WAKO CO., LTD. | PRODUCT

Insulation paint- WAKOECO® SHIELD

Product guide

WAKOECO® SHIELD

Comfortable work environment

Cost reduction

Environmental protection

WAKO CO., LTD. PAINT DIV.

Revision No. 2021-03N-PT

SECTION 01

Reduce costs with heat insulation paint!

Paint yourself a more comfortable living space.

Cool in the summer and warm in the winter.

It is ever more vital that your living environment respond to changes in the natural world that surrounds it.

Using our new technology, we have created heat insulation paint that keeps you cool in the summer and warm in the winter, making it perfect for customers who want to keep their living arrangements comfortable, or simply want to reduce their air-conditioning and heating costs.

Let us help you create your ideal living environment.

WAKOECO® SHIELD

A paint that combines our own unique technology based on a porous ceramic paint.

SECTION 01

About us

More familiar paints that realize a comfortable and living space.

We began with the sale and manufacture of special ceramic-based ship-bottom paint, and have had record sales for over 20 years, both in Japan and abroad.
We are now carried by over 200 dealers throughout Japan.
Through application of our ceramics technology, we have developed new heat insulation and soundproofing paints for use in a variety of construction applications beyond ship bottoms.

Company name	WAKO CO., LTD.
Location	730-0802, WAKO palace 21, 2-1-13, Honkawa-cho, Naka-ku, Hiroshima-shi, Hiroshima-ken, JAPAN
Contact	TEL +81-82-545-3361 / FAX +81-82-545-3371
CEO	Eiji Kanemitsu
Established	March 1987
Capital	10,000,000 yen (JPY)
Bank	Sumitomo Mitsui Banking Corporation / Bank of Tokyo-Mitsubishi UFJ / Hiroshima Bank / Yamaguchi Bank / Momiji Bank / Hiroshima Commercial Bank Credit Union

SECTION 02

Heat Insulation Mechanism

Patented technology
Patented in Japan and abroad

We are proud of our heat insulation, which demonstrated superior performance when tested and proved effective in Indoor exposure testing (simulated) as well.

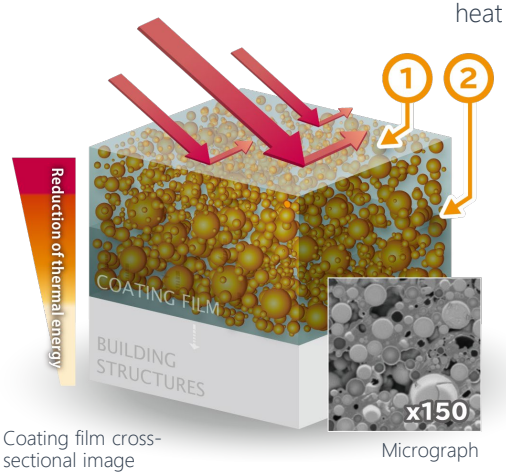
Energy saving effect

Energy saving effect①

Heat shield function that effectively reflects the sun's rays.

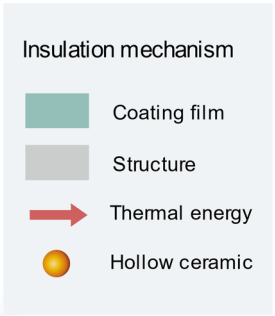
Energy saving effect②

Insulation function that releases heat in the coating film and suppresses heat transfer



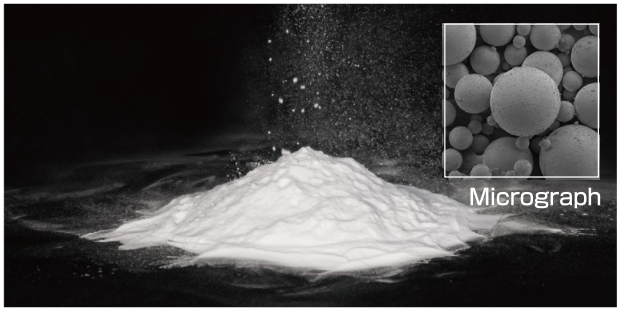
Coating film cross-sectional image

Micrograph



* It is created for the explanation image and is different from the actual one such as color and distribution.

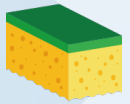
Hollow ceramic beads



It is a fine hollow ceramic bead consisting of large and small, and it does not interfere with the workability with a roller brush during painting, and it can be painted easily.

