

Specifications for roller painting

Process	Materials	Dilution rate	Standard amount of paint	Painting area (15kg can)
Base	Ensure to keep the surface clean by using a sander, scraper, wire brush, and other necessary tools to remove the fragile old paints, dirt, fungus, chalking, and other unnecessary materials. Irregularities, burrows, and other uneven portions should be leveled with emulsion cement.			
Primer	OPTIMUS PRIMER	Clean water: 0% to 30%	0.15 kg/m ² /layer	100 to 120 m ² /can
1st Coating	OPTIMUS WHITE PAINT	Clean water: 0% to 5%	0.2 kg/m ² /layer	35 to 40 m ² /can
2nd Coating	OPTIMUS WHITE PAINT	Clean water: 0% to 5%	0.2 kg/m ² /layer	

Specifications for spray gun painting

Process	Materials	Dilution rate	Standard amount of paint	Painting area (15kg can)
Base	Ensure to keep the surface clean by using a sander, scraper, wire brush, and other necessary tools to remove the fragile old paints, dirt, fungus, chalking, and other unnecessary materials. Irregularities, burrows, and other uneven portions should be leveled with emulsion cement.			
Primer	OPTIMUS PRIMER	Clean water: 0% to 30%	0.15 kg/m ² /layer	100 to 120 m ² /can
Under coating	OPTIMUS UNDER PAINT	Clean water: 15% to 20%	1 kg/m ² /layer	15 m ² /can
Top Coating	OPTIMUS WHITE PAINT	Clean water: 15% to 20%	0.4 kg/m ² /layer	25 m ² /can

Precautions for coating process

■Ensure to have the room well-ventilated during and after the painting process. ■Water or moisture on the base surface could delay the drying process, which could cause coating abnormality. OPTIMUS may not be applied to wood or concrete not adequately dried. ■A dewfall could cause bleaching or bristletail on the paint surface if it occurs before the paint film is completely dried. Keep a good airflow while applying OPTIMUS, and also, try to accelerate the speed of painting process during dewfall season. ■Ensure to conduct a test paint on an unnoticeable spot to check the color and finish before applying the paint. Also, verify the affinity with the base surface in terms of adhesion. ■The curing period for concrete or mortar should be at least 3 weeks; ensure that the water content is 10% or below and pH 9.5 or below before applying OPTIMUS. (OPTIMUS is a monolayer elastic paint that forms a water-proof paint film, and therefore, is prone to blister if the base surface contains water. Take extra care to ensure that an adequate waterproof is in place for the building with a base surface that tends to absorb water.) ■Some sealants and caulking materials are not compatible for adhesion, and thus, should be tested to confirm their affinity before using OPTIMUS. OPTIMUS cannot be used on a wall with a fibrous or otherwise fragile surface, or to which a fireproof coating is applied. ■The primer and paint for the final coating are not facilitated with a rust-proof function; therefore, if the foundation is metallic, the rusted portion should be cleansed and painted with a rust-proof primer before OPTIMUS is applied. ■Dirt tainted on the dried surface of OPTIMUS should be washed with a neutral detergent. Do not wipe it off with a paint thinner or any other materials. Use a roller brush or other painting equipment designed for aqueous use for applying OPTIMUS. (Precautions for storage) ■Keep out of reach of children. Take extra care to prevent children from erroneously swallowing OPTIMUS. ■When storing, keep the lid on, and keep away from a place with direct sunlight or at a temperature ≤ 0°C. (First aid) ■Wash off immediately with a large amount of water if OPTIMUS gets into your eye, and promptly consult a physician. ■Wash off with a large amount of soapy water if OPTIMUS sticks on your skin. Pain or any other abnormality on your skin warrants consultation with a physician. ■Try not to spew out if you erroneously swallow OPTIMUS, and immediately consult a physician. If you get sick during the painting process, stop your work, and rest at a place with clean air.

