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FUJIFILM

● INSTRUCTION MANUAL ●

PRESSURE MEASUREMENT FILM PRESCALE

ULTRA SUPER LOW PRESSURE
LLLW
(TWO-SHEET TYPE)

1 LINE UP

Nine types of Prescale are supplied according to Eight pressure level. Select the appropriate Prescale range.

type	Film type	Pressure range[MPa] $1\text{MPa} \approx 10.2\text{kgf/cm}^2$								
		0.006	0.05	0.2	0.5 0.6	2.5	10	50	130	300
		Pressure range[psi] $1\text{psi} \approx 6895\text{Pa}$								
		0.87	7.3	29	73 87	363	1450	7250	18850	43500
Two-sheet type	Ultra Extreme Low Pressure (5LW)	[0.006 - 0.05 MPa]								
	Extreme Low Pressure (4LW)	[0.05 - 0.2 MPa]								
	Ultra Super Low Pressure (LLLW)	[0.2 - 0.5 MPa]								
	Super Low Pressure (LLW)	[0.5 - 0.6 MPa]								
	Low Pressure (LW)	[0.6 - 2.5 MPa]								
	Medium Pressure (MW)	[2.5 - 10 MPa]								
Mono-sheet type	Medium Pressure (MS)	[10 - 50 MPa]								
	High Pressure (HS)	[50 - 130 MPa]								
	Super High Pressure (HHS)	[130 - 300 MPa]								

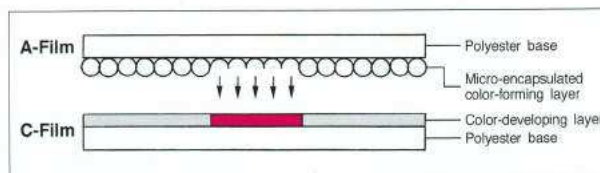
* Film type W:Two-sheet
S:Mono-sheet

2 STRUCTURE AND HOW IT WORKS

Structure

There are two types of Prescale; Two-sheet type and Mono-sheet type.

Two-sheet type is composed of two polyester bases. One is coated with a layer of micro-encapsulated color forming material (A-film) and the other with a layer of the color developing material (C-film). Use two films facing the coated sides each other.



How it works

When pressure is applied, the microcapsules are broken and the color-forming material reacts with the color-developing material to make red color. The microcapsules are designed to break according to the pressure so the color density corresponds to the pressure.

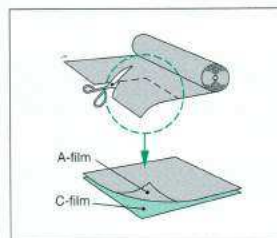
3 PROPERTIES

Precision	$\pm 10\%$ or less (measured by densitometer at 23°C/73.4°F, 65% RH)
Recommended temperature range	20°C~35°C(68°F~95°F)
Recommended humidity range	35%RH~80%RH

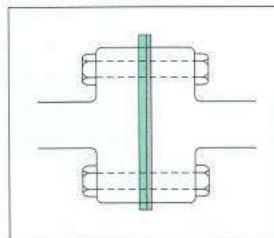
4 HOW TO USE

Two-sheet type(Ultra super low~Medium pressure: LLLW~MW)

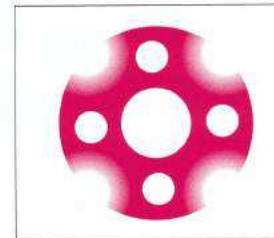
Cut the two films appropriately. (A-film in a black poly sack and C-film in a blue poly sack) Face the rough surfaces of each films and insert the films where you want to measure pressure. Apply pressure. Red patches appear on the film and the color density changes according to pressure level. Take out the C-film, see and check the pressure distribution.



(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.

5 PACKAGING AND FILM COLOR

〈Package〉

The two-sheet type is composed of two rolls. A-film is wrapped in the black poly film and rolled with the coated side facing in and with a rubber spacer attached along both edges of the film to prevent any contact between the film surfaces. C-film is in the blue poly sack and rolled with the coated side facing out.

〈Film Color〉

Film color is as follows.

Two-sheet type	A-film	C-film
Ultra Extreme Low Pressure (5LW)	Translucent white	Whitish
Extreme Low Pressure (4LW)	Translucent white	Whitish
Ultra Super Low Pressure (LLLW)	Creamy	Whitish
Super Low Pressure (LLW)	Yellowish	Whitish
Low Pressure (LW)	Bluish	Whitish
Medium Pressure (MW)	Reddish	Whitish

6 STANDARD CONDITIONS FOR APPLYING PRESSURE

〈Continuous Pressure〉

Gradually increase the pressure to the required level in five seconds and maintain the pressure for another two minutes. The pressure maintained at this level is referred to as continuous pressure.