Point!

The hollow bead layer has a porous shape like a sponge, and when it is evenly coated and fixed, it has a heat insulating and heat insulating effect.

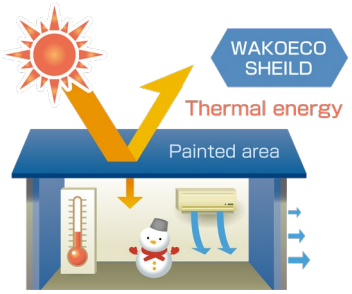


SECTION 02

Effect of energy saving

Comfortable "summer" and "winter" life

Increased cooling efficiency in summer



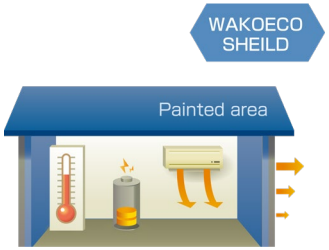
It blocks the strong sunlight in summer and shuts out without letting the cold air of the air conditioner escape.
Streamline air conditioning in the room.

Comparison of prefabricated electricity usage for 7 days in summer [own test]

WAKOECO SHIELD	Unpainted	Power consumption reduction rate
21.01kWh	24.72kWh	-15.0 %

* Measured value measured during the target test period

Increased heating efficiency in winter



Shut out without letting the warm air of the air conditioner escape
Keeps the temperature constant, reduces power consumption, and improves the efficiency of indoor heating.

Comparison of prefabricated electricity usage for 7 days in winter [own test]

WAKOECO SHIELD	Unpainted	Power consumption reduction rate
74.6kWh	95.0kWh	-21.5 %

* Measured value measured during the target test period.

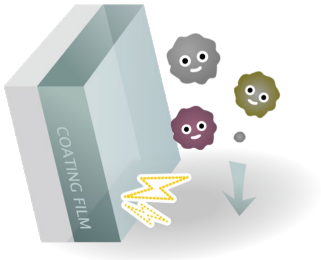
The details of the prefabricated electricity usage comparison test are described on P10.

SECTION 02

Protect the living environment with special ceramics

Special porous ceramics suppress the generation of static electricity.

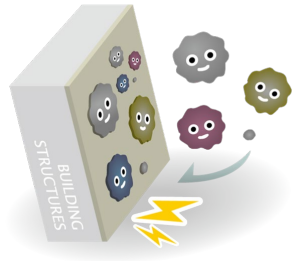
Air quality improvement



Wall surface painted with WAKO ECO® SHIELD

Static electricity is suppressed by the coating film and it is hard to get dirty.

Porous ceramics suppress the generation of static electricity, which suppresses the generation of allergens and extends the life of the wall surface due to dirt.

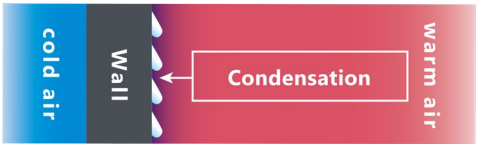


Wallpaper wall surface without painting and anti-static measures

Dust in the air is attracted by static electricity.

Due to the accumulated dust and the moisture in the air that has been sucked in, it becomes a hotbed for mold, has a strange odor, and becomes an allergic substance, which has a problem on health.

Dewproof

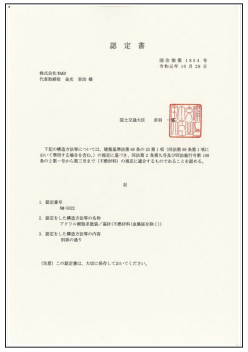


Walls painted with WAKOECO® SHIELD adapt instantly to space temperature. Since the dew point temperature at which dew condensation occurs also changes according to the space, it is possible to suppress the occurrence of dew condensation.

Incombustibility

It has acquired the non-combustible material certification of the Ministry of Land, Infrastructure, Transport and Tourism, and the non-combustible performance is maintained even after construction without degrading the performance of the current non-combustible material.

Ministry of Land, Infrastructure, Transport and Tourism non-combustible material certificate



Nonflammable test

Even in our own test, urethane foam coated with WAKOECO® SHIELD does not have holes even when exposed to the fire of a gas burner.