OPTIMUS WHITE PAINT 5 COLORS



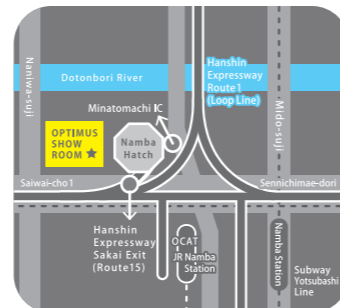
Manufactured by:

Hoei Sangyo Co., Ltd.
94 O'noshiro-cho, Naka-ku, Sakai-shi, Osaka
599-8233
TEL: 072-235-1131 FAX: 072-234-0835

Distributed by :

OPTIMUS SHOWROOM

Minatomachi 82 3F, 1-2-8 Saiwai-cho, Naniwa-ku,
Osaka 556-0021 TEL: 06-6562-1151 FAX: 06-6562-3111
www.optimus.jp



Environmental Design Facade Paint

OPTIMUS® WHITE PAINT

OPTIMUS
WHITE PAINT



Paint that keeps the heat out and keeps it CLEAN

- ✔ Water-based paint
 - ✔ CO² reduced
 - ✔ Self-Cleaning
 - ✔ Air-purifying
- from Japan



Photographed in Arctic Ocean

What can we do to save the future of this planet?

Super-typhoon, rising sea level, drought, heat wave...
The global warming is affecting our planet in various ways.

Polar bears are on the verge of extinction due to global warming. Loss of glacier will make them the first animal to be gone due to global warming.

Can we honestly tell those polar bears, "we will come protect you guys"?

Scientists are predicting that 2/3 of polar bears will be extinct by 2050 if the green gas emission keeps its pace as it is.

It is very important to change our consumption behavior, which would delay the global warming, and thus, protect our beautiful planet.



Photographed in Northern Thailand

A low carbon lifestyle that begins with OPTIMUS

An air-conditioner exhausts CO² the most in your house.

Setting the temperature of your air conditioner by 2°C higher would contribute to the reduction of CO² emission by 800 g/day.

Choosing OPTIMUS for the exterior wall contributes to the reduction of CO² emission by 192 kg/year.

A tiny thing we can do every day...
That is the low carbon lifestyle.

Choose to ride bicycle, drive an ecologically-conscious automobile, use an eco-bag for shopping, and use OPTIMUS when repainting your house.

Such a simple decision makes the world difference for the environment of our planet.

3 reasons for you to choose OPTIMUS WHITE PAINT

reason 1

An everlasting self-cleaning effect keeps the wall white.

Photocatalyst (titanium oxide) generates, on its surface, a strong active oxygen when exposed to light, and degrades and removes organic compounds and viruses from the surfaces. OPTIMUS WHITE PAINT, with a special technology by which the photocatalyst is coated on the microcapsules, removes stain and dirt out of the painted wall, keeping it white all the time.

reason 2

OPTIMUS breaks down noxious air pollutants, and keeps the air clean.

Nitrogen oxide (NOx) and volatile organic compound (VOC) floating in the air become a hazardous substance through photochemical reactions, entering human body, and causes respiratory and other health problems. Photocatalysts absorb and remove NOx and VOC, and purify the air.

reason 3

OPTIMUS shuts off the ambient temperature and reduces CO².

OPTIMUS WHITE PAINT is jam-packed with a layer of microcapsules of 35 to 55 μm. When OPTIMUS is applied and dried, the microcapsules cloak the surface to which the paint is applied, and the vacuum microspheres obstruct the heat from passing through the wall, shutting off the thermal transfer from the outside, and thus, improving the efficiency of air-conditioner and reducing CO² emission.



Here is the difference!

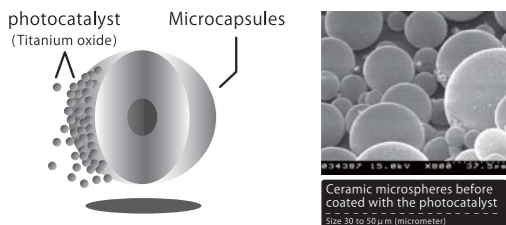
A unique technology that supports OPTIMUS

Two proprietary materials help maximizing the heat blocking, self-cleaning, and air-cleaning effects!

