



Guangdong Bayide New Material Technology Co., Ltd

Address: 1434-1, Donglian Building, No. 574 Xingtan Shuixiang
Avenue, Gaozan Village, Xingtan Town, Shunde District, Foshan City, Guangdong
Province. Phone: 0757-26172113
Email: BAYD@fsbayi.com
Website: <https://baydpaint.com/>



Three dimensional integrated
energy-saving expert

Direct cooling by 25 °C
Durable for over 15 years



Frozen Technology

BAYD

Energy-saving coating

Committed to creating a more livable Earth environment for humanity.

CATALOGUE

What is frozen paint?-----	01
Why choose frozen paint?-----	03
The advantages of frozen paint----	05
Transparent frozen paint-----	07
Adiabatic frozen paint-----	09
Nano frozen paint-----	11
Application of Frozen Paint-----	15
Use case-----	17
Frozen paint user detection-----	18

WHAT IS FROZEN PAINT?

The frozen coating is developed and produced by BAYD Technology Materials Company, using exclusive anti radiation vacuum insulation technology. It can effectively suppress heat transfer and instantly release the freezing effect.

Frozen paint - an expert in energy-saving solutions for three-dimensional integrated buildings. Our products mainly include three series: transparent frozen paint, insulated frozen paint, and nano frozen paint. We have solved the energy-saving and consumption reduction problems of insulation, heat insulation, and energy saving from the three dimensions of building exterior walls, roofs, and glass.

After use, frozen paint acts like a barrier, effectively improving the thermal comfort inside buildings while reducing energy consumption, saving energy costs, and achieving a warm winter and cool summer effect.

Frozen paint adopts a unique structural design, utilizing exclusive high-tech technologies such as ultraviolet surface bonding technology, anti radiation vacuum insulation technology, and instantaneous freezing cooling technology; Not only does it effectively freeze and cool down, but it also has ultra-high resistance to pollution, waterproofing, anti-corrosion insulation, sound insulation and other properties. Compared with similar products, frozen paint has stronger thermal insulation performance and is durable for more than 15 years.



Frozen paint

三维一体建筑节能解决专家

THREE DIMENSIONAL INTEGRATED BUILDING ENERGY SAVING EXPERT



Transparent frozen paint
Solar reflectance ratio ≥ 0.65
Hemisphere emissivity ≥ 0.85
Solar radiation absorption coefficient ≤ 0.35

Adiabatic frozen paint
Surface cooling of $\geq 25^{\circ}\text{C}$
Thermal resistance ≥ 0.5
Weather resistance > 12 years



Nano frozen paint
UV shielding rate $\geq 99\%$
Infrared shielding rate $\geq 90\%$
Visible light transmittance $\geq 70\%$

WHY CHOOSE FROZED PAINT?

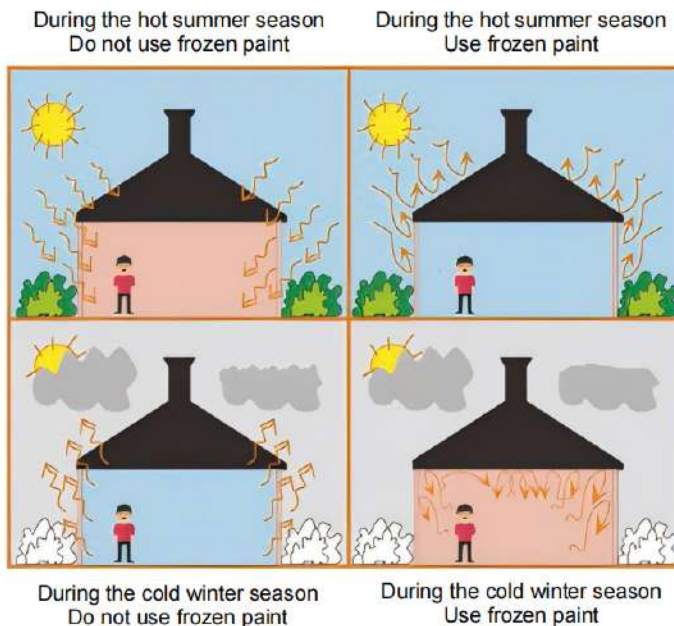
BAYD frozen paint has energy-saving effects such as frozen surface, instant cooling, and thermal insulation. Its excellent insulation, weather resistance, and self-cleaning properties can make it suitable for use in all conventional areas that are exposed to heat radiation, such as building exterior walls, roofs, factories, outdoor equipment, industrial facilities, etc. It can achieve energy-saving effects of thermal insulation and cooling in summer and thermal insulation and cooling in winter. When frozen paint is applied to the exterior surface of a building, a very thin anti radiation vacuum insulation layer will be formed on the surface, forming an effective thermal barrier.

