

Super low VOC, multi functional type water based emulsion paint for interior.

# ECO FRESH SERIES

Environmentally friendly

## **Below measurable limits of VOC (volatile organic compounds)**

ECO FRESH is a super low VOC and odour type water based emulsion paint for interior. Our special emulsion technology has made a very low content of VOC possible to avoid an environmental pollutant. Having almost no odour during and after application, it maintains amenity. Moreover, the smooth and matt finish produces a stylish indoor space.

ECO FRESH CLEAN is a reactive curing super low VOC and odour type water based emulsion paint for interior. It contains features of anti-bacteria, anti-fungus, and absorbing and decomposing formaldehyde. The film based on water based cross-linking technology is excellent in capacities of decontamination and resistance with argem-antibacterial agent and photocatalytic function to various bacteria such as Bacillus coli to cause various communicable diseases, staphylococcus aureus, or fungus.

### 《Features》

#### \* **Low VOC content**

It is a safe paint containing very little VOC, environmental pollutant. Further, ECO FRESH CLEAN designed to be safe containing next to "0" VOC.

#### \* **Less odour**

Since it is almost no odour during application, a room remains comfortable as usual even just after application.

#### \* **Excellent features of anti-bacteria and anti-fungus(ECO FRESH CLEAN)**

It shows superb resistance with argem-antibacterial agent and photocatalytic function to bacteria or fungus that may cause various communicable diseases.

#### \* **Absorbing and decomposing formaldehyde(ECO FRESH CLEAN)**

It maintains a room amenity by efficiently absorbing VOC such as formaldehyde contained in chemical building materials, furniture or bonding agent of wallpaper then decomposing them into safe materials with photocatalytic function.

\* **Preventing pollution and superb dirt-resistance(ECO FRESH CLEAN)**

The film based on water based cross-linking technology is excellent in cleaning dirt since dirt cannot easily penetrate into the film.

《**Uses**》

New and old internal walls of schools, hospitals, buildings, condominiums, houses and hotels

《**Available Substrates**》

Mortar, concrete, plaster boards, other kinds of boards and old films

## 《ECO FRESH SERIES》

	ECO FRESH	ECO FRESH CLEAN
Type	Conventional type	High functional type
Gloss type	Matt, 30% gloss, Semi gloss, Gloss	Matt, 30% gloss, Semi gloss, Gloss
Super low odour	○	○
Anti-fungus	○	○
Anti-bacteria	—	○
Absorbing and decomposing formaldehyde	—	○
Odour eliminating	—	○
Dirt resistance	—	○

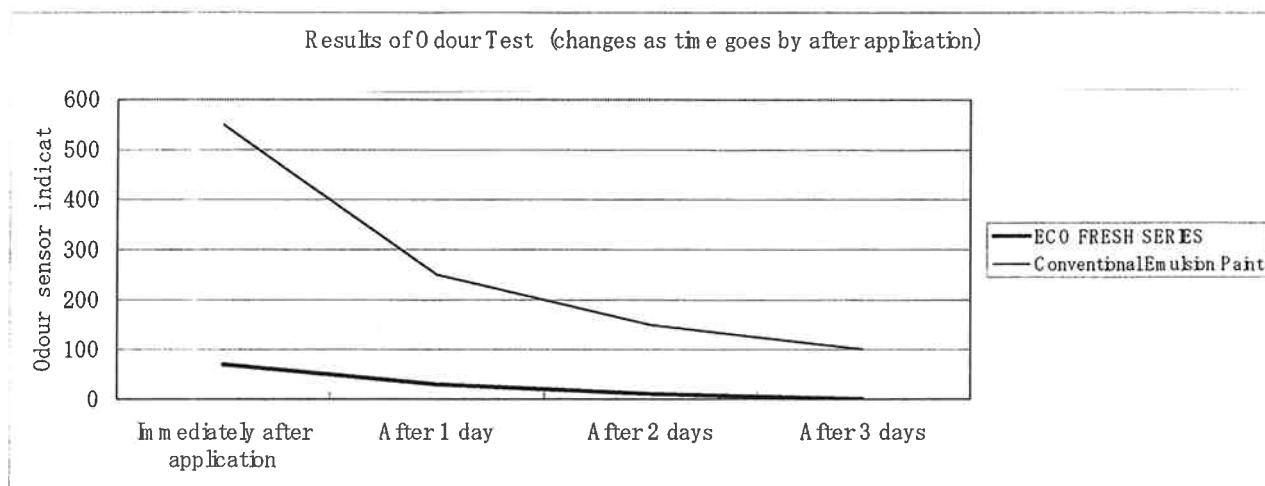
\*ECO FRESH SEALER, which is used for undercoat, is also an environmentally friendly product conforming with the standard of TVOC 1% or less.

