 2 min.
- * For HHS, there is only color chart for continuous pressure.

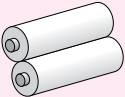
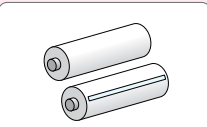
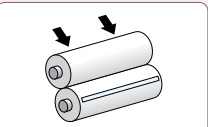
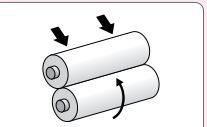
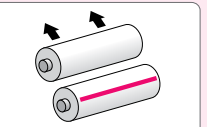
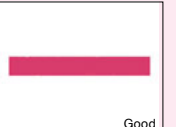
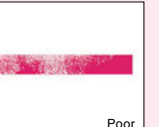
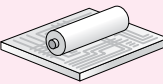
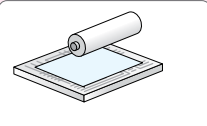
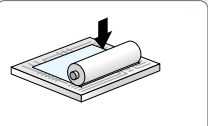
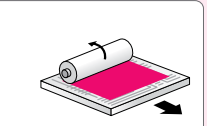
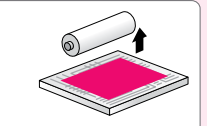
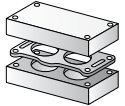
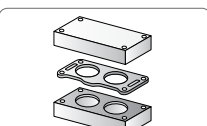
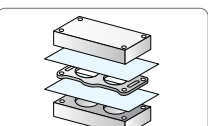
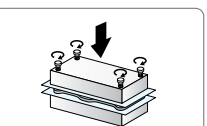
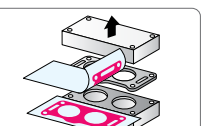
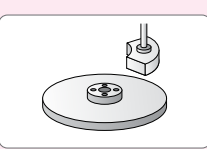
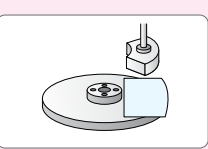
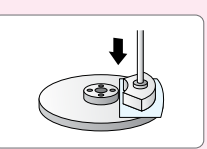
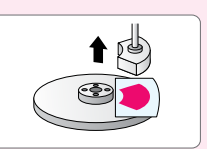
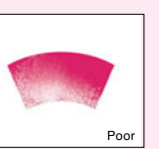
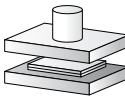
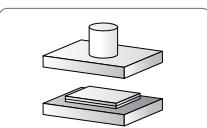
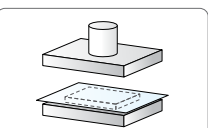
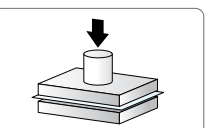
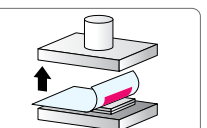
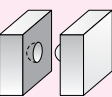
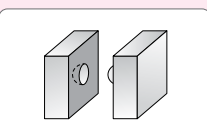
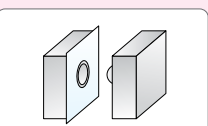
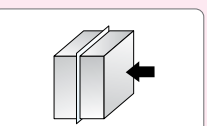
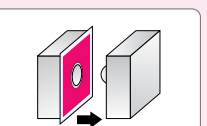
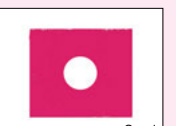
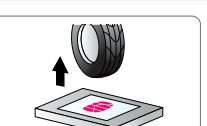
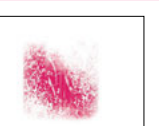
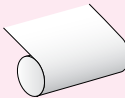
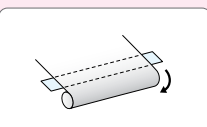
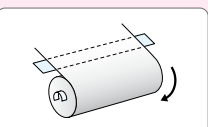
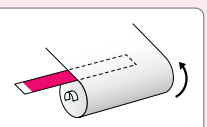
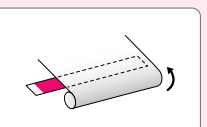
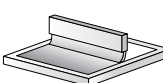
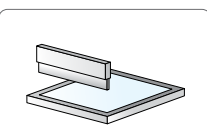
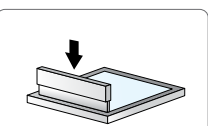
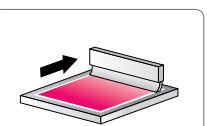
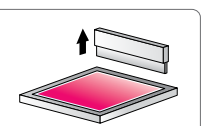
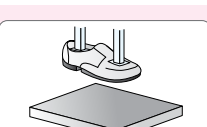
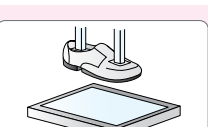
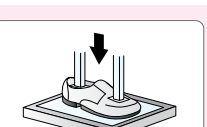
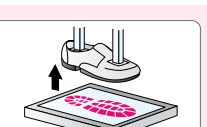
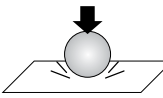
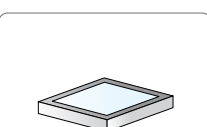
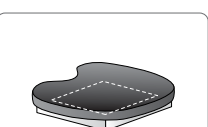
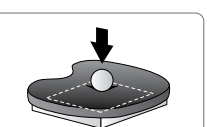
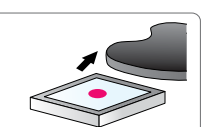
Accuracy and Recommended Temperature / Humidity When Used

