

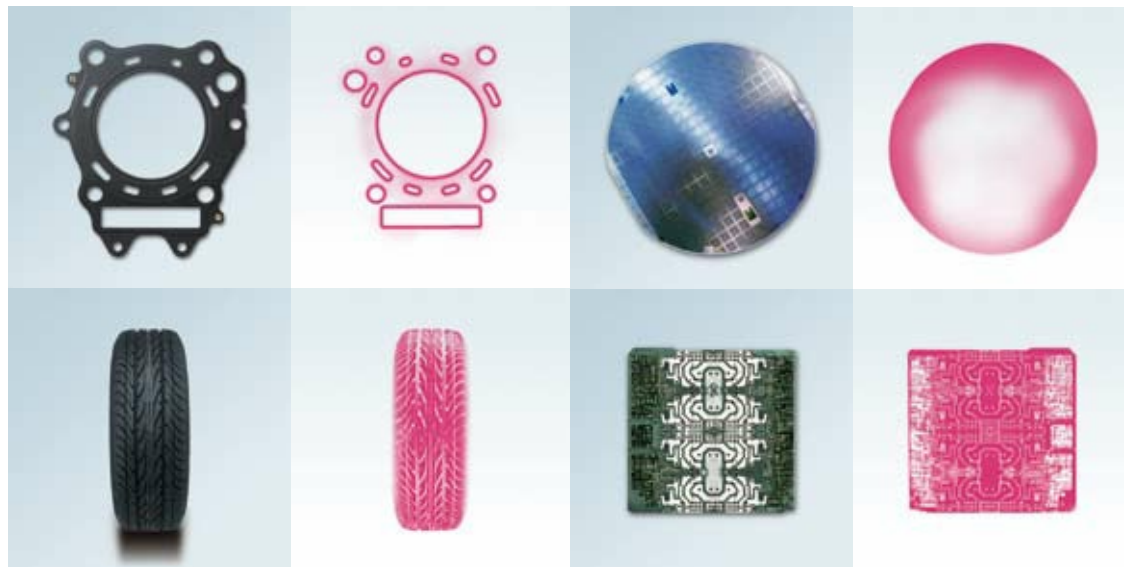


A Prescale



Description

The only film in the world for measuring pressure and pressure distribution.



Simply insert and measure pressure distribution by color density. Possible analysis range from visual confirmation to computer analysis after digitization.

Prescale is the world's only film that measures pressure and pressure distribution. Areas where pressure is applied become red in response to the pressure and it is possible to check pressure magnitude and pressure balance. The eight models of Prescale cover a wide range of pressures from extremely low pressures to super-high pressures.

Enables anyone to measure pressure easily. Just insert between two surfaces.

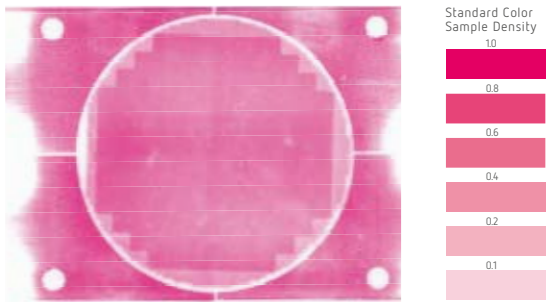
Features

EASY VISUAL CHECK	EASY OPERATION	EASY DIGITIZATION
<ul style="list-style-type: none"> Measure pressure by color density Not just force at a single location, it measures the distribution of it 	<ul style="list-style-type: none"> No Power source required Cut and fit any dimensions 	Digitizing by scanner. Convert pressure density into quantifiable values.

Higher quality	Compared to estimating pressure from the results of trial or actual production runs, measuring pressure with Prescale enables accurate mechanical setting and adjustment.
Higher productivity	Since mechanical device setting and adjustment, as well as switching between production items, can be performed based on measurement results; these take less time and have fewer defects.
Troubleshooting	Even if a defect occurs, mechanical and device states can be checked by measuring pressure and pressure distribution; using Prescale to quickly investigate the cause of the problem.

■ Features (continued)

Visualization of surface pressure by color change



Pressure is detected by color density; unevenness and bias in surface pressure distribution can be checked.

Areas of the film where pressure is applied become red and the color density varies according to the intensity of the applied pressure. The density of red allows visual evaluation of the strength of the pressure. Also, scanning allows a quantifiable pressure map analysis to be performed.