## 《Property Comparison》

		ECO FRESH	ECO FRESH CLEAN	Conventional emulsion paint	Remarks
VOC content (%)		Less than 0.1%	Less than 0.01%	2-5%	—
Odour	Organoleptic test	◎	◎	△	Immediately after application
	Odour sensor indication	50	50	550	Immediately after application
Contrast ratio		98%	98%	97%	
Water resistance		○	◎	△	One week immersion in water

# 《Low Odour Function》

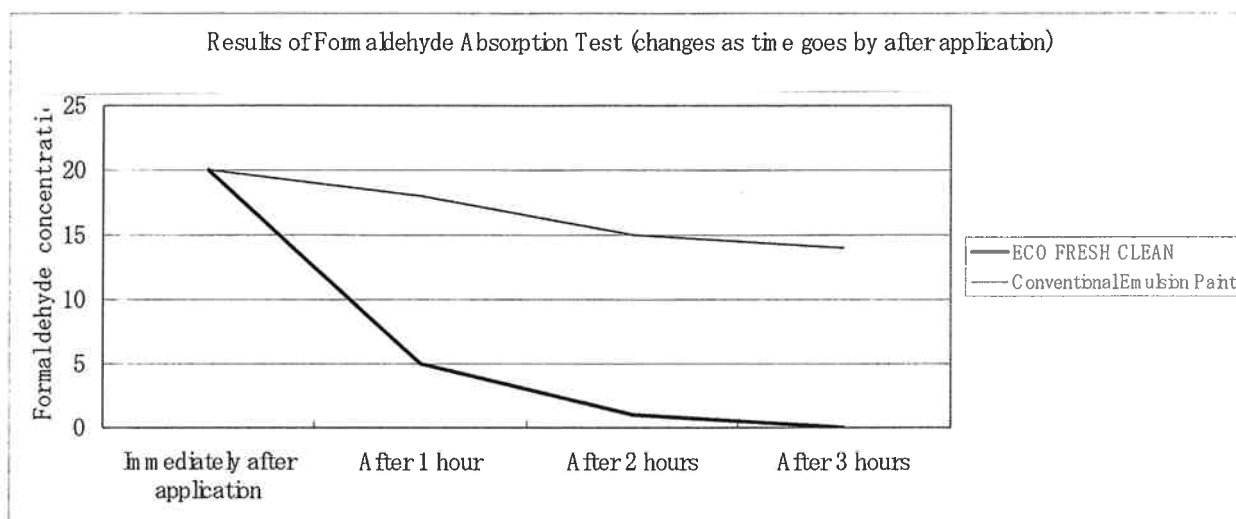
(20°C, 65%RH)



Odour was measured with a sensor at each testing time after application on an internal wall.

# 《Formaldehyde Absorption and Decomposing Function》

(20°C, 65%RH)



Formaldehyde concentration was measured with a gas detecting tube at each testing time after a test piece was put in a 3-liter container of 20ppm concentration of formaldehyde.

## 《Conformity with the Guideline Values》

### 1. Ministry of Health and Welfare

Substance name	Guideline value of Room density( $\mu$ g/m <sup>2</sup> )	ECO FRESH SERIES
Formaldehyde	100(0.08ppm)	0
Toluene	260(0.07ppm)	0
Xylene	870(0.2ppm)	0
Paradichlorobenzene	240(0.04ppm)	0
Ethylbenzene	3800(0.88ppm)	0
Styrene	220(0.05ppm)	0
Chlorpyrifos	1(0.07bbp), child 0.1(0.007ppb)	0
Di-n-butyl phthalate	220(0.02ppm)	0
Tetradecanoic	330(0.04ppm)	0
Di-2-ethylhexyl phthalate	120(7.6ppb)	0
Diazinon	0.29(0.02ppb)	0
Acetaldehyde	48(0.03ppm)	0
Phenobucarb	33(3.8ppb)	0
Nonanal	41(7.0ppb)	0

