XI NIU PI WATERPROOFING

The original Guangxi Golden Umbrella Waterproofing & Decoration Co., Ltd.

Research Achievements of the National Double-demonstration Enterprise

◎ National Technological Innovation Demonstration Enterprise
◎ National Intellectual Property Demonstration Enterprise

XI NIU PI

SF-CPS Self-fusion Type Special Multifunctional Protective Membrane

Special for Metal Roof Protection

Three major functions

Dedicated to enabling metal roofs to be reused for another 20 years!

Research Achievements of the “National Double-demonstration” Enterprise

XI NIU PI

SF-CPS Self-fusion Type Special Multifunctional Protective Membrane

Derived from the protection concept of the automotive industry (PPF) and developed specifically for metal roof protection

National Technological Innovation Demonstration Enterprise

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National Intellectual Property Demonstration Enterprise

No. 204 [2019] of the Department of Science and Technology of the Ministry of Industry and Information Technology
No. 304 [2022] of the Department of Science and Technology of the Ministry of Industry and Information Technology

Jointly Developed with the Scientific Research Team of Professor Li Guangtao from Tsinghua University

XI NIU PI

SF-CPS Self-fusion Type Special Multifunctional Protective Membrane

Three major functions

Dedicated to enabling metal roofs to be reused for another **20** years!

Superior sealing performance
Flexible and crack-resistant
Windproof, rainproof and leakproof.
Better water tightness and air tightness!

Prevention
Leak prevention
Rust prevention

Temperature reduction and heat insulation
Energy conservation and environmental protection
It can reduce the roof temperature by 10℃ - 25℃

Reduction
Temperature reduction
Noise reduction

Weather-resistant
Corrosion-resistant
Avoid minor repairs every 3 years
and major repairs every 5 years

Resistance
Weather resistance
Durability

School-enterprise Cooperation
Joint Research and Development

- Xiniupi Waterproofing Technology Co., Ltd.
- The scientific research team of Professor Li Guangtao from Tsinghua University

Derived from the protection concept of the automotive industry (Paint Protection Film)

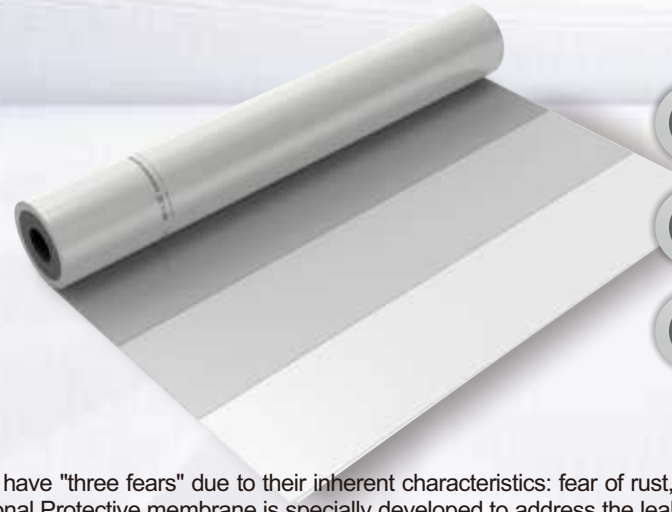
1-time Application 3 Protections

Enable the metal roofs to achieve a triple protection effect

Rust Prevention

Leak Prevention

UV Resistance



- **Special for metal roof protection**
- **Self-fusion for long-term sealing more durable**
- **Military-grade protection more reliable.**

Metal roofs have "three fears" due to their inherent characteristics: fear of rust, fear of leakage, and fear of sun exposure.The Xiniupi Self-Fusion Type Special Multi-functional Protective membrane is specially developed to address the leakage and corrosion problems during the application of metal roofs.The protection of the surface layer is a treatment method applied to various surfaces,aiming to protect them from the influence of the environment, chemical substances, mechanical damage, or other adverse factors,in order to enhance the durability, anti-corrosion performance, anti-wear performance of the surface.The protection of the surface layer has wide applications in different fields such as industry, construction, aerospace, automobiles, and electronic products.

