Line Up

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

Product (Code)	Pressure range [MPa] 1MPa≒10.2kgf/cm² / Pressure range [psi] 1psi≒6895pa	Product size W(mm)×L(m)	Type
Super high pressure (HHS)	0.05 – 0.2 – 0.5 – 0.6 – 2.5 – 10 – 50 – 130 – 300 MPa 29 – 73 – 87 – 363 – 1,450 – 7,250 – 18,850 – 43,500 psi	270 × 12	Mono-sheet type
High pressure (HS)		270 × 12	Mono-sheet type
Medium pressure (MS)		270 × 12	Mono-sheet type
Medium pressure (MW)		270 × 12	Two-sheet type
Low pressure (LW)		270 × 12	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

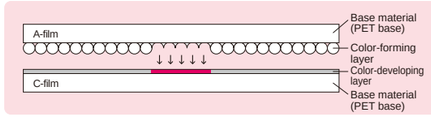
Technology

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.

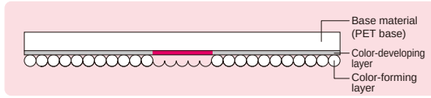


Mono-sheet type medium pressure, high pressure, super high pressure (3 types)

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-developping material absorbs the color-forming material and reacts, thereby generating a red color.



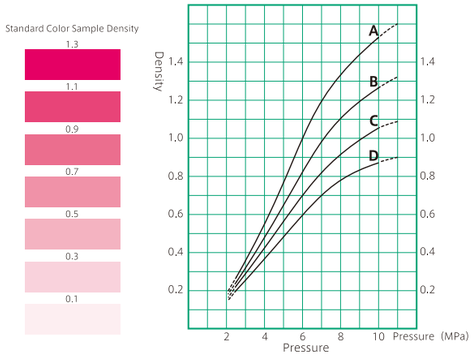
Specification and Operational Environment

Prescale(Two-sheet type／Mono-sheet type)			
Accuracy	±10% or less(when measured with densitometer at 23℃/73.4°F, 65% RH)		
Recommended temperature	20℃～35℃(68°F ～95°F)	Recommended humidity	35%RH～80%RH
Thickness	Mono-sheet : ca.110μ　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

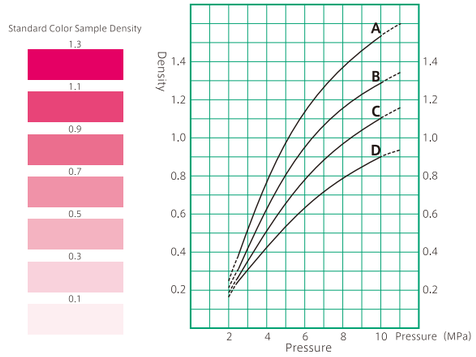
Measurement pressure range: Low pressure (2.5~10MPa)
Pressure application condition: Time to reach the pressure 2min.
Time of retention at the pressure 2min.



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)
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.

＊: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.

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

ALAVA INGENIEROS
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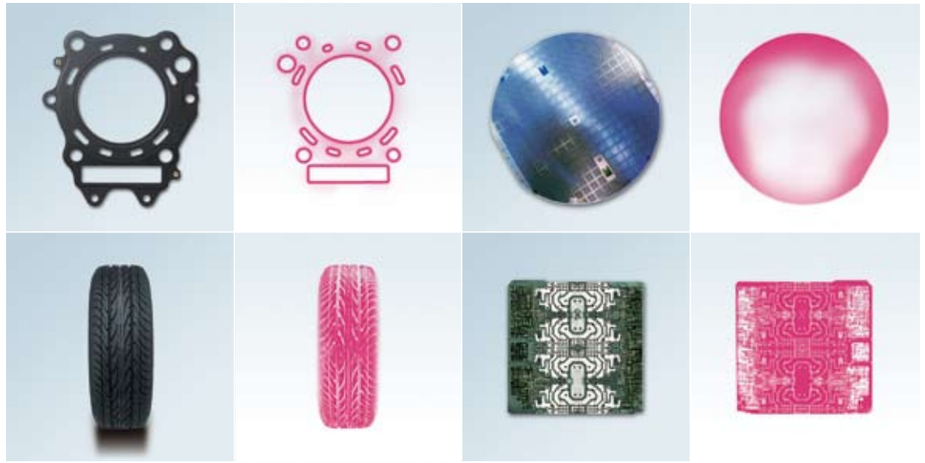
Ref. No. IB-0807E (SK·09·02·F1099) Printed in Japan