### 2. Ministry of Education, Culture, Sports, Science and Technology

Substance name	Guideline value of Room density( $\mu$ g/m <sup>2</sup> )	ECO FRESH SERIES
Formaldehyde	100(0.08ppm)	0
Toluene	260(0.07ppm)	0
Xylene	870(0.2ppm)	0
Paradichlorobenzene	240(0.04ppm)	0

### 3. Ministry of Land, Infrastructure and Transport

Product name	Grade	Grade mark	Eminence (mg/L)	Usage limitation	Registering association
ECO FRESH	Not control subject	F☆☆☆☆	0.12 or less	No limitation	JPMA*
ECO FRESH CLEAN	Not control subject	F☆☆☆☆	0.12 or less	No limitation	JPMA*

\* Japan Paint Manufacturers Association

## 4. Japan Paint Manufacturers Association

Item	Targeted value	ECO FRESH SERIES
Aromatic solvent	0.10% or less	Pass
TVOC	1.00% or less	Pass
Aldehyde	0.01% or less	Pass
Heavy metal	0.05% or less	Pass
Carcinogen, Reproduction toxic substance, Mutagen	0.10% or less	Pass
Sensitizing substance	0.10% or less	Pass

## 《Standard Application Specification》

For new substrates

**ECO FRESH**

(20°C, 65%RH)

Process	Material	Mixing ratio (wt. %)	Consumption (kg/m <sup>2</sup> )	Number of application	Interval (hr)			Remarks
					Within process	Between process	Final curing	
Surface treatment	<ul style="list-style-type: none"><li>• Dry a surface well to bring water content to a maximum of 10% and pH to 10 or less.</li><li>• Completely remove any dirt or dust, and smooth out unevenness and scratches.</li></ul>							—
Underco at*1,2	ECO FRESH SEALER	100	0.10 – 0.15	1	—	Over 2	—	Roller, brush, airless spray gun Discharge: 600 – 1,000ml/min Pattern width: 25 – 30 cm
	Water	0 – 20	—					
Putty* <sup>3</sup> , grinding	<ul style="list-style-type: none"><li>• Repair hollows with finishing putty using a spatula.</li><li>• Grind the repaired areas uniformly with sand paper (#220 – 240).</li></ul>							—
Topcoat * <sup>4,5</sup>	ECO FRESH	100	0.25 – 0.30	2	Over 2	—	Over 24	Roller, brush, airless spray gun Discharge: 600 – 1,000ml/min Pattern width: 25 – 30 cm
	Water	0 – 15	—					

- \*1. Select a suitable undercoat according to the surface condition. For detail, please contact your nearest SKK office.
- \*2. Dilution ratio of ECO FRESH SEALER with water is 5 – 10 wt% when applying with brush or roller and 10 – 20 wt% when applying with spray.
- \*3. Use putty without fungicide as a finishing putty.
- \*4. Dilution ratio of ECO FRESH, ECO FRESH CLEAN with water is 5 – 10 wt% when applying with brush or roller and 10 – 15 wt% when applying with spray.
- \*5. Fix the dilution ratio of mock-up work first, and keep the same ratio from the second time onwards. Dilution ratio may vary depending on hue of materials and temperature.
- \*6. In principle, avoid application in temperatures of 5°C or less. If not possible, apply heat or use a curing process to ensure localized air and coating surface temperatures are above 5°C.



## 《Standard Application Specification》

For new substrates

### ECO FRESH CLEAN

(20°C, 65%RH)

Process	Material	Mixing ratio (wt. %)	Consumption (kg/m <sup>2</sup> )	Number of application	Interval (hr)			Remarks
					Within process	Between process	Final curing	
Surface treatment	<ul style="list-style-type: none"><li>• Dry a surface well to bring water content to a maximum of 10% and pH to 10 or less.</li><li>• Completely remove any dirt or dust, and smooth out unevenness and scratches.</li></ul>							—
Undercoat*1,2	ECO FRESH SEALER	100	0.10 – 0.15	1	—	Over 2	—	Roller, brush, airless spray gun Discharge: 600 – 1,000ml/min Pattern width: 25 – 30 cm
	Water	0 – 20	—					
Putty* <sup>3</sup> , grinding	<ul style="list-style-type: none"><li>• Repair hollows with finishing putty using a spatula.</li><li>• Grind the repaired areas uniformly with sand paper (#220 – 240).</li></ul>							—
Topcoat* <sup>4,5</sup>	ECO FRESH CLEAN	100	0.25 – 0.30	2	Over 2	—	Over 24	Roller, brush, airless spray gun Discharge: 600 – 1,000ml/min Pattern width: 25 – 30 cm
	Water	0 – 15	—					