Vibration damping performance

WAKOECO® SHIELD has vibration damping performance and suppresses the intrusion of external sounds such as the sound of rain hitting the roof.

Safety

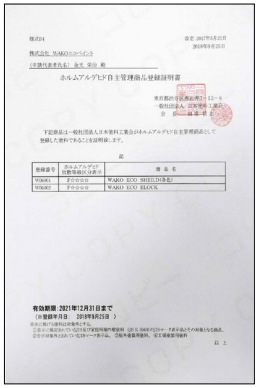
WAKOECO SHEILD, which is water-based, does not use dangerous substances such as organic solvents. We have acquired F ☆☆☆☆ (Forster), which is a measure of the safety of the indoor air environment.

F ★★★★

F Forster

Formaldehyde free　No restrictions on interior use

(General incorporated association) Registered by Japan Paint Manufacturers Association
Registration number W06001



Uniqueness

WAKO ECO® SHIELD has been proven to be effective by third-party testing institutions. Obtained a patent overseas and acquired the right in Japan in December 2020.

SECTION 03

Performance test

[Insulation performance experiment No.1]

Test category	Other company (Testing and research institutes)	Test request destination: Western Industrial Technology Center

Outdoor insulation experiment

In an outdoor environment close to the actual environment, we measure the temperature change inside the 18 litter steel can with unpainted and functional paints from three companies.

■Test equipment setting

Specimen: 18 litter steel can
Measures the temperature rise at the center point of the bottom of the skeleton.


Unpainted


S heat shield paint

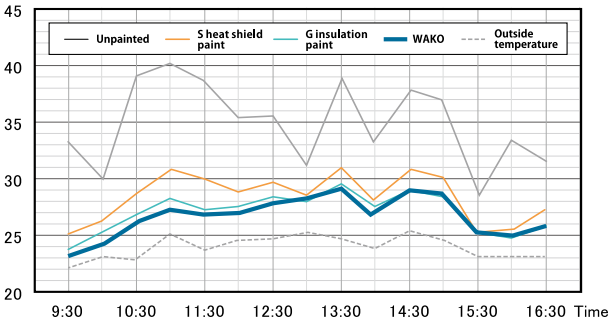

G insulation paint


WAKOECO SHIELD

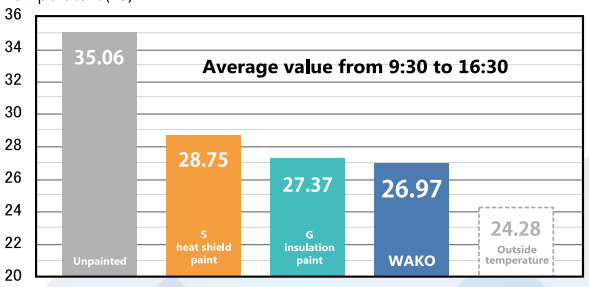
Average value from 9:30 to 16:30 Comparison with WAKO heat insulating paint

Comparison with unpainted	Comparison with S heat shield paint	Comparison with G insulation paint
About -8.1℃	About -1.8℃	About -0.4℃

Changes in the internal and external temperature of the experimental body



Average value of internal temperature and external temperature of specimen



Test results	The temperature rise inside the 18 litter steel can of WAKO heat-insulating paint is suppressed compared to unpainted, S heat-shield paint, and G insulation paint.

[Insulation performance experiment No.2]

Test category	Other company (Testing and research institutes)

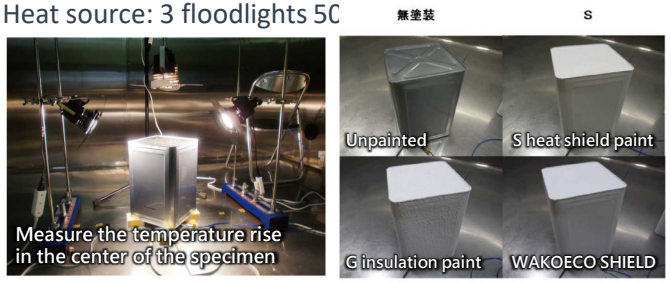
Test request destination: Western Industrial Technology Center

❯ Homeothermic insulation experiment

Using a thermostatic chamber with no temperature change, measure the pure heat insulation effect that is not affected by external factors.