Three special materials help maximizing the heat blocking, self-cleaning, and air-cleaning effects!

ingredients ①

Microcapsules

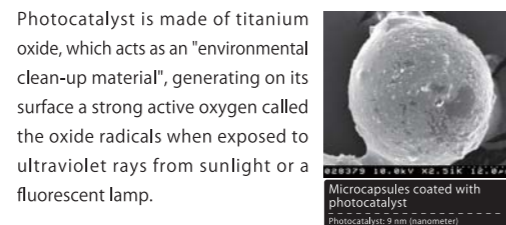


Creates a vacuum layer to shut off heat.

A thermal bottle has a structure consisting of double layers of glass with vacuum in between which prevents heat transfer so as to maintain the temperature of drinks inside. We focused on this characteristic of vacuum when developing OPTIMUS, and were able to successfully contain microcapsules of 35 to 55 μm in the paint. When OPTIMUS dries out, these microspheres with a lower specific gravity float up to and cover the surface, and obstruct the heat from passing through the wall, shutting off the cold air in the winter, and hot air in the summer, contributing to the energy conservation, enabling to reduce electricity bills for air-conditioning, and at the same time, CO₂ emissions.

ingredients ②

Nanosize photocatalyst



Protects the base materials from degradation while maintaining the effect

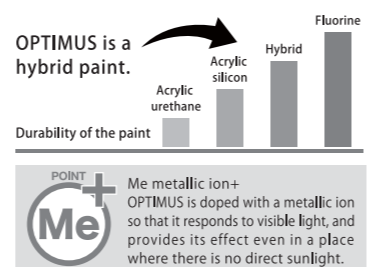
The microcapsules coated with the nano-sized photocatalyst (titanium oxide) degrades and removes organic compounds and viruses from the surfaces when exposed to ultraviolet rays from the sunlight. Conventional photocatalysts mixed in an organic material such as a paint had always been associated with a problem of degrading their own base materials. OPTIMUS contains microcapsules with a lower specific gravity that floats up to and cover the surface, keeping the base materials from degradation, and therefore, fully brings out its photocatalytic action, that is, self-cleaning and air-cleaning effects for a prolonged period.

ingredients ③

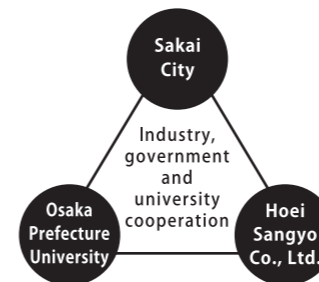
Colloidal silica

Hybrid and resilient paint film formed with an inorganic material

A colloidal silica is a material in which alkaline silicate (liquid glass) is nano distributed. With the colloidal silica content, OPTIMUS maintains a good balance of resinous contents, and helps forming a strong paint film with a high endurance exceeding that of conventional acrylic silicone resin. Also, the colloidal silica combined to add superhydrophilicity on the paint film further improve the self-cleaning effect of the photocatalyst, bringing out an outstanding staining-resistance and weather-resistance effect.



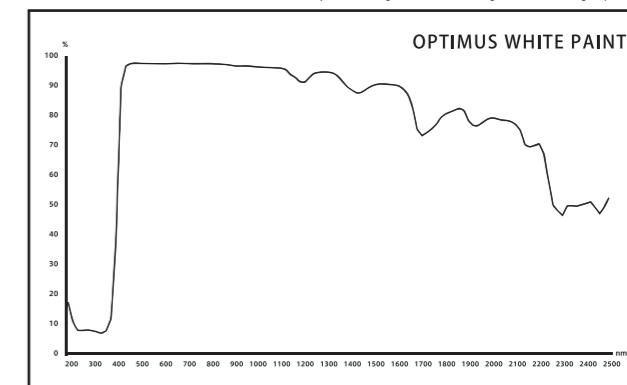
OPTIMUS was developed under cooperation of Sakai City, Osaka University and Hoei Sangyo.



