

Standard application amount *Depending on the application, we also offer intermediate underpaint (0.6kg/m²) and insulation filler (0.6-1kg/m²).



Primer	Base coat	Application	HYDRO THERMO			DARK THERMO		
			Application amount (kg/m ²)	Painted area (15kg can)	Drying time (20°C)	Application amount (kg/m ²)	Painted area (15kg can)	Drying time (20°C)
Metal primer	Iron, SUS304 Galvanium Galvanized sheet steel Bonderized metal	1. Primer layer	0.09 ~ 0.11	135 ~ 165m ²	30minutes to 1hour or more	0.09 ~ 0.11	135 ~ 165m ²	30minutes to 1hour or more
		2. Top coat layer (1st coat)	0.2	37.5m ²	More than 2hours	0.15 ~ 0.2	37.5 ~ 50m ²	More than 2hours
		3. Top coat layer (2nd coat)						
C3 primer	Concrete and mortar Coronial tile Ceramic siding Tile and plaster board Calcium silicate board Artificial marble, ALC	1. Primer layer	0.08 ~ 0.16	95 ~ 190m ²	30minutes to 1hour or more	0.08 ~ 0.16	95 ~ 190m ²	30minutes to 1hour or more
		2. Top coat layer (1st coat)	0.2	37.5m ²	More than 2hours	0.15 ~ 0.2	37.5 ~ 50m ²	More than 2hours
		3. Top coat layer (2nd coat)						
CMS Primer	Colored steel sheet (Polyester baking paint) Concrete, tile Existing coating film	1. Primer layer	0.07 ~ 0.1	135 ~ 165m ²	30minutes to 1hour or more	0.07 ~ 0.1	135 ~ 165m ²	30minutes to 1hour or more
		2. Top coat layer (1st coat)	0.2	37.5m ²	More than 2hours	0.15 ~ 0.2	37.5 ~ 50m ²	More than 2hours
		3. Top coat layer (2nd coat)						

Hue, packing and contents
 ● Metal primer : Milky white, 15kg/4kg/can, water-based acrylic urethane
 ● HYDRO THERMO : Light Color, 15kg/5kg/can, water-based acrylic silicone resin
 ● C3 Primer/CMS Primer : Clear, 15kg, 4kg per can, water-based acrylic
 ● DARK THERMO : Dark color, 15kg/5kg/can, water-based acrylic silicone resin

HYDRO THERMO Painted film performance

Test item	Result	Test standard
Accelerated weathering resistance	Evaluation of observation After the irradiation for 600 hours, the painted film is free from cracking peeling and swelling and the degree of discoloration amongs samples and the sample is visually compared with no great difference between the color change of the sample. Grade of chalking: 1	According to 7.14 of JIS K 5675
	Color difference ΔE*ab	1.4 According to 7.14 of JIS K 5675
Solar reflectance %	Near infrared area Solar reflectance ρIR% b) high luminosity area luminosity L*Value: 97.0 ρIR: 87.2	According to 7.8 of JIS K 5675 b) High luminosity area, If the luminosity L*value is L*≥80.0, ρIR: 80.0
	Total solar reflectance ρ%	87.5 According to 7.8 of JIS K 5675
Acid resistance	No abnormality	According to 7.11 of JIS K 5675
Alkali resistance	No abnormality	According to 7.12 of JIS K 5675
Surface dryness	23°C Dry the surface within 8hours	According to 7.5 of JIS K 5675
	5°C Dry the surface within 24hours	According to 7.5 of JIS K 5675