CONTENT

XI NIU PI SF-CPS Self-fusion Type Special Multifunctional Protective Membrane

01

Metal roofs are inherently "afraid of 3 things": Corrosion and leakage, which greatly shorten their service life.

◎ Metal roofs are inherently "afraid of 3 things".

◎ The interaction between corrosion and leakage causes the protective function of the metal roof to decline.

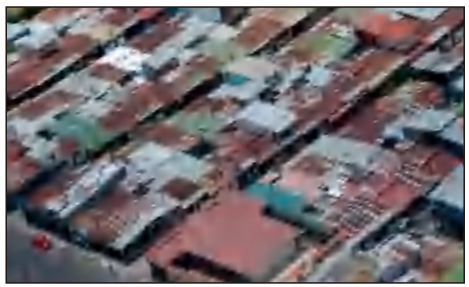
◎ Metal roofs need timely protection to avoid greater losses.

Metal roofs are inherently "afraid of 3 things":

The failure of protection for metal roofs will greatly shorten their service life

1 Afraid of Rust

It gets rusty, greatly shortening the service life of the metal roof.



Generally speaking, the service life of a metal roof is 15 to 25 years.However, due to long-term exposure to the outside and the erosion of rain and corrosive substances,rust occurs, resulting in a significant shortening of its service life.

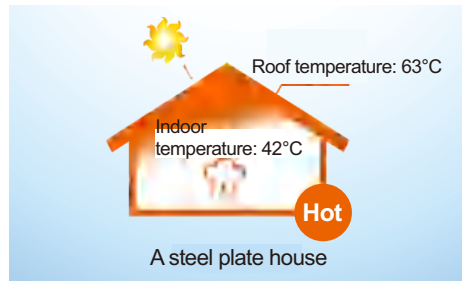
2 Afraid of Leakage

It leaks, hindering production and life and causing significant losses.

The leakage rate within 3 years after installation is as high as over 80%.Once it leaks, it not only affects the normal operation of the factory, causing economic losses, but even endangers personal safety.

3 Afraid of Sun Exposure

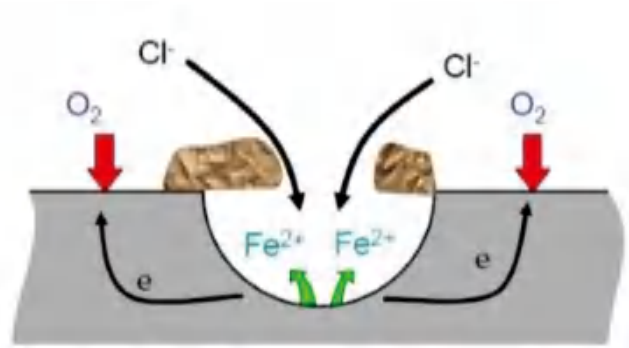
Exposed to the summer sun, it deteriorates the indoor environment and leads to high energy consumption.