〈Momentary Pressure〉

Apply pressure for five seconds and maintain the pressure for another five seconds. The pressure maintained at this level is referred to as momentary pressure.

7 HOW TO DETERMINE THE PRESSURE LEVEL

Pressure distribution check by Prescale alone

When pressure is applied, red patches appear on Prescale. The red color density of Prescale changes depending on the amount of pressure applied. The area with deep red color indicates that the pressure applied was high and conversely the area with light red color indicates that the pressure applied was low. Place the Prescale on a few white sheets of paper with its smooth surface on top and check the result in the light.

Pressure values determination by using the pressure chart

In order to roughly determine the pressure values, use the Prescale standard color sample and the pressure chart. Taking the temperature, the humidity and the pressure condition into consideration, you can determine the pressure values to a certain extent by selecting a pressure curve from the standard pressure chart. Place the Prescale on a few white sheets of paper with its smooth surface on top and check the result in the light.

PRECAUTIONS ON USE

- 1) Contact with the micro-encapsulated color-forming layer of A-film for long periods may cause a skin reaction in sensitive individuals. To wear protective gloves is recommended during handling.
- 2) A-film reacts sensitively even to minute pressure. Don't hold tight or rub it before use.
- 3) Clean the measuring place beforehand. Water, oil or dust if present on the surface of Prescale, will hinder proper color density development.
- 4) Avoid friction between A and C-films. The films should be bound together at the edge if shearing force is expected during the measurement.
- 5) Use the Prescale at temperature 20°C~35°C(68°F~95°F) and humidity 35%RH~80%RH. The result of measurement may not be accurate outside of this region.
- 6) Prescale is not reusable.
- 7) Use Prescale within the given shelf life.

PRECAUTIONS ON STORAGE

- 1) Keep Prescale under cool (below 15°C) and dark room avoid direct sunlight and heat.
- 2) Don't contact Prescale with the following items:
 - Diazo copying papers and carbon papers
 - Water, oil, solvent and other chemicals
 - Vinyl products and adhesive tapes
 - Rubber products
 - Papers written by marker pens
- 3) Keep unused Prescale in the black and blue poly sacks and store them in a box.
- 4) Avoid exposing C-film to the light for extended periods of time.
- 5) Avoid having rough surfaces of used C-films face each other.

FUJIFILM

MADE IN JAPAN by FUJIFILM Corporation

ULTRA SUPER LOW PRESSURE

LLLW

(TWO-SHEET TYPE)

STANDARD CONTINUOUS PRESSURE CHART

Measurement pressure range: 0.2–0.6MPa

• Pressure application conditions

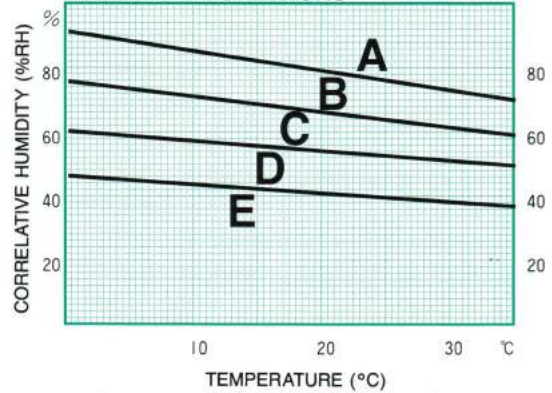
Time to reach the pressure to be measured: 5 sec.

Time of retention at the pressure to be measured: 2 min.