Prescale (two-sheet type / mono-sheet type)	
Accuracy	±10% or less (when measured at 23°C, 65%RH by concentration measuring apparatus)
Recommended temperature	20°C~ 35°C *1
Recommended humidity	35%RH ~ 80%RH *2 *3

*1 5LW/4LW/HHS: 15°C~30°C

*2 5LW/4LW: 20%RH~75%RH *3 HHS: 35%RH~70%RH

Wide Range of Applications and Measurement Techniques

Examples of measurement types	Industries	Applications	Measurement methods	Measurement results
 Nip pressure	- Pulp & Paper - Chemical - FPDs - Touch panels - Semiconductor - Office machine - PCBs - Electronics - Li-ion battery	- Pressure between nip rolls and calendar rolls, e.g., paper machines, coating machines - Pressure between electrophotographic neat fixing parts - Pressure between embossing rolls - Pressure between lamination rolls - Nip pressure of high-performance films - Bonding pressure of polarizing plates,OCA or Cover glass - Bonding pressure of BG tapes - Bonding pressure of DFR lamination - Nip pressure of coating machine for electrode - Conveyor nip roll pressure	   	Good Poor
 Roll/plate contact pressure			   	Good Poor
 Tightening pressure	- Automobile - Machinery - Aerospace	- Pressure of fastened surfaces, e.g., engines, gearboxes, turbines, valves, pumps, hydraulic, cylinders, bolted joints and compressors - Sealing performance of gaskets, seals, and O-rings	   	Good Poor
 Contact pressure	- Automobile - Electronics	- Contact pressure of brakes, clutch plates, and pistons - Contact pressure of spot-welding machines - Contact pressure of IC heat sinks	   	Good Poor
 Compression pressure	- PCBs - Ceramic devices - FPDs - Semiconductor - Photovoltaics - Fuel cell - Smartphones - Electronics - Aerospace - Conveyor belt	- Bonding pressure of laminated print substrates - Bonding pressure for laminated ceramic devices - Bonding pressure for LCD panels - ACF bonding pressure - Press pressure of vacuum laminator - Bonding pressure of fuel cell stacks - Bonding pressure of smartphones - Composite layup pressure - Wafer bonding pressure - Bonding pressure of vulcanizers	   	Good Poor
 Contact conditions	- Machinery - Automobile - Packaging - Li-ion battery - Semiconductor - Injection molding - Printing	- Contact condition of press dies - Balance checking of press machines - Contact condition of heat seal bars - Contact condition of press machines for adhesion - Contact condition of CMP polishing head - Contact condition of suction jig for die bonding - Contact condition of molds - Blanket cylinder pressure of printing machines	   	Good Poor
 Support pressure	Automobile	- Support pressure for tires and caterpillar tracks - Support pressure for machines, bridge beams, and tanks	   	Good Poor
 Winding pressure	- Pulp & Paper - Chemical	- Winding pressure for high-performance films and paper - Winding pressure of coils	   	Good Poor
 Squeegee pressure	- PCBs - Ceramic devices - Electronics - Printing - Photovoltaics	Squeegee pressure for screen-printing e.g., print substrates, green sheets for ceramic devices	   	Good Poor
 Medical pressure	Medical	- Pressure on soles of human feet and on soles of shoes - Cavitation pressure - Orthopedics - Bone plate pressure, bone joint pressure, tooth alignment and pressure, mastication analysis, biomedical, and ergonomics	   	Good Poor
 Impact pressure	Others	- Functional testing of equipment for baseball, golf, etc. - Package drop testing - Impact pressure of water jets - Pressure on freight during transportation - Impact pressure on bumpers and airbags	   	Good Poor