FUJIFILM　PRESCALE　ALAVA INGENIEROS

Pressure Measurement Film
PRESCALE

PRODUCTS GUIDE

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

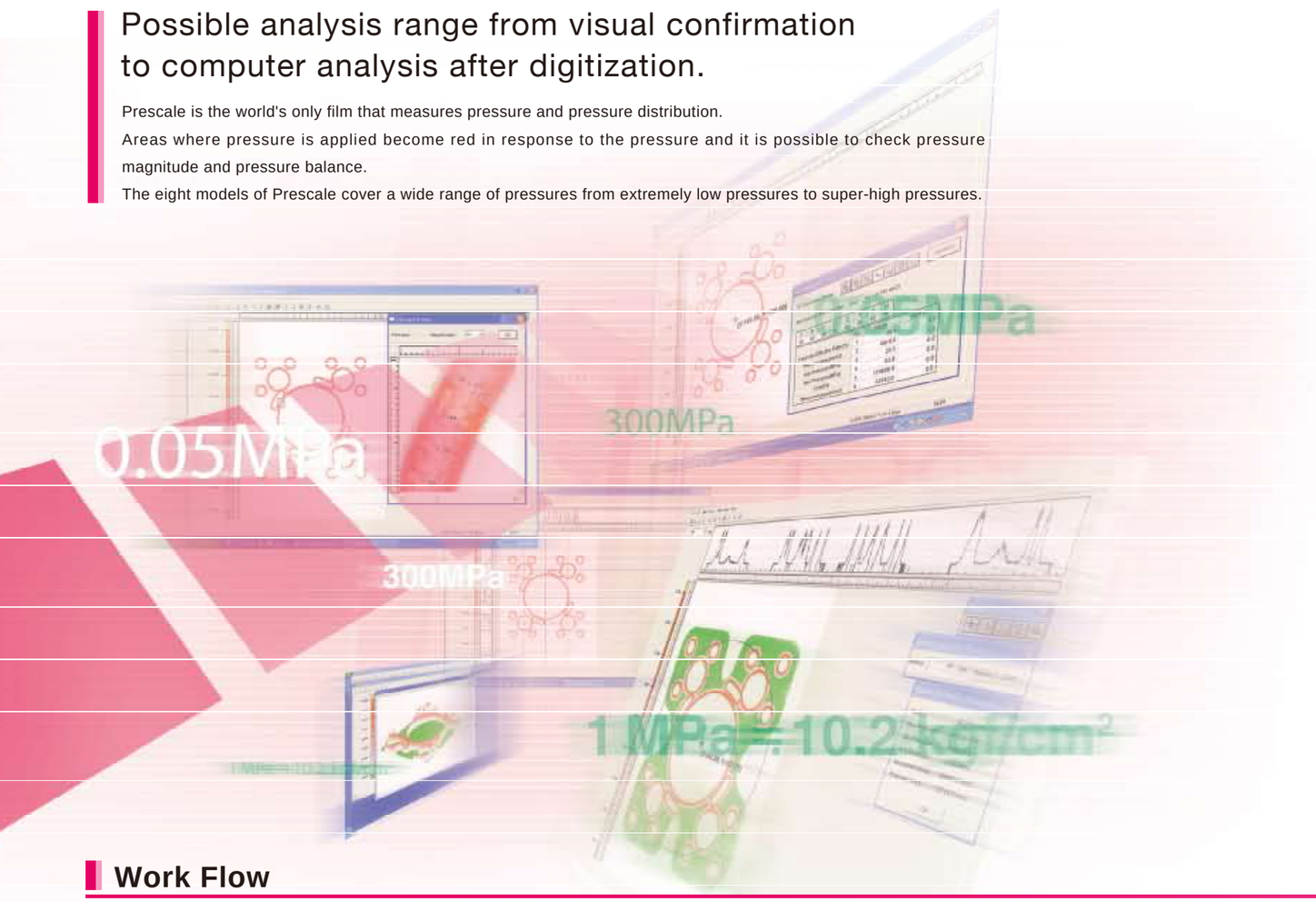


An Introduction to a Wide Range of Applications and Measurement Techniques

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.