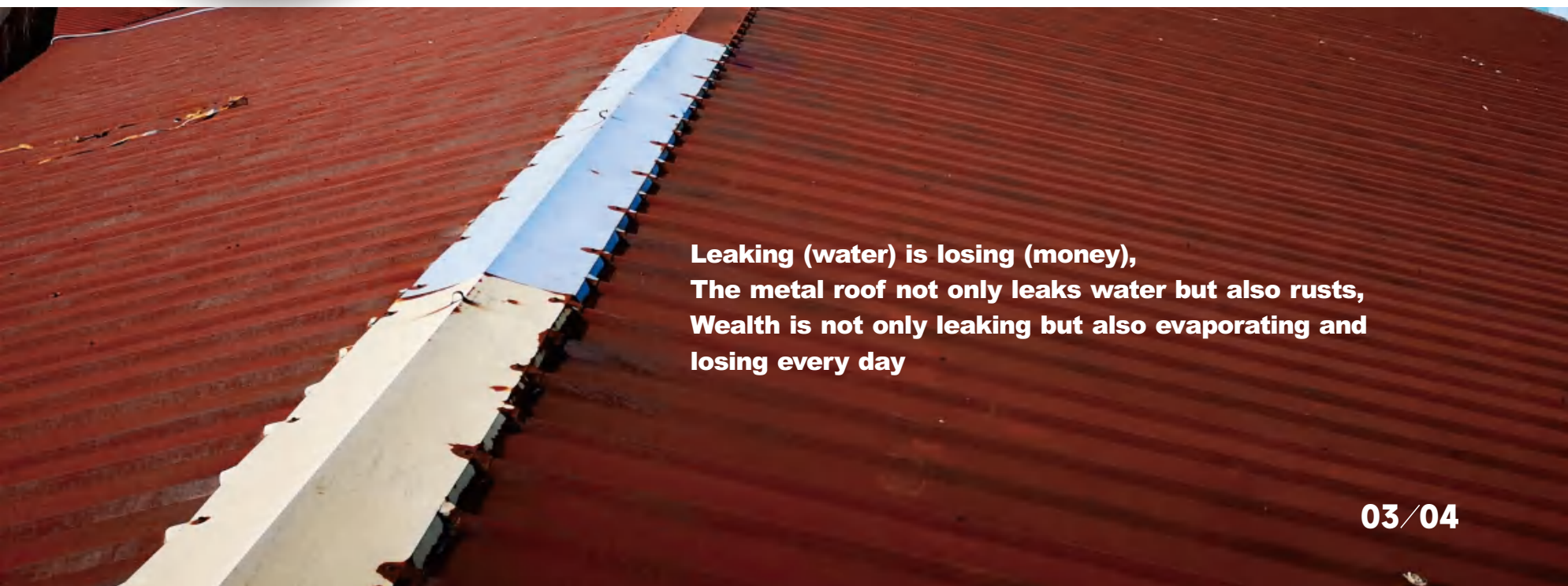
Metal materials are extremely prone to heat absorption. Direct sunlight can cause the indoor temperature to reach over 40°C,increasing the energy consumption of machines and deteriorating the indoor storage and working environment.

Rust

Due to long-term exposure to the outside, the protective paint film layer of the metal plate is affected by vibration and the influence of thermal expansion and contraction, and naturally ages and cracks, allowing water and oxygen to seep in.The material of the color steel tile contains a large amount of iron.Once it comes into contact with acids, alkalis and organic solvents, a chemical reaction will occur to generate ferrous dioxide and ferric oxide,Producing rust and causing corrosion.



The principle of corrosion

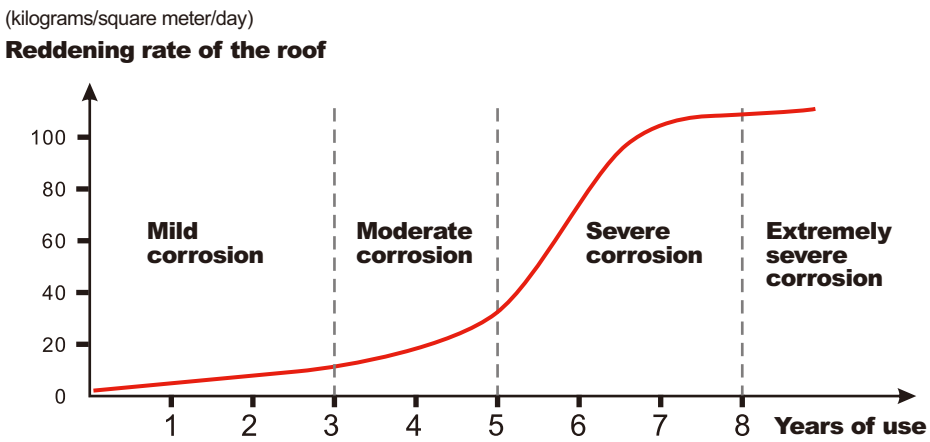


Leaking (water) is losing (money),
The metal roof not only leaks water but also rusts,
Wealth is not only leaking but also evaporating and losing every day

Health index of metal roofs: Reddening rate

The metal roofs that are usually ignored have become chronically ill and rapidly corrided.

The reddening rate of metal roofs rises sharply after 5 years, leading to severe leakage and threatening structural safety



① Corrosion is slow in the early stage

Rust spots appear, with mild corrosion.Minor repairs are needed every 3 years, and major repairs every 5 years; Most metal roofs have rust and leakage after 5 years.