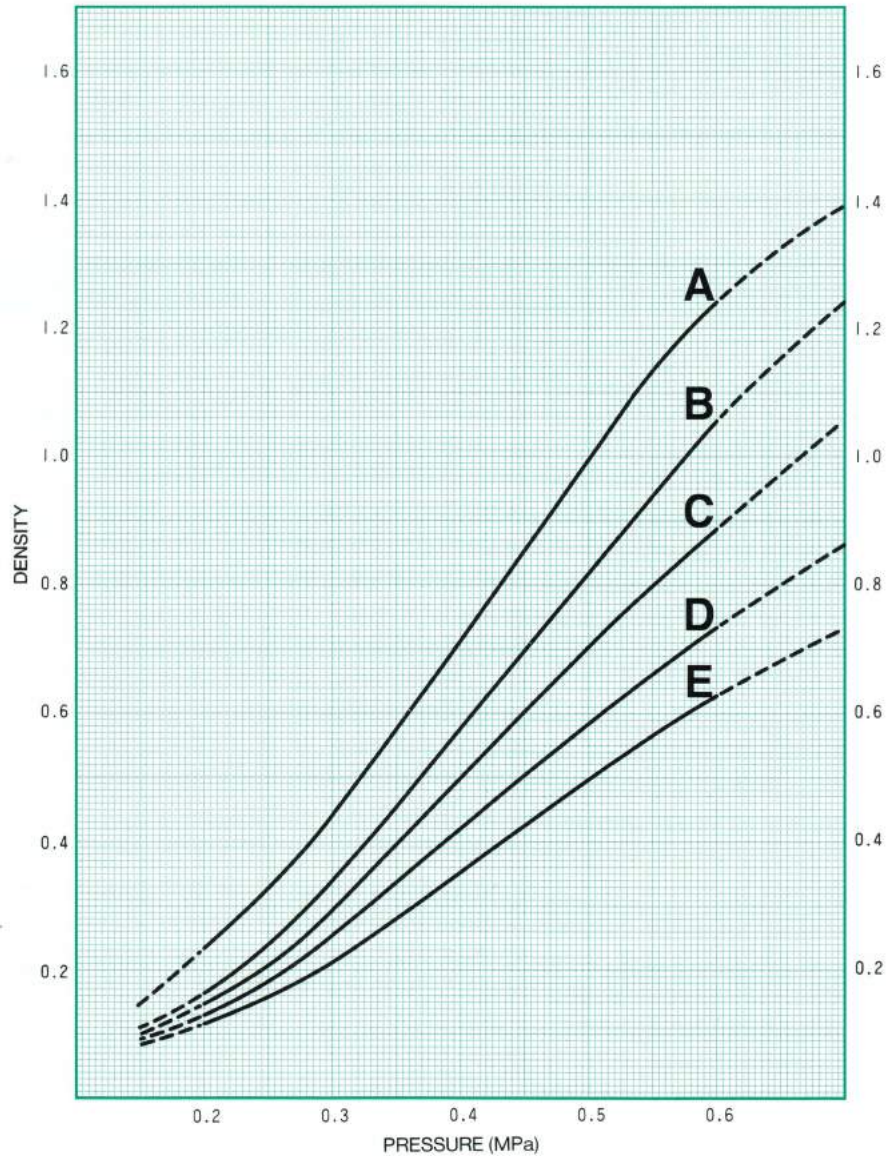
Check if the temperature and humidity meet with the conditions above when the pressure is applied.

(For example, if the room temperature is 25°C and the humidity factor is 60%RH, acquire the pressure from the C curve in the standard chart.)

GRAPH OF TEMPERATURE/ HUMIDITY CONDITIONS



STANDARD COLOR SAMPLE



As the pressure range indicated by the broken line in the graph may exceed the permissible error range, it should be used for reference purposes only.

STANDARD MOMENTARY PRESSURE CHART

Measurement pressure range: 0.2–0.6MPa

• Pressure application conditions

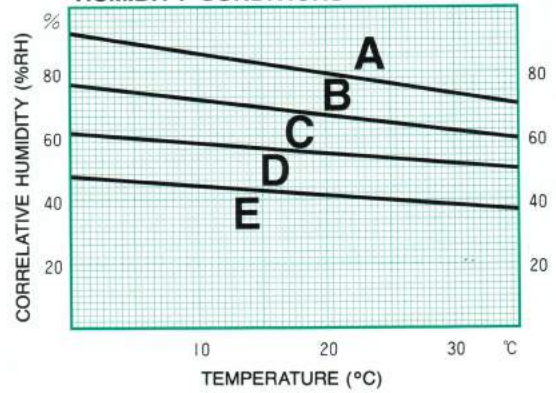
Time to reach the pressure to be measured: 5 sec.

Time of retention at the pressure to be measured: 5 sec.

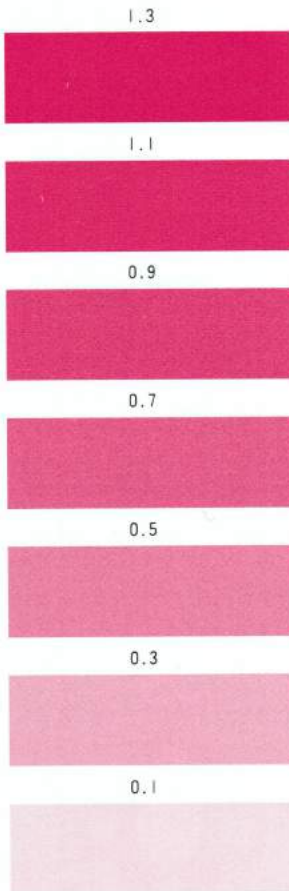
Check if the temperature and humidity meet with the conditions above when the pressure is applied.

(For example, if the room temperature is 25°C and the humidity factor is 60%RH, acquire the pressure from the C curve in the standard chart.)

GRAPH OF TEMPERATURE/ HUMIDITY CONDITIONS



STANDARD COLOR SAMPLE



As the pressure range indicated by the broken line in the graph may exceed the permissible error range, it should be used for reference purposes only.