During the hot summer season

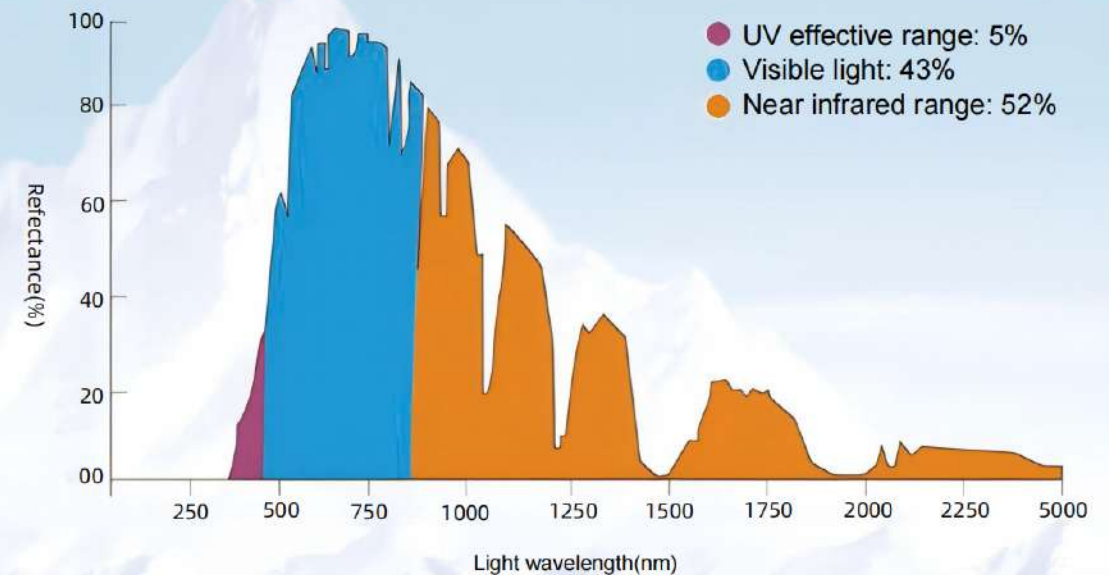
After the surface of buildings, equipment, etc. is coated with BAYD frozen paint, the surface instantly cools by more than 25 °C, effectively preventing the transfer of heat flow and achieving the effect of cooling and energy saving.

During the cold winter season

Frozen paint is like a thick layer of cotton quilt wrapped around the surface of a building. It not only resists the cold, but also ensures that the heat inside the building is not lost, thus achieving the energy-saving effect of summer insulation and winter insulation. In addition, BAYD Frozen Paint has super strong weather resistance and can last for more than 15 years. Please feel free to choose it.



COMPOSITION OF SOLAR RADIATION ENERGY



Sunlight is composed of ultraviolet, visible, and infrared components. The infrared wavelength range is the main component that generates sunlight energy and heat. Our BAYD frozen paint is a functional material specially designed to shield different spectral bands.

Frozen paint

characteristics and application advantages

1、Insulation and thermal insulation

The thermal conductivity coefficient of frozen paint is very low, and the insulation effect is 3-5 times that of traditional materials. After insulation, the heat loss is small, the space utilization rate is high, and the performance advantage at high temperatures is more obvious.

2. Waterproof and fireproof

The fire resistance level can reach the national building material A-level non combustible standard and has excellent overall hydrophobicity.

3、Heat resistant and durable

The unique three-dimensional network structure of frozen paint avoids the phenomenon of sintering deformation, particle accumulation, and sharp decline in insulation performance caused by other materials under long-term high temperature or vibration.