* Refer to details of Prescale types on the back for measurable pressure range

Fuji Digital Analysis System
for Prescale

FPD-8010E



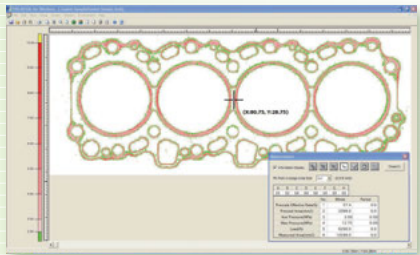
Colorized Prescale is digitized using a scanner
and converted into numerical data by software.
Various pressure analyses can be conducted.

The FPD-8010E converts Prescale pressure values into numerical data and is a pressure mapping analysis system that allows various methods of analysis. In order to make Prescale data even more useful, we will meet your requirements for converting to numerical data, saving data and performing data analysis.



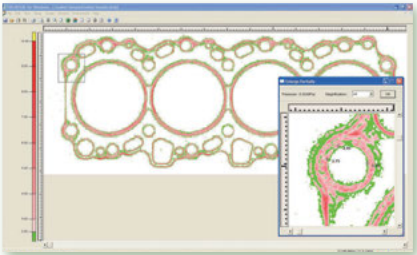
Functions

Overall
Measurement



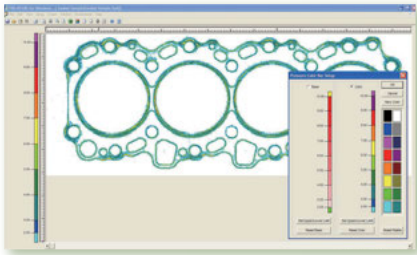
Various data such as average pressure and maximum pressure are displayed.

Partial
Enlargement



The specified field is enlarged. (x4,x8,x16)
Pin point pressure values can be displayed on the image.

Changing the
pressure Bar
Setting



The colored pressure bar and the pressure bar boundary can be changed.

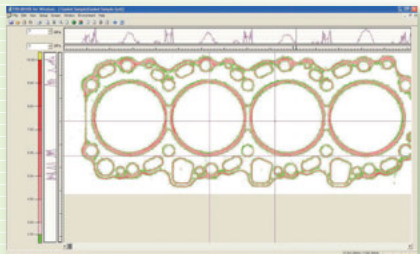
Text Data
Output

Pressure data is exported to a text file.

Total Weight
Distribution

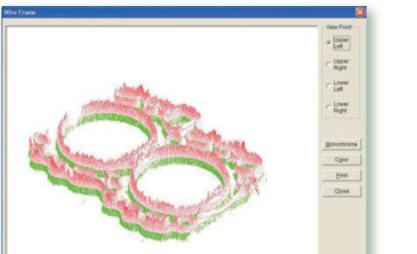
The upper and left segments of the total pressure are displayed on a bar graph.

Pressure
Cross Section



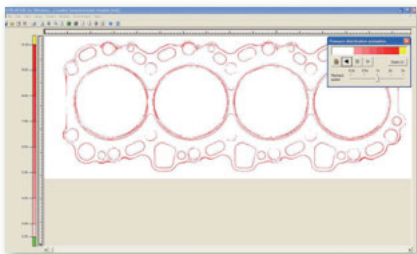
Pressure distribution on a line passing through a specified point is shown on a line graph.

Wire Frame



Pressure is displayed in 3-D format.

Pressure
Distribution
Animation



Step-by-step pressure values are displayed in an animated format.

Histogram
Analysis

Pressure on the circumference is displayed as a histogram.

Printing and
Saving

The displayed screen and data can be printed. After stored data is re-loaded and displayed, you can store it.