■ Line up

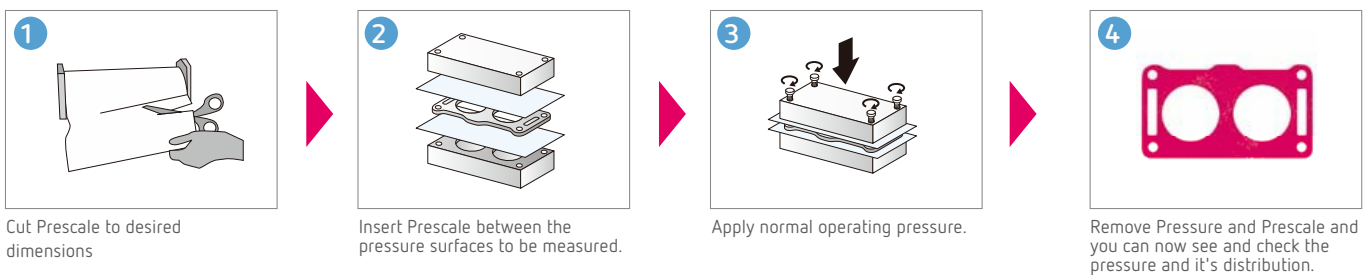
Seven types of Prescale are supplied according to pressure level. Select appropriate Prescale.

Product (Code)	Pressure range [MPa] 1MPa ≈ 10.2kgf/cm ²		Product size W(mm)×L(m)	Type
	0.05	0.2 0.5 0.6 2.5 10 50 130 300		
	Pressure range [psi] 1psi ≈ 6895pa			
Super high pressure (HHS)			270 × 10	Mono-sheet type
High pressure (HS)			270 × 10	Mono-sheet type
Medium pressure (MS)			270 × 10	Mono-sheet type
Medium pressure (MW)			270 × 10	Two-sheet type
Low pressure (LW)			270 × 10	Two-sheet type
Super low pressure (LLW)			270 × 6	Two-sheet type
Ultra super low pressure (LLLW)			270 × 5	Two-sheet type
Extreme low pressure (4LW)			310 × 3	Two-sheet type

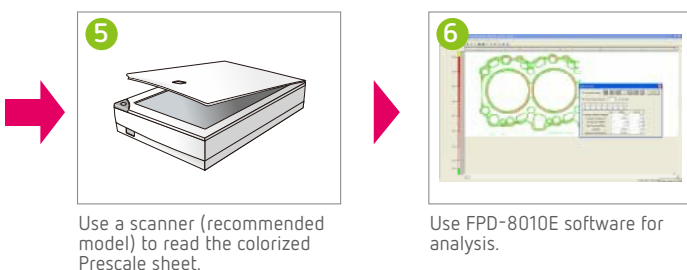
Notes: W in the product codes indicates two-sheet type, S indicates mono-sheet type

■ Workflow

Measurement method



Digitizing



Wide Range of Applications and measurement techniques

4LW Extreme low pressure
0.05–0.2Mpa

MW Medium pressure
10–50Mpa

LLLW Ultra super low pressure
0.2–0.6Mpa

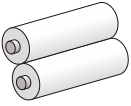
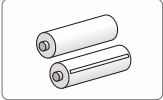
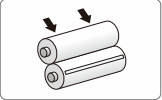
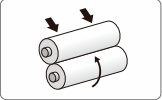
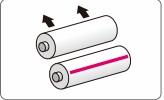


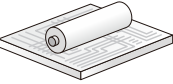
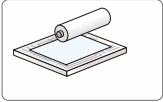
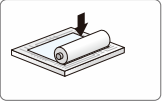
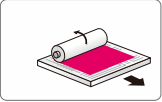
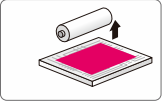


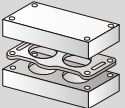
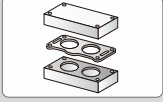
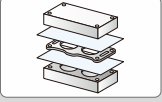
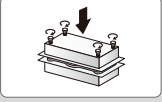
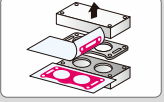



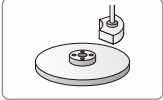
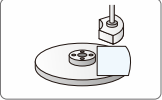
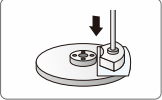
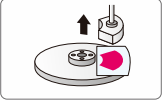