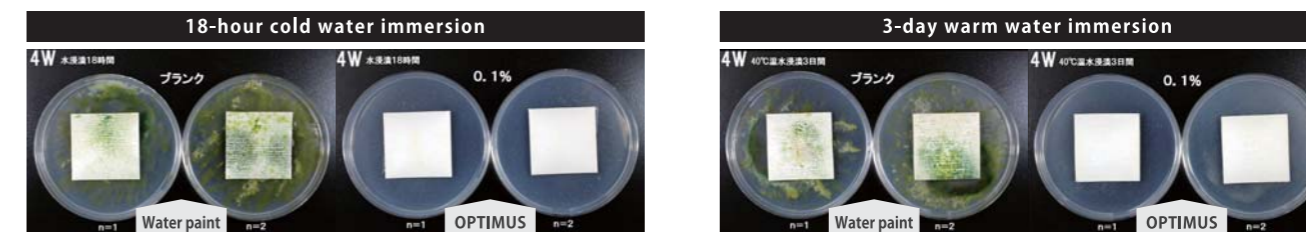
A patent for microcapsule has also been filed and is currently under review.

Solar reflectance (JIS5602 2008)

Product No. OPTIMUS WHITE PAINT 89.80% / 91.28% / 90.36%
JASCO (Nihon Bunko Co.) V-670 (Near ultraviolet ray and visible light) / (Near infrared region) / (The entire light spectrum)



OPTIMUS keeps away algae and mold. Strong in wet environment.



Samples: Image on the left (water paint) : Image on the right (OPTIMUS) Study method: [1] Apply an inorganic salt agar medium onto a plate, solidify the medium, and put the sample on the medium. [2] Spray the plate with the algae suspension until the surface of the sample is immersed. [3] Culture it in a small conservatory. Preprocessing: 18-hour cold water immersion followed by 3-day warm water immersion Assessment endpoint: Algae count on the sample

Here is the difference in 1 year!



Maintains the whiteness forever!

An exterior wall coated with OPTIMUS (picture on the left) and a wall without OPTIMUS coating were compared in 1 year. The whiteness on the OPTIMUS-painted wall remained unchanged after 1 year while the wall with no OPTIMUS had stains and discoloration.

Here is the mechanism of self-cleaning.

Auto-purification with super-hydrophilicity (means opposite of water-repelling)



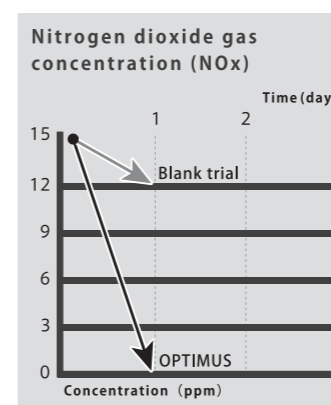
It degrades and removes dirt from the surface.

The OPTIMUS-painted exterior wall absorbed the oil floating near the wall, and also, organic compounds and viruses on the surface of the oil, which are degraded along with the oil as the sunlight triggers the photocatalyst contained in the surface layer of OPTIMUS, and finally the degraded substances are washed away by the rain.

Confirmed air-cleaning effect

OPTIMUS dramatically reduces the level of nitrogen oxide (NOx).

OPTIMUS with its photocatalyst effect removes nitrogen oxide (NOx) from the air, and thus, keeping the air clean. The NOx concentration in the air around the OPTIMUS-painted surface was compared to that around a surface with no OPTIMUS paint; the NOx concentration around the OPTIMUS-painted surface decreased to zero in 1 day (Based on the results of studies conducted by Osaka Prefectural Institute of Advanced Industrial Science and Technology).



OPTIMUS degrades the auto emission!



A 2-story house (about 300 m²) with OPTIMUS painted on the exterior wall can degrade auto emission worth about 200 km drive.