DARK THERMO Painted film performance

Test item	Result	Test standard
Accelerated weathering resistance	Evaluation of observation After the irradiation for 600 hours, the painted film is free from cracking peeling and swelling and the degree of discoloration amongs samples and the sample is visually compared with no great difference between the color change of the sample. Grade of chalking: 2	According to 7.14 of JIS K 5675
	Color difference ΔE*ab	0.7 According to 7.14 of JIS K 5675
Solar reflectance %	Near infrared area Solar reflectance ρIR% b) high luminosity area luminosity L*Value: 30.9 ρIR: 56.1	According to 7.8 of JIS K 5675 b) High luminosity area, If the luminosity L*value is L*≥40.0, ρIR: 40.0
	Total solar reflectance ρ%	28.2 According to 7.8 of JIS K 5675
Acid resistance	No abnormality	According to 7.11 of JIS K 5675
Alkali resistance	No abnormality	According to 7.12 of JIS K 5675
Surface dryness	23°C Dry the surface within 8 hours	According to 7.5 of JIS K 5675
	5°C Dry the surface within 24 hours	According to 7.5 of JIS K 5675

CAUTION Precautions for Hydro thermo/Dark thermo coating

- Matters concerning the occurrence of cracks and surface cracks**
 ① Strictly adhere to the dilution rate listed in the construction specifications. - If the coating exceeds the dilution rate (5%), the shrinkage rate will increase when the coating dries, causing surface cracks.
 ② Do not apply more than the amount specified in the construction specifications. -Paint hardens from the surface, so if the amount applied is greater than the standard amount, water will break through the paint film as it evaporates, leading to surface cracks. ③ Be sure to apply the undercoat layer specified in the construction specifications. - If there is no undercoat layer, when the topcoat layer dries and hardens, the adhesion to the base is weak and internal stress increases, leading to surface cracks on the topcoat surface. ④ For panel substrates such as ALC that move a lot, fill the joints with a coating material that moves a lot, such as urethane sealant, and use it as a cushioning material. ⑤ When painting the sealant, cracks or peeling of the paint film or staining due to the plasticizer may occur.
- Regarding paint film peeling**
 ① If the undercoat layer (primer) is heavily absorbed, apply the undercoat layer again. - If the primer is strongly sucked in, it will not adhere well to the topcoat, causing it to peel off. (plaster board as the base type) ② Do not open the interval between the undercoat layers too much. If the interval is too wide, dirt and dust may adhere to the undercoat layer, resulting in poor adhesion with the topcoat. Furthermore, if the interval is too large, the activity of the undercoat layer itself will drop, resulting in poor adhesion. ③ When the substrate is mortar or concrete, in addition to the adhesion of dust and dirt, the efflorescence is removed. Since the efflorescence / laitance itself is a crystal of alkali and the primer is not impregnated and the adhesive strength with mortar or concrete can not be secured, a peeling phenomenon is caused. ④ Use painted material specified by the manufacturer. - If materials from other manufacturers are combined and used, there may be problems with adhesion and durability, so use materials designated by the manufacturer. ⑤ When a solvent-based primer is used, since the hydro thermo / dark thermo is a water-based paint, it causes a defect phenomenon such as adhesion failure or cissing. After removing with a sander or the like and applying a water-based primer, apply a hydro thermo / dark thermo.
- Regarding color separation**
 ① Strictly adhere to the dilution rate listed in the construction specifications. If the dilution rate is too high, separation will occur within the paint film due to the difference in specific gravity of the pigment, resulting in color separation. ② Be sure to stir the paint before applying
- Avoid construction at low temperatures, high temperatures, and high humidity (environmental conditions of 5°C or lower, 35°C or higher, and humidity of 85% or higher)**
 Avoid applying under the above environmental conditions as the development of coating film strength will be delayed. (If water evaporates at a low temperature and high humidity, the water will not fly and the formation of a coating will be significantly delayed. Also, if the temperature is high, roller marks and brush marks will occur and the appearance will be impaired.)
- Base that cannot be painted**
 ① Avoid using fluorine coating or silicone coating as the base coating, as it will not be able to secure adhesion (it will not adhere). ② Avoid painting as the base of PP (polypropylene) does not adhere to hydro thermo / dark thermo. ③ Fragile ground
- Regarding construction**
 ① In case of rain, the construction will be suspended. (Even if it is sunny, if it rapidly becomes overcast, construction will be suspended.) ② Improve ventilation during and after painting. (It is difficult to proceed smoothly to the next process, because the formation of the coating film becomes slow. ③ Since it is a water-based paint, no solvents are used when diluting it. (Paint separation and poor drying will occur.) ④ To circulate the air by a blower. (Especially when the humidity is high, the drying of the coating film is extremely slow. Also, do not hit the painted surface directly with the wind.)