Specifications

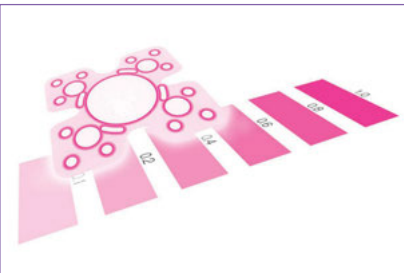
Product Name	FUJIFILM PRESSURE DISTRIBUTION MAPPING SYSTEM for PRESACLE
Model	FPD-8010E
Main Functions	Pressure analysis Pressure data output function Partial Zoom function Excess length synthesis function
Scan Sizes	Single Read : 297mm x 210mm (11.7 in x 41.3 in) Maximum : 891mm x 1050mm (35.1 in x 41.3 in)
Resolution	0.125 (200dpi), 0.25 (100dpi), 0.5, 1, 2mm sq.
Scanner	Epson A4 Scanner. Perfection V37/V370, Perfection V600/V850

Recommended Software Environment

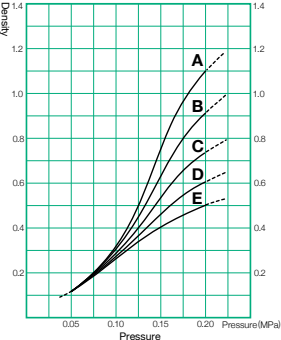
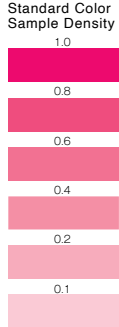
OS	Windows 8, 8.1, 10 (32 / 64bit)
CPU	more than 1GHz
Memory	more than 2GHz
HDD	available capacity must be more than 32GB
Display	1024x768 60,000 colors or more

Visual Evaluation (Reference Chart)

Using Prescale with the reference charts allows visual evaluation. Using the reference charts provided for each product type makes it possible to measure pressure values by viewing the Prescale color density.



Visual evaluation of density from standard color samples.

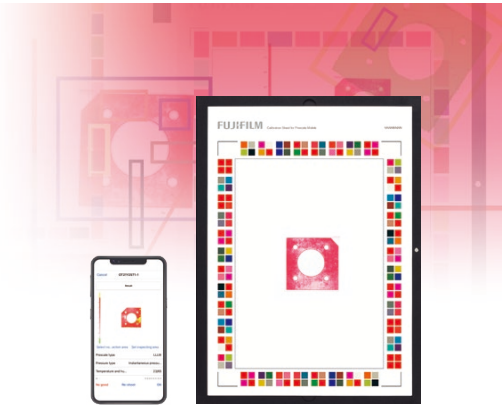


Pressure Image Analysis App

FUJIFILM Prescale Mobile

The app that enables quantification of pressure at ease.

FUJIFILM Prescale Mobile is a dedicated app that enables easy quantification of pressure by capturing the colored Prescale with mobile device. It supports inspection and analysis based on quantified data.



Basic Function

※ 検査イメージ

Analysis image

Captured Prescale is processed through quantification of the pressure then displayed as an image.

Inspection area

You can select multiple areas you want to inspect.

Analysis result

Quantified analysis result on each inspection area can be checked.

Other Useful Functions

Pressure Color Bar Customization

Able to customize the color of the analysis to differentiate the pressure distribution

Default setting

Customized example

Auto Judgment

Based on the preset threshold value or range, it automatically judges the inspection result.

Auto-Judgement : Pass

Auto-Judgement : Fail

Data Storage

Data can be stored and can be referenced anytime.