② Accelerated corrosion occurs in 6-8 years

If timely protection is not taken to prevent the continuation of corrosion growth, the corrosion will spread like cancer cells,The corrosion rate rises sharply, and the area will spread exponentially,Severe corrosion leads to severe leakage and increases the roof maintenance cost;

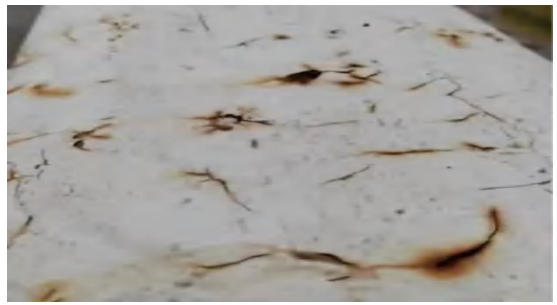
③ Metal roofs should be protected in time to avoid greater losses

If the metal roof is severely rusted and leaks continuously, which has endangered the structural safety,The removal and reconstruction of the roof is a very complex and expensive process,And it treats the symptoms but not the root cause. The option of roof renovation should be avoided as much as possible unless it has reached the point where it cannot be repaired any more.

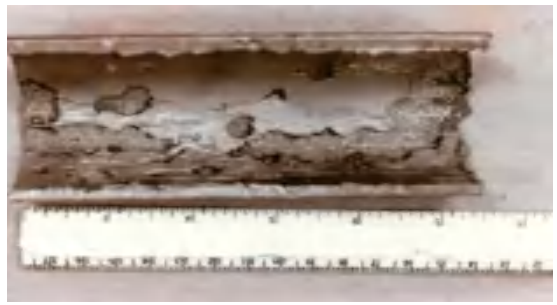
Reasons for large-scale corrosion of metal roofs

Corrosion greatly reduces the protective capacity of metal roofs,
Leading to leakage and even structural safety problems

① Corrosion caused by environmental factors



The protective paint film is damaged due to aging caused by metal tremors or acid rain, etc.



Corrosive damage is caused by rapidly flowing corrosive factors (such as wind or rainwater)

② Stress corrosion caused by structural factors

Brittle fracture occurs due to the synergistic effect of corrosion and stress

partialpitting has the greatest destructiveness and hidden danger, causing perforation

The four stages of corrosion of metal roofs

Stage 1:
Mild corrosion

① Usually appears in 1-3 years
② Reddening rate: The rust area does not exceed 10%
③ The corrosion is in the form ofpartial dots and linear corrosion at the lap joints

Protection early warning period

partialcorrosion has occurred and timely protection is required

Stage 2:
Moderate corrosion

① Appears in 3-5 years
② Reddening rate: The rust area does not exceed 50%
③ Rust points have formed a planar shape, and rust has appeared in patches

Protection window period

The corrosion has expanded and is in the early stage of accelerated corrosion

"Within 5 years is the best window period for the protection of existing metal roofs."

Stage 3:
Severe corrosion

① Appears in 5-10 years
② Reddening rate: The rust area exceeds 50%
③ A continuous rust surface has formed, and the corrosion rate has doubled

The last rescue period for protection

Missing this period will enter the“terminal stage of cancer" and be hopeless

Stage 4: Extremely
Severe corrosion

① More than 10 years
② Reddening rate: The rust area reaches 100%
③ The entire surface has rusted, withpartial perforations, and the panel strength has been greatly reduced

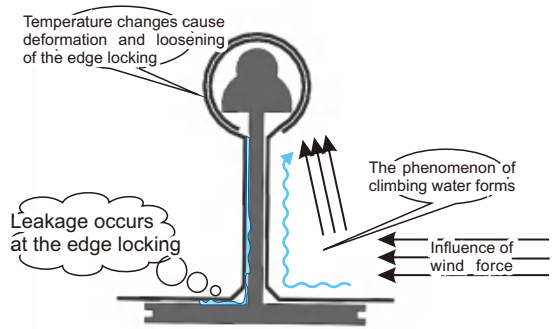
The "full spread of cancer" stage

Hopeless. The panel strength is like bean curd dregs and loses the protection value.
It can only be replaced and redone, but it still only treats the symptoms but not the root cause.