Credibility of Made in Japan *In-house development, in-house factory and in-house production*

FACTORY

Hoei Sangyo Co. Ltd.,
 94 Onoshibacho, Naka-ku,
 Sakai, Osaka, Japan
 TEL 072-235-1131
 FAX 072-234-0835



COMPANY

OPTIMUS INC.

Showroom of head office

3F, 2-1-14 Kitahama,
 Chuo-ku, Osaka, Osaka
 TEL 06-6203-1121
 FAX 06-6203-1141

OPTIMUS Tokyo Lab.

2F, 2-3-10 Jingumae,
 Shibuya-ku, Tokyo
 TEL 03-6804-3292
 FAX 03-6804-3293

<https://optimus.jp/>



Next-generation paint that contributes to global warming

IMPROVED Durability & Stain resistance

HYDRO THERMO

DARK THERMO

FOR CARBON NEUTRAL

SUSTAINABLE DEVELOPMENT GOALS



New technology information providing system of Ministry of Land, Infrastructure, Transport and Tourism
NETIS
 Registration No. KK-180055-A

JIS K 5675

HYDRO THERMO / DARK THERMO

Hydrophilic heat-insulating paint that creates a sustainable world and the future of the earth.

In recent years, our planet has been threatened by global warming, mainly caused by an increase in greenhouse gases due to carbon dioxide emissions.

However, it is said that the rise in global temperatures can be suppressed by painting 1-2% of the earth's surface area with heat shielding and insulation paints, and we need to take measure against global warming by choosing.