■Test equipment setting

Heat source: 3 floodlights 5C

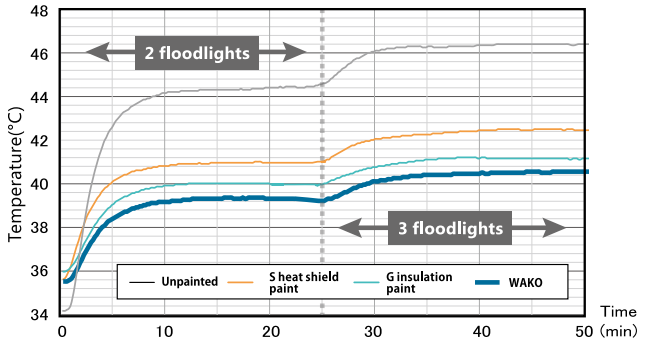


Average temperature in the cente. of the test

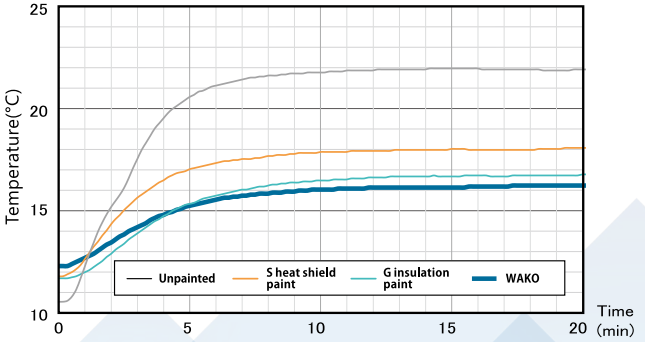
Difference from unpainted 18 litter steel can

Environmental test room (constant)	Floodlight	Temperature comparison with unpainted 18 litter steel can (℃)			
		Unpainted	S heat shield paint	G insulation paint	WAKOECO SHIELD
Room temperature 35℃	2 bodies	-	-3.4	-4.3	-5.0
	3 bodies	-	-3.9	-5.6	-5.9
Room temperature 10℃	3 bodies	-	-4.0	-5.3	-5.8

Room temperature set to 35 degrees



Room temperature set to 10 degrees



Test results	The temperature rise inside the 18 litter steel can of WAKOECO SHIELD is suppressed compared to unpainted, S heat-shielding paint, and G heat-insulating paint.

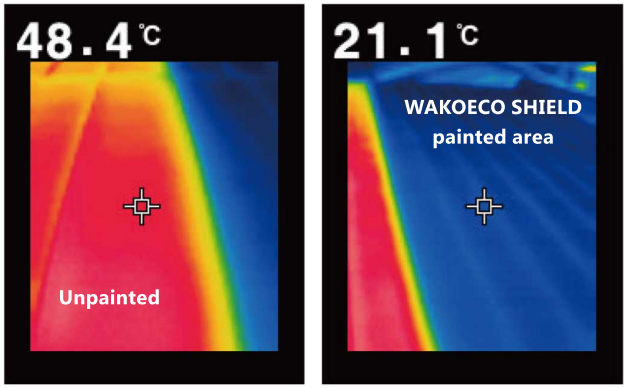
[Insulation performance experiment No.3]

Test category	Other company (General company)

Test request destination: Switchboard manufacturer

❯ Thermography

Testing location	:	Otake City, Hiroshima Prefecture
Measurement period	:	May 5th, 2019
Painted area	:	Roof part
weather	:	Cloudy
Highest temperature	:	26.6°C
Lowest Temperature	:	14.7°C



By preventing the ingress of heat transmitted from the roof, air conditioning costs can be reduced, leading to energy savings.

[Power consumption comparison experiment]

Test category	Other company (Testing and research institutes)

Test request destination: Western Industrial Technology Center

Prefabricated electricity usage comparison

Even prefa proven to be effective in reducing electricity costs.
By reviewi ct of reducing electricity costs can be further improved.

Summer

Winter

Location: Higashi-Hiroshima City, Hiroshima
Implementation period: January-March 2020
Test target: Prefab (12.54㎡)
Construction site: Roof / indoor

Comparison of prefabricated electricity usage for 7 days in summer [own test]

WAKOECO SHIELD	Unpainted
21.01kWh	24.72kWh

Power consumption reduction rate

-15.0 %

* Measured value measured during the target test period.