Leakage

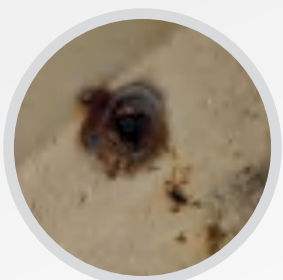
Lack of sealing at rigid connection parts, reverse leakage of rainwater

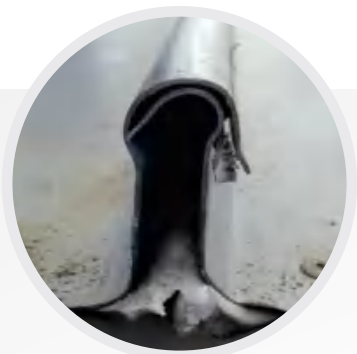
Metal roofs are highly prone to deformation and loosening due to temperature changes.Under the action of variable wind directions,Water vapor or rainwater can enter through the gaps in the metal plates along the wind direction,Causing rainwater to enter reversely from low to high, resulting in water leakage.Once water enters, it is not easy to be discharged. Over time, rusting begins from the inside.It may seem fine on the outside, but in fact, rusting has already started inside and is gradually

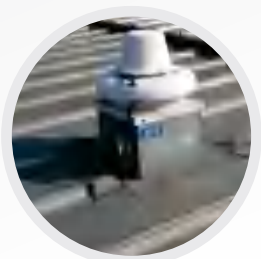


Schematic diagram of reverse leakage mechanism

Common causes of leakage in metal roofs







01

Temperature difference changes and easy deformation lead to leakage

Due to the large temperature difference in the roof environment,The thermal conductivity of the metal plate itself is high.Thermal expansion and contraction cause the color steel plate to shrink and deform, creating gaps at the interfaces and causing potential leakage risks.

02

Deformation caused by external forces leads to leakage

Because the steel frame structure itself is prone to elastic deformation under the action of external forces such as temperature changes, wind loads, and snow loads,Displacement is likely to occur at the connection parts, causing potential leakage risks.

03

Many materials and many seams are prone to cause leakage

The use of different materials for connection at special parts is prone to generating gaps:For example, at the connection between the parapet wall and the steel plate, roof daylighting belts and other parts,Due to the asynchronous change of stress, potential leakage risks arise.

04

Rust perforation leads to leakage

Due to corrosion, the structure of the metal roof becomes embrittled,Brittle fractures or pitting perforations may occur, resulting in water leakage.

Sun Exposure

- The high thermal conductivity of metal leads to high indoor temperatures and a sharp increase in energy consumption. Some can only be cooled by spraying.
- Excessive sun exposure accelerates the aging of the metal topcoat, causing cracks, blistering, and peeling.

The high thermal conductivity of metal leads to high indoor temperatures and a sharp increase in energy consumption.Some can only be cooled by spraying.

Excessive sun exposure accelerates the aging of the metal topcoat, causing cracks, blistering, and peeling.

02

There are many existing maintenance problems for metal roofs. Traditional methods treat the symptoms but not the root causes.

◎ Partial repair and overall replacement treat the symptoms but not the root cause, and the problems are not completely solved.

◎ The misapplication of traditional waterproofing materials has the opposite effect, accelerating corrosion and leakage.

◎ Protection > Waterproofing. The protection requirements for metal roofs are higher than those for waterproofing.

Once the metal roof rusts and leaks,

We tend to “seek medical advice hastily when we are seriously ill and in a panic”:

Partial repair: "Repair wherever it leaks”

Partial minor repairs do not completely solve the problem. With multiple repairs, the cost keeps increasing.

Partial treatment of leakage or corrosion parts:

Taking partial brushing or covering protective materials on the leakage or corrosion parts seems effective in the short term.Over time, cracking or debonding of the structural surface may occur, which treats the symptoms but not the root cause.

Partial replacement of components or roof panels:

Partial replacement treats the symptoms but not the root cause. It does not change the nature of the material.Over time, the metal material is still prone to corrosion, and the rigid lap joint is still prone to leakage.