7、LONG SERVICE LIFE

Frozen paint is an inorganic mixed material that does not age under long-term exposure to ultraviolet radiation and has good weather resistance. And it has good flexibility and tensile strength, good waterproofing, no sinking due to rainwater immersion and pipeline vibration. The accelerated aging test shows that the service life of frozen paint can reach more than 15 years.

6、Convenient construction

Frozen paint products are liquid coatings that can be applied by spraying, roller coating, brushing, scraping, and other construction methods. Lightweight, easy to transport, and improves work efficiency.

5、Green and environmentally friendly

The product is composed of inorganic materials and does not contain harmful substances to the human body. It does not release toxic gases under flames.

4、Sound insulation and earthquake resistance

Frozen paint not only protects buildings and equipment, but also has functions such as sound absorption, noise reduction, and vibration buffering, improving environmental quality and protecting equipment.



Transparent frozen paint



► Product Introduction

Revolutionary transparent reflective frozen paint. This product has the advantages of waterproofing, anti-seepage and alkali resistance, long weather resistance, and strong energy-saving effect. It can be formed in one construction on building exterior walls (including tiles, marble, real stone paint, aluminum-plastic panels, etc.), saving time and environmental protection, without changing the exterior wall mechanism and color, and easily meeting energy-saving requirements. It is the best comprehensive alternative to traditional building materials.

► Product Description and Features

Product Name : Architectural Transparent Frozen Paint

Specification and model : 18 liters per barrel

Color : Transparent

Material properties : Water based green and environmentally friendly material

Weather resistance period : 15 years or more

Fire rating : Class A, non combustible when exposed to fire

Operating temperature : $-30^{\circ}\text{C} \sim 150^{\circ}\text{C}$

Thermal insulation temperature difference: above $\geq 25^{\circ}\text{C}$

Solar reflectance : ≥ 0.65

Hemisphere emissivity : ≥ 0.85

Solar radiation absorption coefficient : ≤ 0.35

Main performance : thermal insulation, cooling, waterproofing,

Additional performance : Waterproof and leak repair

Application field : Only applicable to building exterior wall tiles, marble real stone paint, etc. Construction methods: spray coating, roller coating, brush coating



Energy saving Solution for Building Exterior Walls

Working conditions : In the hot summer, the temperature inside the building remains high, and the energy consumption of air conditioning is huge.

Solution : Apply transparent frozen paint to the exterior walls of the building without changing the color of the exterior walls.

Construction precautions :

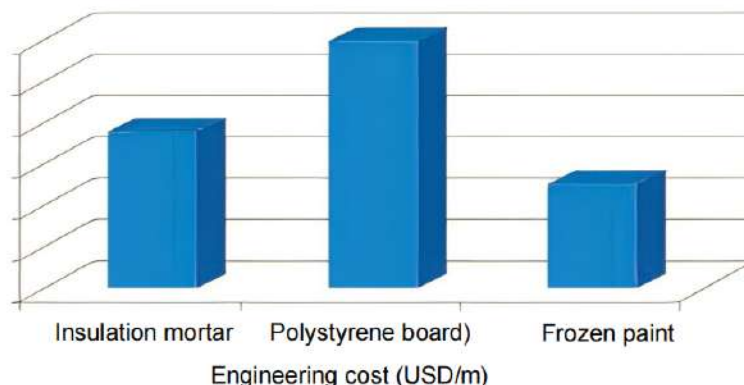
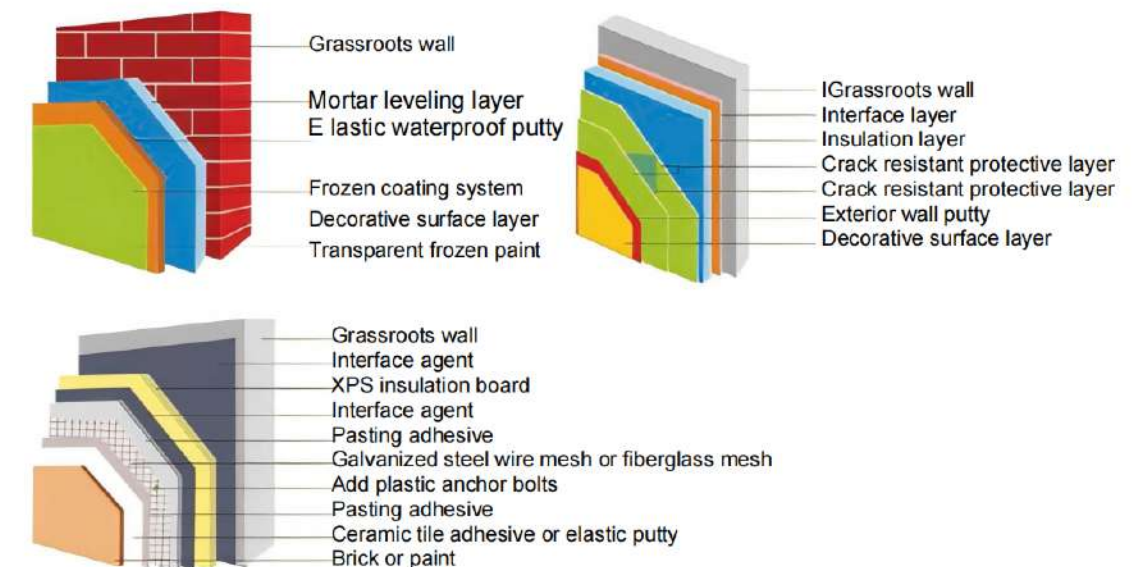
- (1) Tools: high-pressure water gun, cleaning agent, airless sprayer or roller, steel brush, mixer, shovel;
- (2) Material: Transparent frozen paint can add $\leq 10\%$ moisture (weight ratio); After adding water to the material, it needs to be stirred evenly by a mixer before construction can begin;
- (3) Construction: During the construction process of transparent reflective frozen paint, the relative humidity of the air should be between 60% and 70%; And the overall dry film thickness should not exceed 0.25mm.