- Measure pressure by color density
- Not just force at a single location, it measures the distribution of it

EASY OPERATION

- No Power source required
- Cut and fit any dimensions

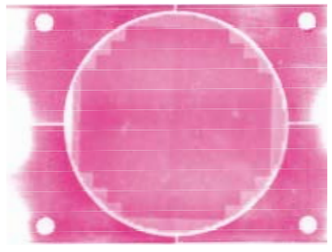
Digitizing by scanner convert pressure density into quantifiable values

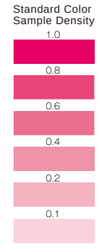
Higher quality — Compared to estimating pressure from the results of trial or actual production runs, measuring pressure with Prescale enables accurate mechanical setting and adjustment.

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.

Visualization of surface pressure by color change



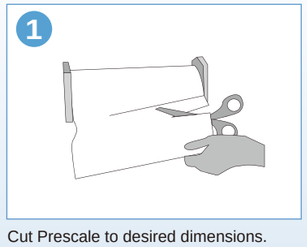


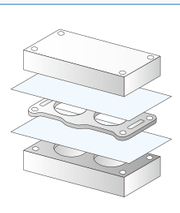
Pressure is detected by color density; unevenness and bias in surface pressure distribution can be checked.

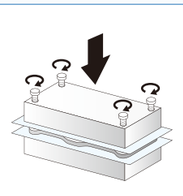
Areas of the film where pressure is applied become red and the color density varies according to the intensity of the applied pressure. The density of red allows visual evaluation of the strength of the pressure. Also, scanning allows a quantifiable pressure map analysis to be performed.