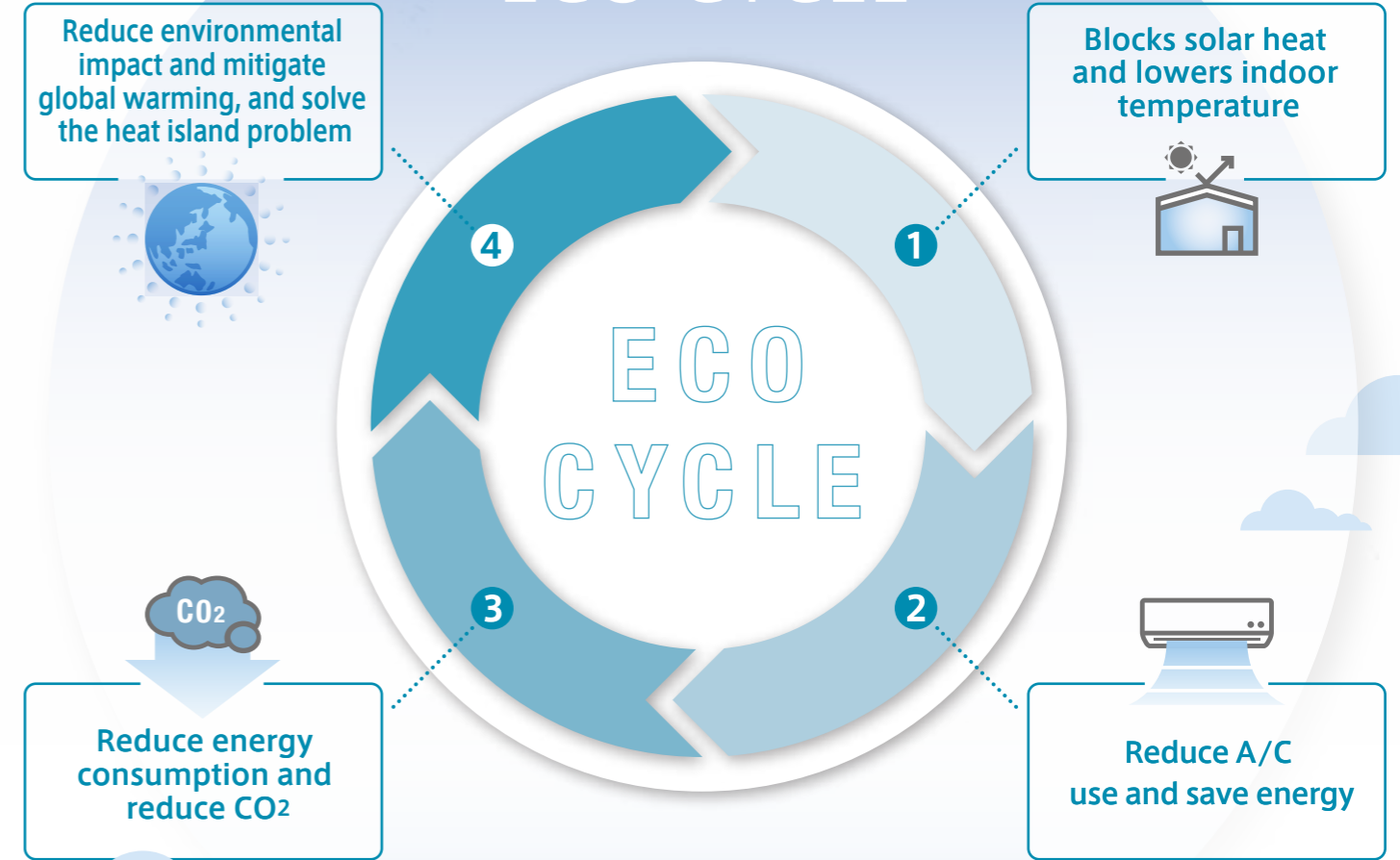
Optimus's "Hydro Thermo/Dark Thermo" is a hydrophilic heat-insulating paint that has high heat-insulating properties and excellent stain resistance, which are required in the carbon-neutral era.

As the only sustainable exterior paint that has a beautiful finish, creates an eco-cycle and contributes to curbing global warming, we are creating a sustainable society and a prosperous future for the earth.

Effective as a countermeasure against global warming



HYDROTHERMO & DARKTHERMO PRODUCES ECO CYCLE



OPTIMUS VISION

CREATE A GREENER PLANET

Optimus aims to contribute to the decarbonized society and a sustainable world by pursuing sustainability based on three businesses: "Manufacturing of paints that are friendly to people and the global environment", "Housing business that can be expected to purify air and reduce CO₂" and "Plant-based food cafe for better environment." We will continue to expand our business globally with the aim the vision of sustainable world.

OPTIMUS CREATES THE FUTURE

Features of HYDRO THERMO / DARK THERMO

IMPROVED
Durability &
Stain resistance

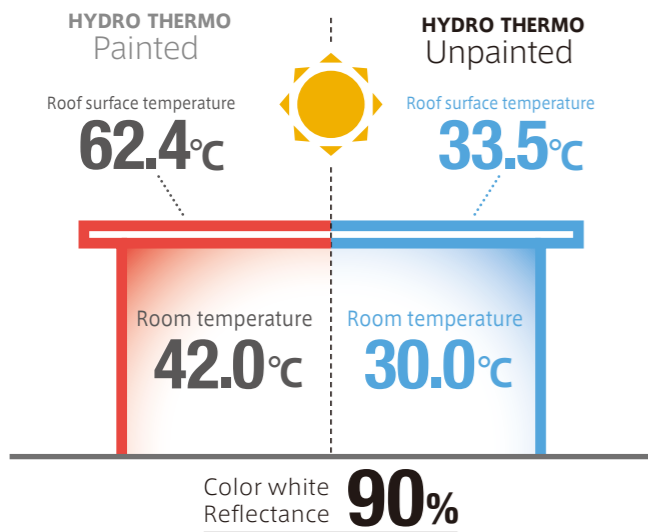
We are the only "hydrophilic heat shielding and insulation paint" that has both high heat shielding and insulation properties and excellent stain resistance.