Construction precautions :

- (1) Tools: high-pressure water gun, cleaning agent, airless sprayer or roller, steel brush, mixer, shovel;
- (2) Material: Transparent frozen paint can add $\leq 10\%$ moisture (weight ratio); After adding water to the material, it needs to be stirred evenly by a mixer before construction can begin;
- (3) Construction: During the construction process of transparent reflective frozen paint, the relative humidity of the air should be between 60% and 70%; And the overall dry film thickness should not exceed 0.25mm.

► Convenient construction and short construction period

Comparison diagram of frozen coating system with insulation mortar and XPS board wall structure



Adiabatic frozen paint



► Product Introduction

Insulated frozen paint has energy-saving effects such as frozen surface, instant cooling, and thermal insulation. Its excellent insulation, weather resistance, and self-cleaning properties can be used in all conventional areas that are subject to heat radiation, such as building exterior walls, roofs, factories, outdoor equipment, industrial facilities, etc. It can achieve energy-saving effects of thermal insulation and cooling in summer and thermal insulation and insulation in winter.

► Product Description and Features

Product Name : Insulated Frozen Paint

Specification and model : 18 liters per barrel

Color : White or other customized colors

Material properties : Water based environmentally friendly

material Weather resistance period : 15 years or more

Fire rating : Class A, non combustible when exposed to fire

Operating temperature : -30 ~150 °C

Thermal insulation temperature difference : >25 °C

Equivalent thermal resistance : >0.5 (m · K)/W

Thermal conductivity coefficient : <0.03W/(m · k)

Solar heat absorption rate : <10%

Main performance : thermal insulation, cooling, thermal insulation, waterproofing, anti-corrosion, sound insulation, insulation. Other additional performance: decorative renovation, waterproof leak repair, anti-corrosion renovation

Application areas : surfaces of cement, metal, plastic, glass, etc.

Construction methods: spray coating, roller coating, brush coating



► Application Description

During the hot summer season

After the surface of buildings, equipment, etc. is coated with super insulated frozen paint, the surface instantly cools by more than 25 °C, effectively preventing the transfer of heat flow and achieving the effect of cooling and energy saving.

During the cold winter season

Super insulated frozen paint is like a thick blanket wrapped around the surface of a building, which not only resists the cold, but also ensures that the heat inside the building is not lost, thus achieving energy-saving effects of summer insulation and winter insulation.