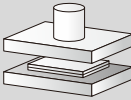
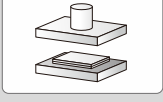
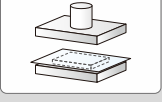

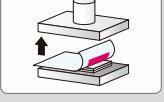




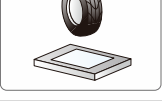
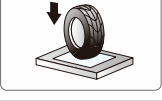
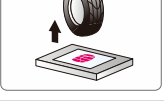


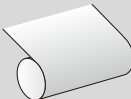
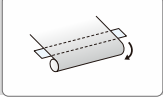
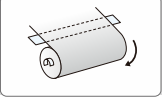
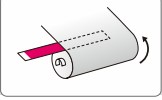
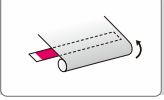


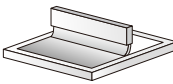
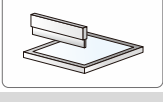
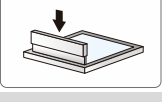
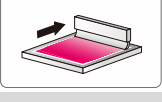
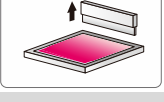


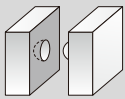
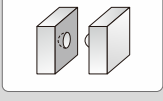
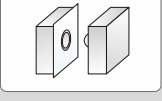
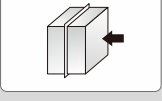
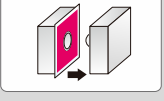
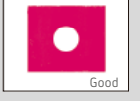
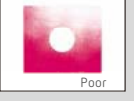
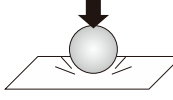
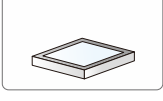

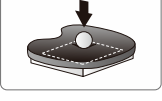
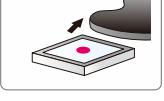



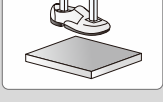
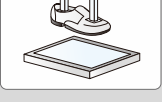
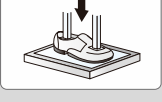


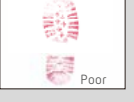
MS Medium pressure
10–50Mpa

LLW Super low pressure
0.5–2.5Mpa

HS High pressure
50–130Mpa

LW Low pressure
2.5–10Mpa

HHS Super high pressure
130–300Mpa

Examples of measurement types	Examples of use	Recommended types*	Measurement methods	Measurement
 <p>Nip pressure</p>	<ul style="list-style-type: none"> Nip rolls and calendar rolls, e.g., paper machines, coating machines Nip rolls for immobilization of copiers Pressure between embossing rolls Pressure between lamination rolls Bonding pressure of polarizing plates Bonding pressure of BG tapes Nip pressure of high-performance films Conveyor nip roll pressure 	<p>4LW LLLW LLW LW</p> <p>MW MS</p>	   	 
 <p>Roll/plate contact pressure</p>			   	 
 <p>Tightening pressure of fastened parts</p>	<ul style="list-style-type: none"> Pressure of fastened surfaces, e.g., engines, gearboxes, turbines, valves, pumps, hydraulic cylinders, and compressors Checking sealing performance of gaskets, seals, and O-rings 	<p>LW MW MS HS</p> <p>HHS</p>	   	 
 <p>Contact pressure</p>	<ul style="list-style-type: none"> Contact pressure of brakes, clutch plates, and pistons Contact pressure of spot-welding machines Contact pressure of IC heat sinks 	<p>4LW LLLW LLW LW</p> <p>MW MS HS</p>	   	 
 <p>Compression pressure</p>	<ul style="list-style-type: none"> Planar press pressure for plywood and laminates Bonding pressure for LCD panels Wafer bonding pressure Bonding pressure of fuel cell stacks Bonding pressure of laminated print substrates ACF bonding pressure Bonding pressure for laminated ceramic capacitors 	<p>4LW LLLW LLW LW</p>	   	 
 <p>Support pressure</p>	<ul style="list-style-type: none"> Support pressure for tires and caterpillar tracks Support pressure for machines, bridge beams, and tanks 	<p>4LW LLLW LLW LW</p> <p>MW MS HS HHS</p>	   	 
 <p>Winding pressure</p>	<ul style="list-style-type: none"> Winding pressure for high-performance films and papers Winding pressure of coils 	<p>4LW LLLW LLW LW</p> <p>MW MS HS</p>	   	 
 <p>Squeegee pressure</p>	<ul style="list-style-type: none"> Squeegee pressure for screen-printing (print substrates, etc.) 	<p>4LW LLLW LLW</p>	   	 
 <p>Contact conditions</p>	<ul style="list-style-type: none"> Contact condition of press dies Balance checking of press machines Contact condition of press machines for adhesion Blanket cylinder pressure of printing machines Contact condition of disks for surface polishing (CMP) Contact condition of heat seal bars Silicon wafer polishing pressure Semiconductor chip mounting pressure 	<p>4LW LLLW LLW LW</p> <p>MS HS</p>	   	 
 <p>Impact pressure</p>	<ul style="list-style-type: none"> 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 	<p>LLLW LLW LW MS</p> <p>HS HHS</p>	   	 
 <p>Medical</p>	<ul style="list-style-type: none"> 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 	<p>4LW LLLW LLW LW</p>	   	 