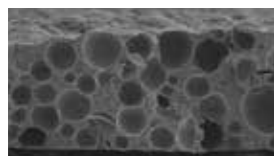
HEAT SHIELDING/ THERMAL INSULATION

Contains a complex oxide-based heat-shielding oxidized pigment, which exhibits a heat-shielding effect by efficiently reflecting the heat rays (infrared rays) contained in sunlight and decrease the surface temperature.

Comparison of hydrotherm coated roof and uncoated roof



It efficiently reflects the infrared region (380 nm to 2,500 nm)



Cross section of painted film of Hydro Thermo and Dark Thermo

The flexible balloons are lined up to increase thickness and provide insulation.

Lowers room temperature with two effects: heat shielding and insulation



HYDROPHILIC/ STAIN RESISTANT

By combining the hydrophilic function (self-cleaning effect) with a unique paint formulation, it is possible to maintain heat shielding effects and low pollution properties for a long period of time.

Paint structure

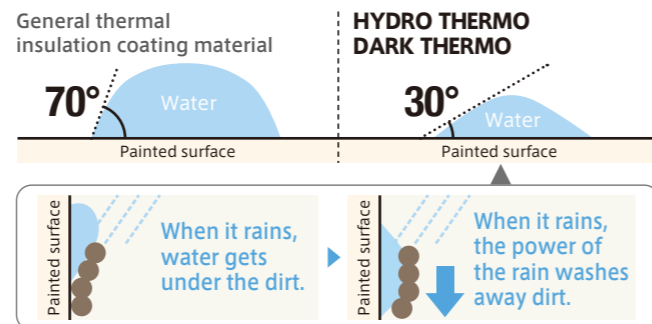


Optimus' unique photocatalytic resin balloon
Smaller "Supercapsule" and improved stain resistance

Conventional product 40~80µm → 20µm
The coating surface has become even smoother, making it less likely to get dirty.

Self-cleaning by the power of rain with hydrophilicity

When it rains on the water-friendly surface (the contact angle between the paint surface and the water is small), rainwater enters between the dirt and the paint surface, and the dirt attached to the paint surface floats up and washes away with the rainwater.

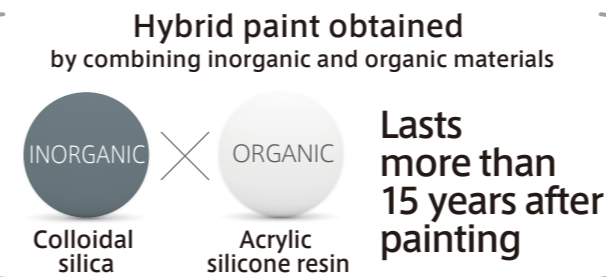


Maintains heat shielding effect and low pollution for a long time

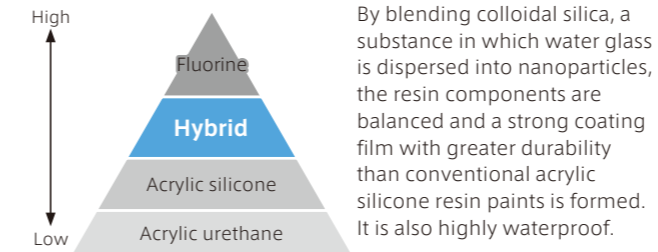


WEATHER RESISTANCE AND DURABILITY

A paint containing acrylic and silicone resin that has excellent weather resistance and durability. No abnormalities occurred in the paint film after 3,750 hours of UV irradiation (equivalent to 15 years of outdoor exposure) after placing the test specimen in an accelerated weathering tester. * We meet standard of JIS-K-5675