Building insulation and energy-saving solutions

Working conditions: In the hot summer, the temperature inside the building (or factory warehouse, etc.) remains high, and production personnel cannot work/produce normally; In the cold winter, the working temperature in the warehouse workshop is too low, which consumes energy and seriously affects the storage of goods and safety production. And over time, buildings may experience corrosion damage, water leakage, and powder loss, making anti-corrosion, waterproofing, renovation, and maintenance urgent.

Solution : Apply frozen paint to the roof/exterior surface of the building

Construction steps:

Step 1: Use a high-pressure water gun and cleaning agent to clean the construction surface thoroughly;

Step 2: Check the metal substrate for rust, dew points, and other conditions. If any damage, rust, corrosion, dew points, nail holes, or other conditions are found on the surface of the substrate, please apply a layer of metal primer to increase the adhesion and corrosion resistance between the insulation layer and the substrate; Check the cement base (or other inorganic base) for moss, alkali, and other conditions. After removing the surface layer, apply a layer of cement penetrating primer to increase the adhesion and weather resistance between the insulation layer and the base layer;

Step 3: It is recommended to use a airless spray gun to apply the first coat of super insulated frozen paint;

Step 4: After the surface is dry, apply a second coat of super insulated frozen paint and complete the process;

Construction precautions:

(1) Tools: high-pressure water gun, cleaning agent, airless sprayer or roller, steel brush, mixer, shovel;

(2) Materials: Metal primer cannot be mixed with water. Penetrating primer can be mixed with ≤ 20 % moisture (weight ratio), and insulated frozen paint can be mixed with ≤ 15% moisture (weight ratio). After adding water to the material, it needs to be stirred evenly with a mixer before construction can begin;

(3) Construction: During the construction process of insulated frozen paint, the relative humidity of the air should be between 60% and 70%; And the overall dry film thickness should not be less than 0.5mm, the thicker the thickness, the better the performance.

Comparison of Competitive Effects:

Adiabatic frozen paint		Low price frozen paint
Cooling>25 °C ȳ	V S	Cooling ≤ 15 °C
Over 15 years		1~2 years of expiration
Waterproof and anti-corrosion function		No waterproof or anti-corrosion function

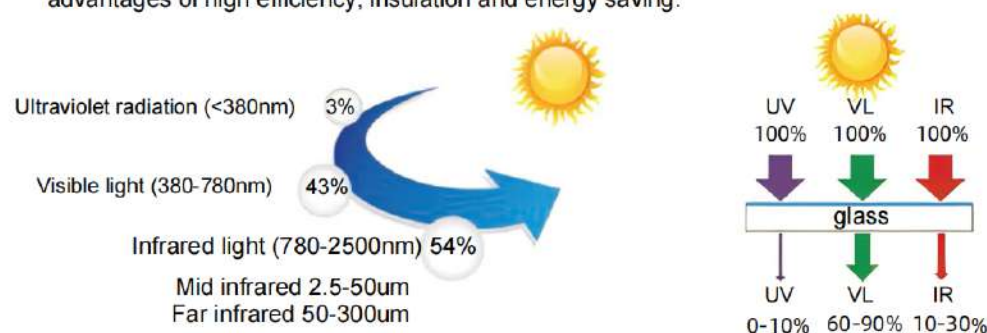


Nano frozen paint



► Product Introduction

Form a spectral selective coating insulation layer on the glass to better block direct sunlight indoors, with a UV blocking rate of 99%, visible light penetration rate of 75%, and infrared blocking rate of 90%; In summer, depending on the intensity of sunlight exposure, indoor temperatures can be significantly reduced by 4-8 °C, and exposed objects can be cooled by 6-15 °C; In winter, it can improve the barrier rate of glass thermal convection, effectively preserve indoor heat, achieve insulation effect, and have the advantages of high efficiency, insulation and energy saving.