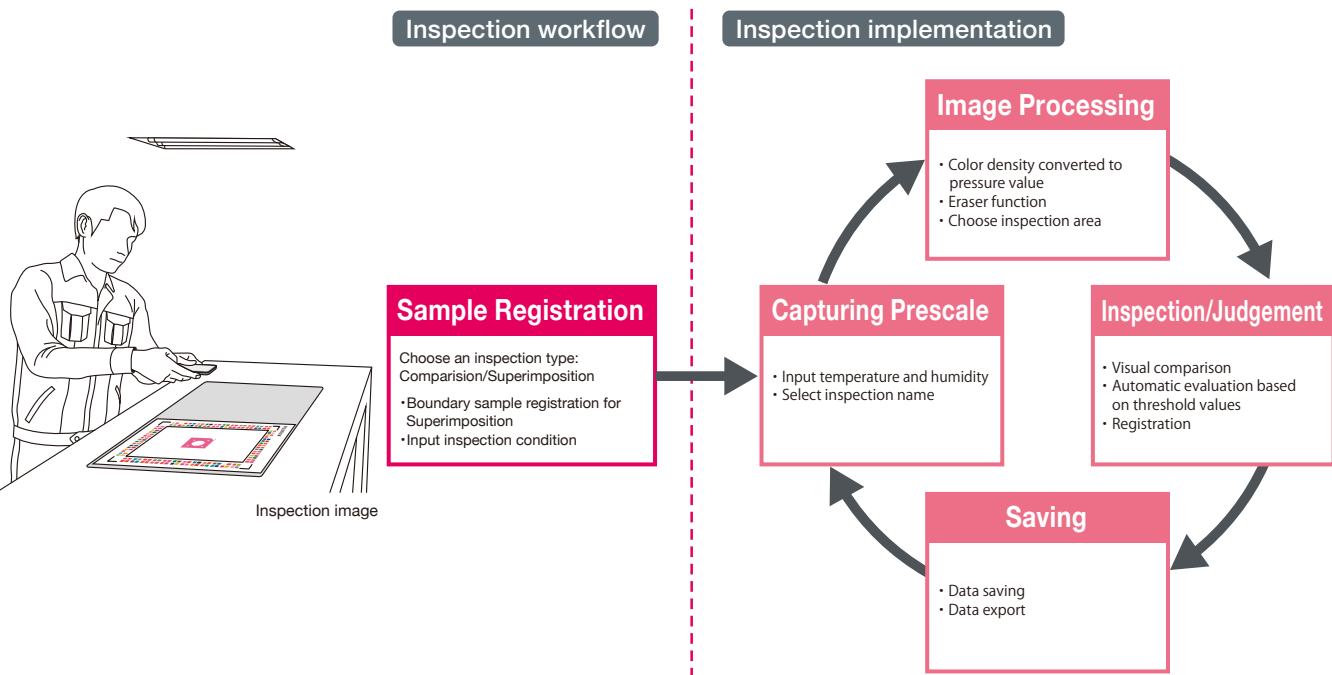
Data Exportation

Able to export data such as inspection result or pressure value in 0.25mm* for further analysis.

* Based on Calibration sheet size A4

Inspection Workflow

Once the sample is registered, it can be easily inspected.



Supported Measurements

Item	Unit	Explanation
Measured Area	mm ²	The size of the selected inspection area
Pressure Area	mm ²	The size of the colored area
Pressure Area Ratio	%	The percentages of the colored area within the measured area
Effective Rate	%	The percentages of the colored area within the recommended pressure range of the inspected Prescale
Custom Press Area	mm ²	The size of the specified pressure range area
Custom Press Area Ratio	%	The percentages of the custom press area within measured area
Average Pressure	MPa	The average pressure of the colored area
Maximum Pressure	MPa	The maximum pressure of the colored area
Minimum Pressure	MPa	The minimum pressure of the colored area
Weight	N	The weight on the colored area (pressure area multiplied by average pressure)
Pressure Uniformity	%	An index indicating the uniformity of pressure value on the colored area
OD Uniformity	%	An index indicating the uniformity of color density on the colored area

Main specifications

Specifications		Supported devices	
Product name	FUJIFILM Prescale Mobile	Supported devices	iPhoneSE 2th/3th generation, iPad Air 4th/5th generation
Items included	2 calibration sheets, Folder (cardboard), License Authorization Letter, 10 protective sheets	OS	16.0.3 or above
Usable Prescale	MW, LW, LLW, LLLW, 4LW, Prescale for High Temperature LLW	Memory	64GB or above
Recommended Lighting Condition	-Light source: White LED, or white fluorescent light -Color temperature: 5,000-6,500 K -Illuminance: 500-900 lux	* Mobile devices are not included with the product and should be purchased separately by the customer. * Please check the website for the latest information.	
Readable size	Up to A4		