Durability of paint

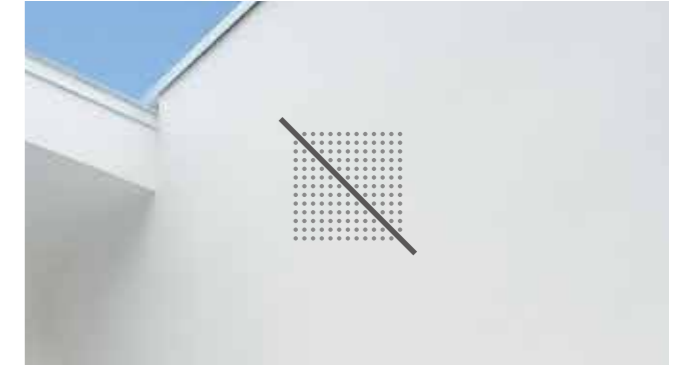


Super-weather resistance achieved by radically controlled titanium

Unlike conventional titanium oxide, it forms a barrier layer around titanium oxide that confines radicals. Since no radicals are generated, there is no damage to the resins and organic pigments that make up the paint, making it possible to achieve super-weather resistance.

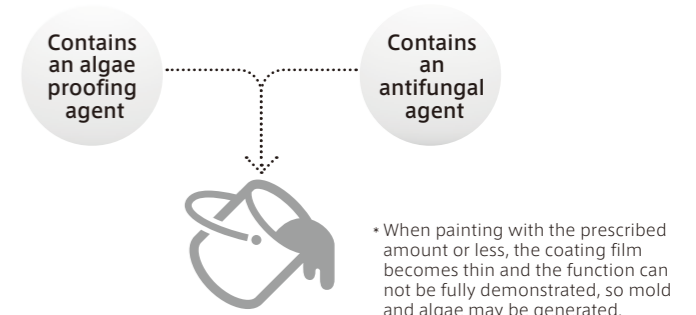


Long-lasting and resistant to deterioration and deterioration caused by weather

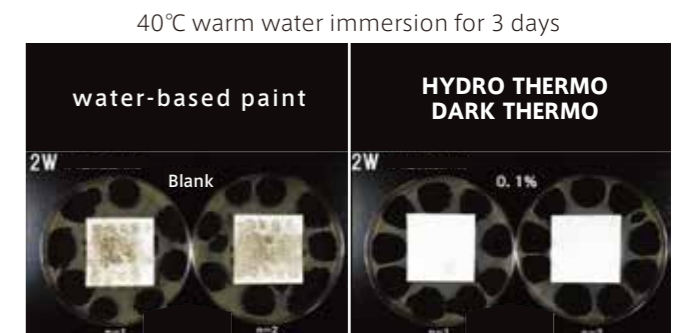


MOLD AND ALGAE RESISTANT

The combination of anti-algae / anti-fungal agent suppresses the occurrence of mold, algae and moss, so it is safe even in places where the sun does not hit or areas with high moisture along the sea. It can be used in a wide range of applications from large factories to residential buildings.



Hydro Thermo/Dark Thermo mold resistance test



Test method: According to JIS-Z-2911 mold resistance test method, paint test
Pretreatment: 40°C warm water immersion for 3 days
Investigation method: Investigate the degree of mold growth on the test surface

Can be used in various applications, regions, and environments

A hydrophilic, heat-insulating and heat-insulating paint with high heat-shielding, heat-insulating, and stain-repellent properties, as well as a wide variety of colors.

A design paint that has the same functionality as Hydro Thermo and specializes in dark colors.