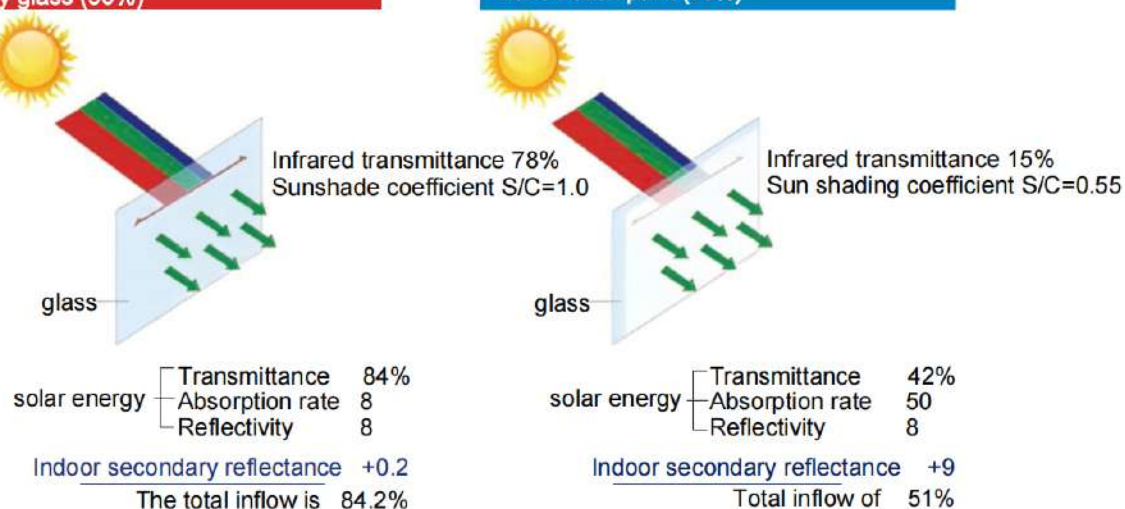


► scope of application

Used for building glass, glass curtain walls, ceiling glass, high-end hotels, guesthouses, office buildings, private residences, exhibition halls and other glass insulation and UV protection.

Visible light transmittance of 3mm ordinary glass (90%)

Visible light transmittance of 3mm glass+ nano frozen paint (75%)



$$\text{Energy saving rate} = \frac{\text{3mm glass total inflow} - \text{3mm glass+ nano frozen paint total inflow}}{\text{Total inflow of 3mm glass}} = \frac{84.2 - 51}{84.2} \times 100 = 39.4\%$$

Energy saving solutions for architectural glass

Working conditions: In the scorching summer, sunlight and infrared heat directly penetrate the glass into the room, causing unbearable stuffiness. The energy consumption of refrigeration equipment such as air conditioning is huge, and energy-saving renovation is urgent.

Solution : After coating the glass surface with nano frozen paint, a nano thermal insulation coating layer will be formed, which can block more than 90% of the infrared rays in sunlight from entering the room, reduce the scorching heat in summer, and improve the cooling efficiency of air conditioning; Block more than 99% of ultraviolet radiation, slow down the aging of homes and interior decoration, and extend the service life.

Construction steps:

- Step 1: Use protective film to shield and protect the ground and window sills;
- Step 2: Use glass specific cleaning agent to clean the base surface 1-2 times and use a scraper to clean it. Use non-woven fabric and anhydrous ethanol to clean the glass base surface 1-2 times.
- Step 3: Use protective paper to seal the edges around the glass for protection
- Step 4: Measure the construction area and prepare nano frozen paint:
- Step 5: Use a scraper to evenly apply the prepared nano frozen paint onto the glass substrate
- Step 6: After the nano frozen paint dries, remove the edge banding paper and protective film, and complete the process

Construction precautions:

- (1) Tools: cleaning agent, protective film, anhydrous ethanol, tray, non-woven fabric, shovel, tape measure, sponge scraper;
- (2) Material: Nano frozen paint should not contain water or other substances. After opening, the material should be cleaned and immediately sealed;

Construction : During the construction process of nano frozen paint, the relative humidity of the air should be between 60% and 70%; And the overall dry film thickness should not exceed 50um.



Summer - Insulation



Winter - Insulation



BAYD Frozen Paint

Three dimensional integration Energy saving solution expert

■ Transparent frozen paint

Frozen paint on the surface of building exterior walls

The emergence of transparent frozen paint will bring a new definition to building energy efficiency, and also greatly promote the development of global low-carbon economy. It has achieved ultra-high performance of thermal insulation and energy saving without affecting the mechanism and color of the building itself, and is the best product for energy-saving of existing and new buildings.