Work Flow

Measurement method

1 
Cut Prescale to desired dimensions.

2 
Insert Prescale between the pressure surfaces to be measured.

3 
Apply normal operating pressure.

4 
Remove Pressure and Prescale and you can now see and check the pressure and it's distribution.

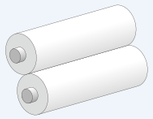
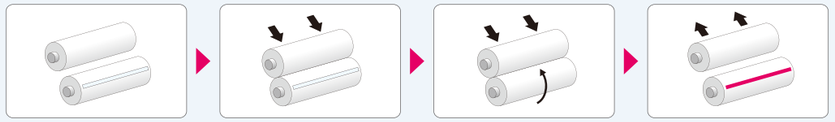
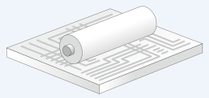
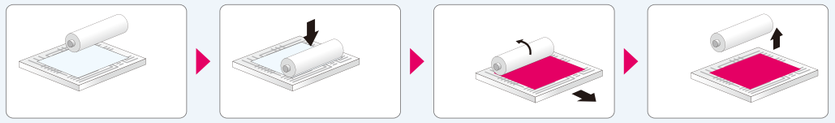
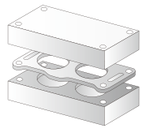
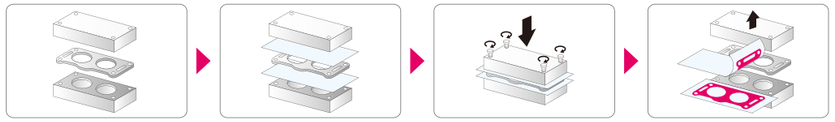
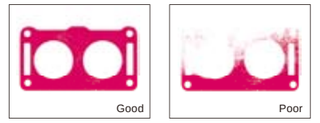
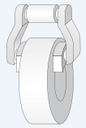
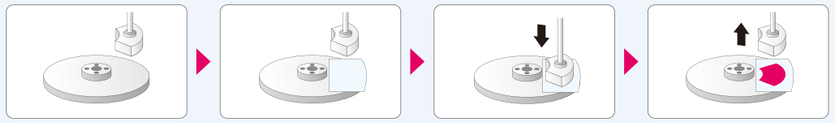
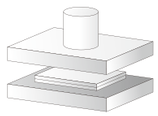
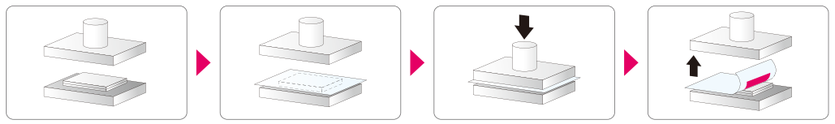
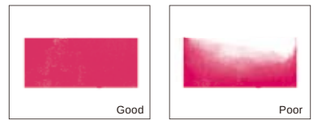
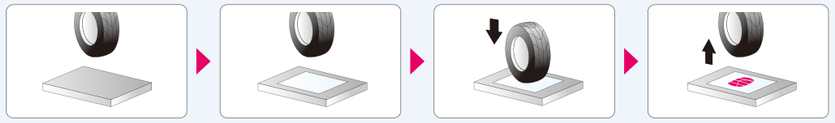
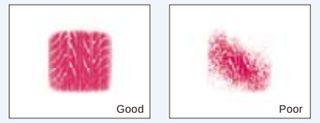
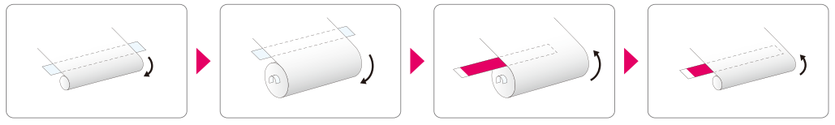
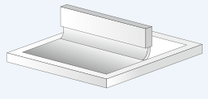
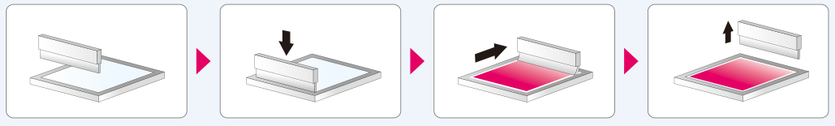
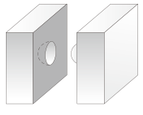
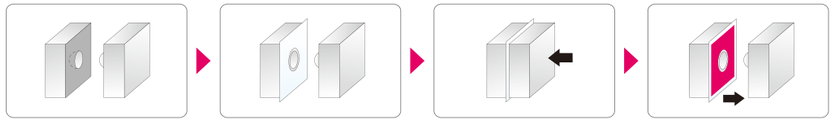
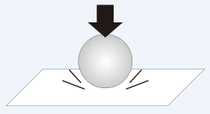
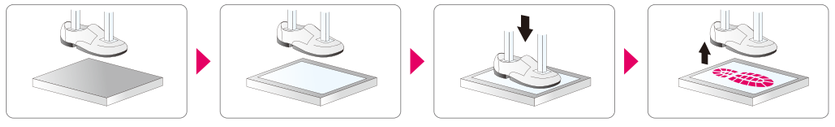
Digitizing

5 
Use a scanner (recommended model) to read the colorized Prescale sheet.

6 
Use FPD-8010E software for analysis.

Wide Renge of Applications and measurement techniques

4LW Extreme low pressure 0.05～0.2Mpa	LLLW Ultra super low pressure 0.2～0.6Mpa	LLW Super low pressure 0.5～2.5Mpa	LW Low pressure 2.5～10Mpa
MW Medium pressure 10～50Mpa	MS Medium pressure 10～50Mpa	HS High pressure 50～130Mpa	HHS Super high pressure 130～300Mpa