Please check the website for details. **FUJIFILM Prescale Mobile** Search

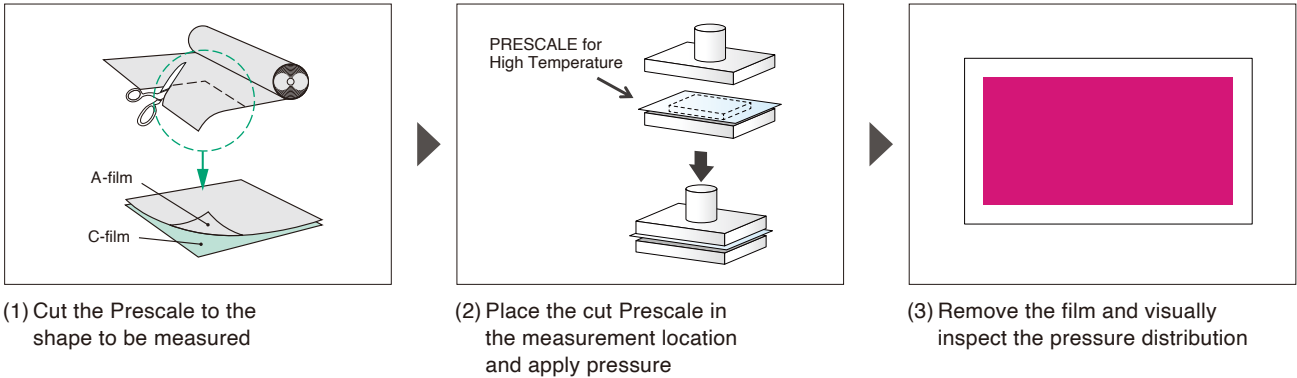
Pressure Measurement Film

Prescale for High Temperature LLW

The new Prescale for High Temperature can be used during heat pressing and other heat-based processes.



How to Use



Specifications

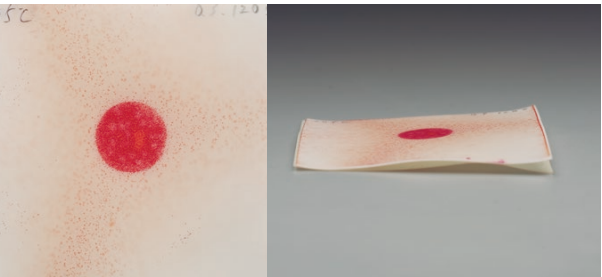
Product size	270mm × 6m
Pressure range	0.5MPa~2.5MPa / 73~363psi
Recommended heating temperature	180°C~220°C / 356~428°F (double-sided heating)
Accuracy	±10% or less (measured by densitometer)

Pressure values under high-temperature conditions can be confirmed visually by checking the color chart included with the product.

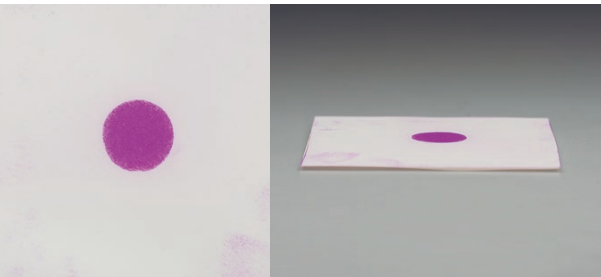
Application Examples

Example of measurement types	Industries	Applications
Heat press pressure	- Automotive - Injection molding - Electronics etc.	- Check the level and distribution of pressure applied by heat press.
Heated nip pressure	- Li-ion battery - PCB - Ceramic devices - Electronics etc.	- Check the pressure applied by heated rollers and laminators.
Heat sealing pressure	- Food - Pharmaceutical - Other packaging etc.	- Check heat-sealing devices for misalignments and distortions.
Heated lamination pressure	- PCV - Ceramic devices - Li-ion battery - Electronics etc.	- Check the evenness and uniformity of contact of high-temperature laminator molds.
Compression pressure	- PCB - Li-ion battery - Electronics etc.	- Check the level and distribution of pressure applied by high-temperature compression press. - Check the compression pressure during charging and discharging processes under high-temperature conditions.

Standard Prescale



Prescale for High Temperature

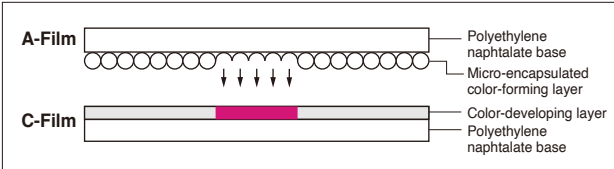


* This is an image

- Heat-induced color development and base deformation are significantly reduced compared to standard Prescale products.
- Enables accurate pressure distribution measurement under conditions closer to actual manufacturing conditions.
- Reduces required heating and cooling time for manufacturing equipment, contributing to improved productivity.

How It Works

This product consists of two film types: A-film is coated with a layer of micro-encapsulated color forming material. C-film with a layer of the color developing material. Use two films facing the coated sides each other. When pressure is applied, the microcapsules are broken and the color-forming material reacts with the colordeveloping material to make red color. The microcapsules are designed to break according to the pressure so the color density corresponds to the pressure.



Please check the website for details.

Prescale for High Temperature

Search



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