HYDRO THERMO

For Metal roof / Colonial roof / Factory / House / Container

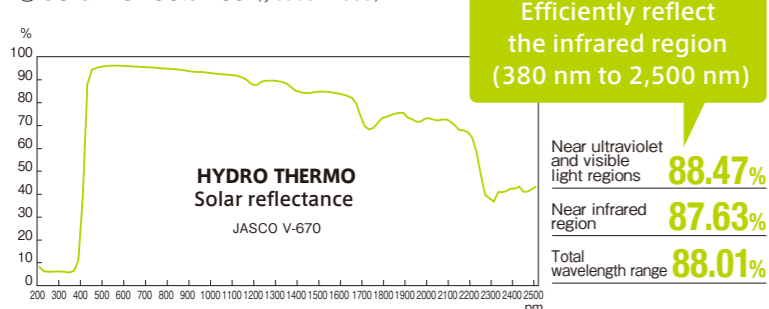
Hydro Thermo is a hydrophilic thermal insulation paint which is friendly to the global environment. Acrylic and silicon are added to the base resin for excellent weather resistance. A special pigment formulation efficiently reflects the infrared region (380nm to 2,500nm) contained in sunlight and suppresses the rise in surface temperature. Because it has a hydrophilic function and demonstrates self-cleaning effect by rainwater, it is hard to get dirty and can maintain the heat shielding effect for a long time

DARK THERMO

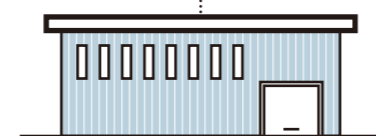
For Metal roof / Colonial roof / Factory / House / Container

Dark Thermo is a combination of an infrared-transmitting special pigment and a complex oxide that improves the infrared reflection function of dark colors, which was difficult to achieve with conventional thermal barrier paints. Using this technology, the paint itself has a heat shielding function for not only white but also light to dark colors, making it a paint that can contribute to reducing the heat island effect and saving energy, which is considered a problem in modern society. Another feature of Dark Thermo is that it can maintain its heat shielding effect for a long period of time by combining it with hydrophilic properties.

© Solar reflectance (JIS5602 2008)

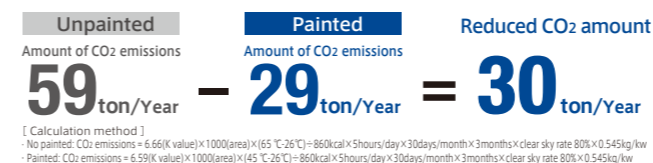


© CO₂ reduction effect and electricity cost reduction forecast HYDRO THERMO/DARK THERMO

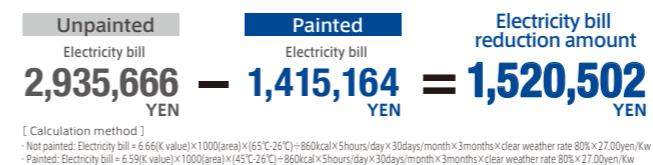


By preventing the intrusion of solar heat from the roof by painting the heat insulation and heat insulation paint of the hydro thermo, the amount of air conditioning used and the load are reduced, and the amount of CO₂ reduction and the amount of electricity cost reduction are calculated.

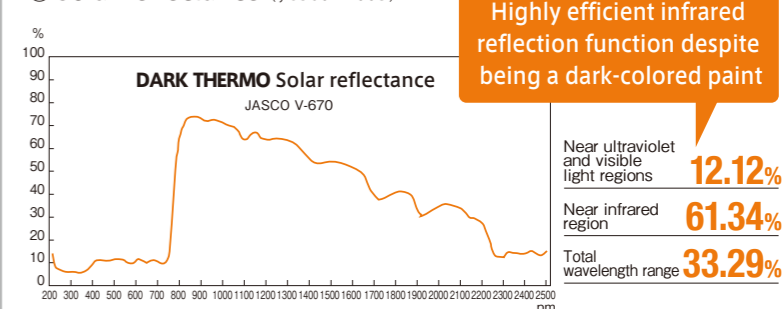
Reduced CO₂ amount [Iron plate roof]



Electricity bill reduced amount



© Solar reflectance (JIS5602 2008)



HYDRO THERMO COLORS

Matte texture | Cusotemizing Color

Seven light colors



DARK THERMO COLORS

Matte texture | Cusotemizing Color

Six dark colors