For a passenger car with the engine size of 3000 cc, the catalog value of NOx is 0.013 g/km; therefore, the cubic content of NOx after a 1-km drive of the passenger car would be NOx 0.013 g divided by 1.91 g/L (NOx density per 1L) = 0.0068062L = 6.8062 cm² (NOx density); that is, OPTIMUS per 100 cm² removed 0.045 cm²; thus, OPTIMUS: NOx = 100 m²: 0.045 cm² = x cm²: 6.8062cm² x cm² = 100 multiplied by 6.8062, and then, divided by 0.045 = 15124.888 cm² = 1.5124888 m². Thus, you need approximately 1.5 m² of OPTIMUS to remove NOx worth about a 1-km drive of a passenger car.

6 major features of OPTIMUS

1 Long lasting whiteness

Maybe you have given up trying to keep the exterior wall clean because the paint applied would be eventually tainted anyhow with all kinds of undesirable substances. OPTIMUS with its photocatalyst function degrades and removes organic compounds and viruses from the exterior wall, which will eventually be washed out by the rain, and therefore, keeps the exterior wall white.

3 CO² reduction

A massive CO² emission is said to be the cause of global warming. OPTIMUS has an excellent thermal blocking and insulation effects, and therefore, dramatically improves the efficiency of air conditioners, enabling to reduce the electricity needed for air-conditioning, and thus, consumption of oil and other energy resources, which may contribute to the reduction of CO² emission.

5 Excellent weather resistance

Cracks and other trouble on the paint layer not only cause functional problems, but also cause disfigurement requiring repainting. OPTIMUS, which makes the best use of our longtime paints manufacturing technology, prevents cracking on the paint surface, and is highly resistance to water, and thus, requires less frequent repainting.

6 Easy to apply

You may be thinking that a paint with such various features involve various precautions when applying it. Though, OPTIMUS is a multi-functional paint, it only requires 2 layers of paint like any other monolayer paints.

OPTIMUS to reduce the urban heat island effect!

In cities with asphalt-paved roads, a massive thermal emission is released from air conditioners, causing outstanding increase of temperature compared to suburbs; this is called an urban heat island (UHI) effect. Such increased temperature helps increasing the photochemical oxidant which is harmful to the human body, and is also suggested as a potential cause of torrential rainfall. OPTIMUS helps relieving such urban heat island effect.