* Refer to details of Prescale types on page 2 for measurable pressure range

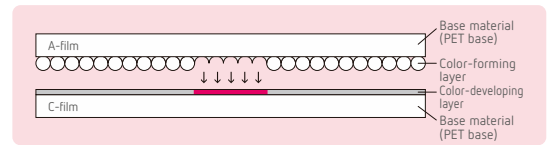
Technology

Two-sheet type extreme low pressure, ultra super low pressure, super low pressure, low pressure, medium pressure (5 types)

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.

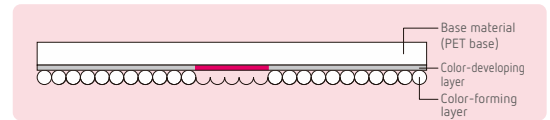


Mono-sheet type medium pressure, high pressure, super high pressure (3 types)

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.



Specification and Operational Environment

Prescale (two-sheet type / mono-sheet type)

Accuracy	±10% or less (when measured with densitometer at 23°C/73.4°F, 64% RH)		
Recommended temperature	23°C ~ 35°C (68°F ~ 95°F)	Recommended humidity	35%RH ~ 80% RH
Thickness	Mono-sheet : ca. 110 μ	Two-sheet : A-film : ca. 90μm, C-film : ca. 90μm	*Each type of products has different thickness

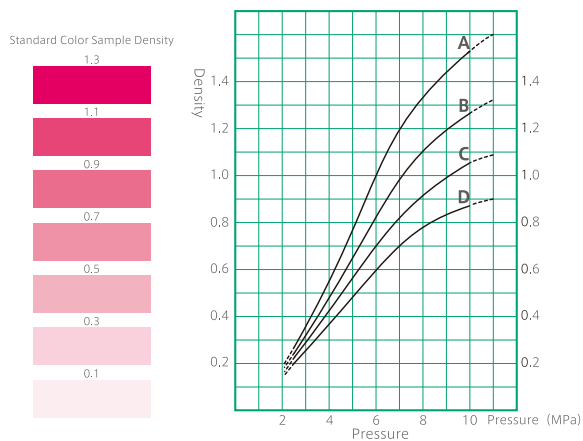
Pressure Chart (low pressure <LW> case)

Continuous pressure

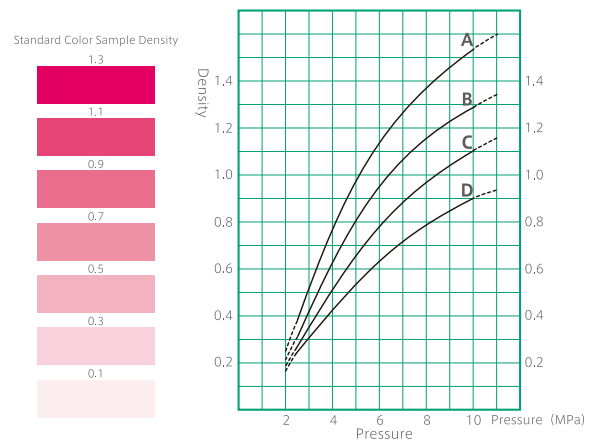
Measurement pressure range: Low pressure (2.5~10MPa)
Pressure application condition: Time to reach the pressure 2min.
Time of retention at the pressure 2min.

Momentary pressure

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



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



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

* : Taking the temperature and humidity condition into consideration, select a curve among A, B and C.

*Specifications and performance capabilities are subject to change without notice.