■ Adiabatic frozen paint

Ultra low thermal conductivity insulation frozen paint

Insulated frozen paint has energy-saving effects such as frozen surface, instant cooling, and thermal insulation. It can effectively block and suppress heat conduction, convection, and radiation, and can be used in all conventional areas that are subject to thermal radiation, such as building exterior walls, roofs, factories, outdoor equipment, industrial facilities, etc. It can achieve energy-saving effects of thermal insulation and cooling in summer and insulation and cooling in winter.

■ Nano frozen paint

Multi functional nano energy-saving paint

Nano frozen paint is a high hardness ultra-thin coating that blocks infrared rays, shields ultraviolet rays, is transparent, clear, energy-saving, and environmentally friendly. It is the best product for energy-saving renovation of building glass.

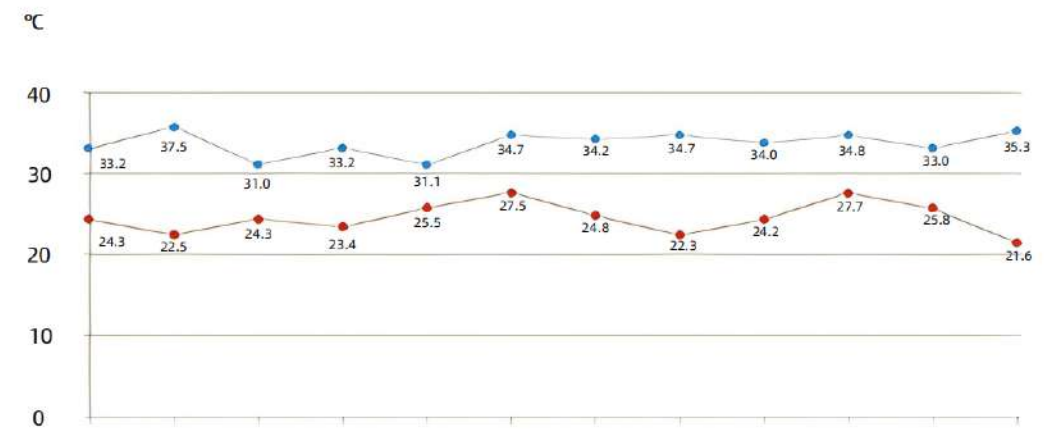


TYPICAL ENERGY

SAVING APPLICATION OF FROZEN PAINT

Computer data center : energy savings of 35%
Products used: Transparent Frozen Paint, Insulated Frozen Paint, Nano Frozen Paint Application: Used on the roofs, exterior walls, and glass of computer data centers.

BAYD Frozen Paint is used on building surfaces and glass in computer data centers. The data computer stored in this place is used to store electronic health mechanisms and maintain information exchange between clinics and hospitals. The use of frozen paint is to prevent sudden shutdown of the computer system due to overheating. The use of frozen paint in computer data centers can lower indoor temperatures to a safe level - the temperature can be reduced by an average of 35%, thereby preventing equipment shutdown and short circuits caused by overheating.



The data is the internal temperature of the ceiling (roof bottom) in July 2019. BAYD frozen paint was applied to the roof of the building, and the temperature was measured again in 2020 for comparison. The measurement results indicate that BAYD frozen paint has reduced the internal temperature by an average of 27%.

Color steel panel house case - Anfeno Tianjin factory

Anfeno Color Steel Plant: Energy saving 40%

Products used: Insulated Frozen Paint, Nano Frozen Paint

Application: This building covers an area of 8928 square meters. The total electricity consumption of the central air conditioning system in the new factory from August 2017 to August 2018 is 500480 kWh, which is calculated as $\text{RMB} + 500480 \text{ kWh} \times 0.84 \text{ yuan/kWh} = 420403.2 \text{ yuan}$. Compared to 61.5T standard coal, using frozen paint can save 40% energy.



Overview before construction



Overview after construction



68 °C before spraying



39 °C after spraying

= 29°C

CONSUMER

Frozen paint user detection

Products used: Transparent Frozen Paint, Insulated Frozen Paint, Nano Frozen Paint

Long term testing has been conducted on hundreds of users in China, and the use of frozen paint has greatly reduced their monthly electricity and gas bills. User monitoring in Changchun, Jilin, China:

Testing period: April 2016 to March 2017 (without undergoing 3D integrated energy-saving renovation)

April 2017 to March 2018 (after the three-dimensional integrated energy-saving renovation)

Heating energy: Use natural gas for heating in winter