2 Excellent thermal barrier

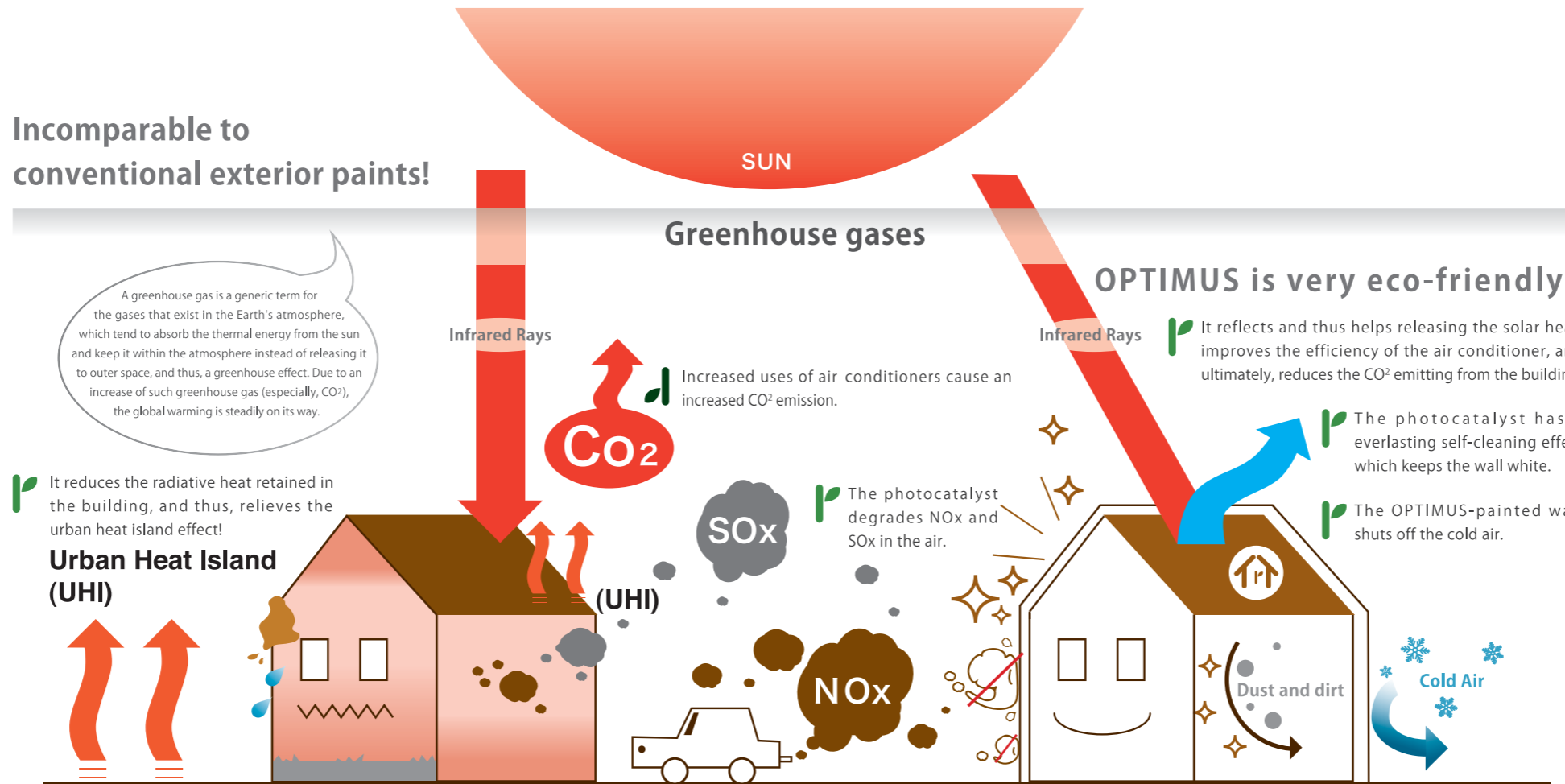
Air conditioning occupies a significant portion of electricity used in factories. The microcapsules concentrated on the paint surface of OPTIMUS block off the air from the outside, and therefore, shutting off the cold air in the winter, and hot air in the summer, contributing to a large reduction of the electricity used for air conditioners.

4 Air purification

Nitrogen oxide (NOx) and volatile organic compounds (VOC) that float in the air, may be chemically altered to become a hazardous substance, which might affect human body. OPTIMUS with its photocatalyst function absorbs and removes nitrogen oxide (NOx) and volatile organic compounds from the air, and thus, keeping the air clean.



Incomparable to conventional exterior paints!

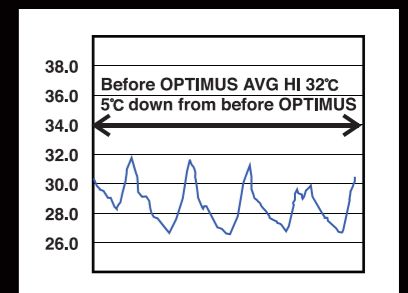
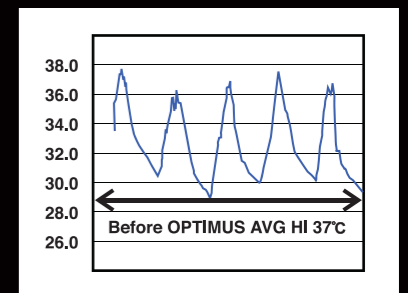


OPTIMUS is highly regarded worldwide.



OPTIMUS has been used in many localized Japanese factories in Thailand and many other Asian nations, and is highly regarded as evidenced by repeated uses among many of these companies.

The difference in indoor temperature by the heat blocking effect is outstanding. ≤5° C after use of OPTIMUS



The above 2 graphs present the results of comparison between an OPTIMUS painted exterior wall and a regular paint coated wall. While the mean peak temperature in a room with a regular paint-coated wall (the above figure) reached 37° C, that in a room with an OPTIMUS painted wall was 32° C, about 5° C lower. The heat blocking effect of OPTIMUS dramatically improves the efficiency of air conditioners.