- \*1. Select a suitable undercoat according to the surface condition. For detail, please contact your nearest SKK office.
- \*2. Dilution ratio of ECO FRESH SEALER with water is 5 – 10 wt% when applying with brush or roller and 10 – 20 wt% when applying with spray.
- \*3. Use putty without fungicide as a finishing putty.
- \*4. Dilution ratio of ECO FRESH, ECO FRESH CLEAN with water is 5 – 10 wt% when applying with brush or roller and 10 – 15 wt% when applying with spray.
- \*5. Fix the dilution ratio of mock-up work first, and keep the same ratio from the second time onwards. Dilution ratio may vary depending on hue of materials and temperature.
- \*6. In principle, avoid application in temperatures of 5°C or less. If not possible, apply heat or use a curing process to ensure localized air and coating surface temperatures are above 5°C.

# **《Performance Test Results 1》**

## **JIS K 5663 physical property test with synthetic resin emulsion paint type 1**

Test item		Results A*	Results B*	Criterion
Condition in container		Pass	Pass	When being stirred, it makes uniform condition without any hard lumps.
Workability		Pass	Pass	No impediment for coating work when making twice coatings.
Low temperature stability(-5°C)		Pass	Pass	No deterioration
Drying time(h)	20°C	Pass	Pass	2 max.
	5°C	Pass	Pass	4 max.
Appearance of paint film		Pass	Pass	No unusualness in appearance of paint film.
Contrast ratio (white and tint)		98	98	93 min.
Water resistance		Pass	Pass	No unusualness when immersed in water for 96 hours.
Alkali resistance		Pass	Pass	No unusualness when immersed for 48 hours.
Washability		Pass	Pass	Endurable for washings of 500 times.
Accelerated weather resistance		Pass	Pass	The degree of chalking is 1 mark or lower, there are no swelling, peeling and cracking and the degree of colour change is not larger than that on evaluation sample.
Weather resistance		Pass	Pass	After 12-month test, there are no swelling, peeling and cracking, and the degree of colour change and chalking is not larger than that on evaluation sample.

\*Results A = ECO FRESH MATT

\*Results B = ECO FRESH CLEAN MATT

## 《Performance Test Results 2》

### JIS K 5660 physical property test with matt synthetic resin emulsion paint type

Test item		Results C*	Results D*	Criterion
Condition in container		Pass	Pass	When being stirred, it makes uniform condition without any hard lumps.
Low temperature stability(-5℃)		Pass	Pass	No deterioration
Workability		Pass	Pass	No impediment for coating work when making twice coatings.
Drying time(h)	20℃	Pass	Pass	2 max.
	5℃	Pass	Pass	4 max.
Appearance of paint film		Pass	Pass	No unusualness in appearance of paint film.
Contrast ratio (white and tint)		97	97	95 min.
Specular gloss		80	81	70 min.
Water resistance		Pass	Pass	Gloss retention of 80% or more and no unusualness on paint film when immersed for 96 hours.
Alkali resistance		Pass	Pass	Gloss retention of 65% or more and no unusualness on paint film when immersed for 7 days.
Washability		Pass	Pass	Endurable for washings of 1000 times.
Humidity and cool-heat cycling resistance		Pass	Pass	Gloss retention of 80% or more and endurable for humidity and cool-heat cycling test.
Accelerated weather resistance		Pass	Pass	After 480 hours test, gloss retention is 60% or more, the degree of chalking is 1 mark or lower, and the degree of color change is not larger than that on evaluation sample.
Weather resistance		Pass	Pass	After 12-month test, the degree of chalking is 2 marks or lower, there are no cracking, peeling, swelling, and pinhole and the degree of color change and gloss change are not larger than those on evaluation sample.

\*Results C = ECO FRESH GLOSS

\*Results D = ECO FRESH CLEAN GLOSS

**《Packing Style》**

- \* ECO FRESH SEALER : 18 kg/can
  - \* ECO FRESH : 16 kg/can
  - \* ECO FRESH CLEAN : 16 kg/can
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**《Hazards Information and Safety Precautions》**

Read cautions on containers thoroughly before use, and at the same time, refer to MSDS (material safety data sheet). Be always conscious of safety control while at work.