Examples of measurement types	Examples of use	Recommended types*	Measurement methods	Measurement results
 **~~Nip pressure~~**	● 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	4LW LLLW LLW LW MW MS		 Good Poor
 **Roll/plate contact pressure**				 Good Poor
 **Tightening pressure of fastened parts**	● Pressure of fastened surfaces, e.g., engines, gearboxes, turbines, valves, pumps, hydraulic cylinders, and compressors ● Checking sealing performance of gaskets, seals, and O-rings	LW MW MS HS HHS		 Good Poor
 **Contact pressure**	● Contact pressure of brakes, clutch plates, and pistons ● Contact pressure of spot-welding machines ● Contact pressure of IC heat sinks	4LW LLLW LLW LW MW MS HS		 Good Poor
 **Compression pressure**	● 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	4LW LLLW LLW LW		 Good Poor
 **Support pressure**	● Suppport pressure for tires and caterpillar tracks ● Support pressure for machines, bridge beams, and tanks	4LW LLLW LLW LW MW MS HS HHS		 Good Poor
 **Winding pressure**	● Winding pressure for high-performance films and papers ● Winding pressure of coils	4LW LLLW LLW LW MW MS HS		 Good Poor
 **Squeegee pressure**	● Squeegee pressure for screen-printing (print substrates, etc.)	4LW LLLW LLW		 Good Poor
 **Contact conditions**	● 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	4LW LLLW LLW LW MS HS		 Good Poor
 **Impact pressure**	● 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	LLLW LLW LW MS HS HHS		 Good Poor
 **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	4LW LLLW LLW LW		 Good Poor

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

Fuji Digital Analysis System
for Prescale

FPD-8010E

Scanner + PC (Analysis software)

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

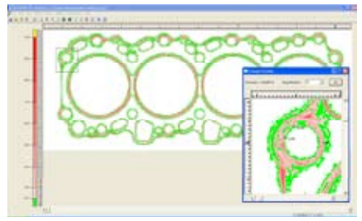
The FPD-8010E converts Prescale pressure values into numerical data and is a pressure mapping analysis system that allows various methods of analysis. In order to make Prescale data even more useful, we will meet your requirements for converting to numerical data, saving data and performing data analysis.

Functions

Overall Measurement

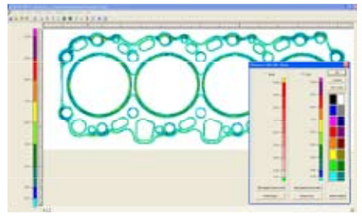
Various data such as average pressure and maximum pressure are displayed.

Partial Enlargement



The specified field is enlarged. (×4,×8,×16) 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.

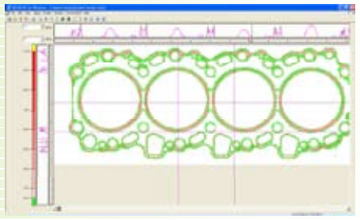
Text Data Output

Pressure data is exported to a text file.

Total Weight Distribution

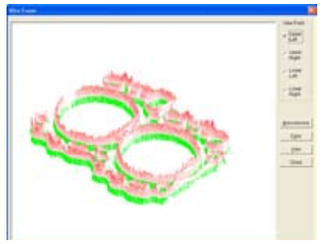
The upper and left segments of the total pressure are displayed on a bar graph.

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 PRESCALE
Model	FPD-8010E
Main Functions	Prescale image input function Pressure distribution display function/ Pressure data output function 3D display function / polar coordinate display function
Scan Sizes	Single Read : 297mm × 210mm (11.7 in × 41.3 in) Maximum : 891mm × 1050mm (35.1 in × 41.3 in)
Resolution	0.125 (200dpi), 0.25 (100dpi), 0.5, 1, 2 mm sq.
Dedicated Cover Weight	570g
Dedicated Cover Dimensions	70 (H) × 290 (W) × 364 (D) mm

Packed Items	Dedicated software, dedicated cover, calibration sheet, installation manual, software license.
Scanner	Please ask your dealer for information on recommended scanner types.

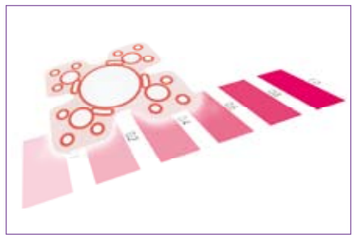
Recommended Software Environment

OS	Window® 2000 Professional SP4 and more Window® XP Home Editlon Windows XP / Professional SP2 and more Windows Vista™ Business Windows Vista™ Home Premium
CPU	Pentium® III 1GHz or Higher
Memory	512MB or more
Display	XGA or better, 65,000 colors or more

Visual Evaluation (Reference Chart)

Visual + 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.