Comparison of prefabricated electricity usage for 7 days in winter [own test]

WAKOECO SHIELD	Unpainted
74.6kWh	95.0kWh

Power consumption reduction rate

-21.5 %

* Measured value measured during the target test period.

Test results	Compared to unprocessed prefabs, the effect of reducing electricity bills was demonstrated in both summer and winter.

SECTION 03

Construction results

Construction site	Fukushima
Building use	
Plastic factory	
Painted area	
2,400㎡	

Construction site	Hiroshima
Building use	
Rental apartment	
Painted area	
200㎡	

Construction site	Hyogo
Building use	
Construction shop	
Painted area	
500㎡	

Construction site	Hiroshima
Building use	
Auto parts factory	
Painted area	
700㎡	

Other achievements

Construction site	Osaka
Building use	
General housing	
Painted area	
150㎡	

Wave Energy

Decided to use as a heat insulating paint for Wave Energy, a manufacturer of power receiving and transforming equipment.

SECTION 03

Test Report

WAKOECO® SHIELD is composed of a special ceramic layer, which is strong against ultraviolet rays and has about twice the durability of general acrylic paints and urethane paints. Expected useful life is 10 to 15 years or more under general environment.

Falling-weight(Dupon method)	No abnormality.
Cupping	No cracking and peeling at depth of indentation 8.0mm
Adhesion(Cross cut)	Classification 0
Alkali resistance No abnormality. 24hours	No abnormality.
Acid resistance No abnormality. 24hours	No abnormality.
The effect of heat lhour	Temperature:150°C
	Color difference : (Rating 2) *1 No cracking, blister. peeling and doss decrease.
	Temperature:200°C
	Color difference : (Rating 2) *1 No cracking, blister. peeling and doss decrease.
Resistance to neutral spray 96hours	No abnormality.
Accelerated weathering 1000 hours	No abnormality.
Accelerated weathering 2000 hours	No abnormality.
Reflectance solar at 0hour, 1000 hours (The near-infrared region)	0hour ：85.1
	1000 hours：85.5
Reflectance solar at 2000 hours (The near-infrared region)	85.4
Humidity and cool-heat cycling	No abnormality.
Permeability test	0.3ml
Flexibility test	No abnormality.

*1 JIS K 5600-4-3:1999 Visual comparison of the color of paints Annex B (normative) Color difference rating scheme
Table B. 1 Rating scheme for components of color difference by visual assessment

SECTION 03

Specifications

Colors

N-95	N-85	N-80	42-80D
22-90C	22-85C	22-85B	25-85F
75-90D	72-80D	–	

Please contact us for other colors.

Technical Data

Information	Base color	White and light color (order)			
	Painted surface	matte			
	Mixing ratio	-			
	Theoretical coverage	0.42 ~ 0.48kg/㎡ (2 coats of paint)			
	Flash point	-			
	Drying time	5℃	10℃	20℃	30℃
	- Surface dry	1hr	45mins	30mins	20mins
	- Hard dry	6hrs	4.5hrs	3hrs	2hrs
	Overcoar interval	5℃	10℃	20℃	30℃
	- Min	6hrs	4hrs	3hrs	1hr
Application	Precending coats	Depending on the material.			
	Number of coats	2 or more times			
	Method of dilution	Water			
	Method of dilution ratio	Airless spray - max.15% by volume , Roller or Brush - max.10% by volume			
	Method of application	Airless spray · Roller · Brush			
	Application condition				
	- Relative humidity	Max.85%			
	- Substrate temperature	Min.5℃ (at least 3℃ above the dew point)			
	- Atmosphere temperature	5 ~ 35℃			
	Airless spray	- Nozzle orifice 0.023 ~ 0.030 inch - Nozzle pressure 2,000 ~ 3,500 psi			
	- Chip used range	0.023 ~ 0.030 inch			
	- Pressure	2,000 ~ 3,500 psi			
Storage		Shelf life : 9months at 5 to 35℃ Store in dry, shaded conditions away from source of heat and ignition.			

WAKO CO., LTD. | PRODUCT

Insulation paint- WAKOECO® SHIELD

Product guide

WAKO CO., LTD. Paint Division

Location 730-0802, WAKO palace 21, 2-1-13, Honkawa-cho, Naka-ku, Hiroshima-shi, Hiroshima-ken, JAPAN
URL https://wec-paint.jp/english

WAKO CO., LTD.

Paint Division website