Overall replacement: "Keep delaying until there is no cure and have to renovate"

Some owners miss the maintenance window period. Overall replacement is a painful decision.

A seriously leaking and corroded roof can only be demolished and rebuilt, and roof demolition is a very complex and expensive process:

It affects the normal operation of enterprises, and even leads to suspension of work and production.Large cranes, dismantling machines, cutting machines, welding machines and other equipment need to be used.Project construction filings need to be made with the safety supervision and fire departments.Demolition and replacement are carried out simultaneously, and there are certain technical difficulties during the demolition.

Once a metal roof rusts and leaks, the misapplication of traditional waterproofing materials on metal roofs can only backfire...

Waterproofing ≠ Protection

Not only does it fail to play the role of waterproofing protection, but it also accelerates its corrosion and shortens its service life.

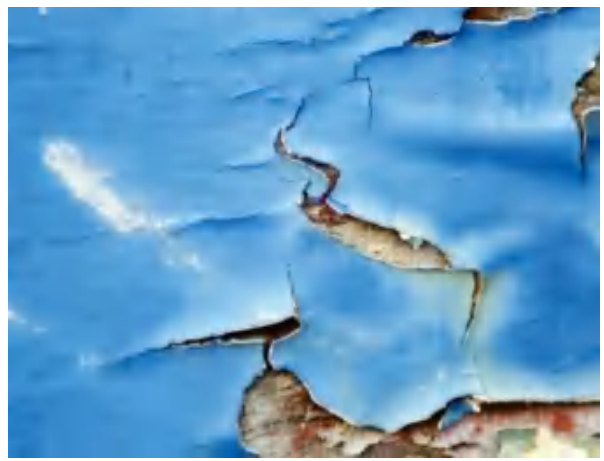
❶ Poor weather resistance and prone to aging.

Repair with waterproofing coating

The original coating is not rust-resistant. It is even more difficult to protect with the later-applied waterproofing coating.

Ordinary coatings have insufficient ultraviolet resistance performance.When exposed to the atmosphere for a long time, it is prone to aging and tensile fatigue fracture under the effect of persistent tension, losing the protective effect on the metal surface;

The maintenance coating has poor water resistance, absorbs water and expands, and debonds from the base surface.The thickness of the coating layer is uneven, and quality monitoring is difficult.



The waterproof coating layer is not resistant to ultraviolet rays and is extremely prone to aging and cracking, with a short service life.

When using the method of manual brushing, it is very difficult to control the thickness of the coating layer, and the situation of cutting corners is likely to occur.

Carry out repairs using regular waterproofing rolls

Insufficient weather resistance, especially insufficient ultraviolet resistance, causes the material to age prematurely and fails to play a protective role.

The temperature of the metal roof in summer can be as high as 70 or 80 degrees Celsius.The high-temperature resistance performance of ordinary modified asphalt membranes is 70℃.Exceeding this temperature, various stable phase structures inside the material undergo segregation and recombination, causing deterioration of material properties, becoming hard and brittle, and reducing strength, losing the flexible sealing effect on parts such as nail holes and joints. Eventually, phenomena such as leakage and corrosion occur.

Aging and embrittlement, losing the sealing effect on the nail holes.

Most waterproofing materials are not designed for exterior use. When exposed to the outdoor environment for a long time, especially under the influence of ultraviolet rays, the surface of the materials will age, showing phenomena such as yellowing and embrittlement.Even for a small number of waterproofing materials for exposed use, they are generally materials that are not inherently ultraviolet-resistant, the ability to resist ultraviolet rays is limited. It is difficult to be used for a long time in the working conditions of metal roofs.

2 The bonding at high and low temperatures is not durable, losing the sealing and protective function.

If the SBS waterproofing membrane constructed by the hot-melt method is used for repair

This material is not resistant to high temperatures and may be fused multiple times.
As a result, its adhesive force will be lost and sealing cannot be achieved, thus leading to water channeling.

The high temperature generated when applying the torching method for material application will not only damage the paint surface of the color steel tile but also cause harm to the thermal insulation layer beneath it.

The membrane cannot achieve a sealed bond with the base surface, and water channeling is inevitable. Moreover, after water channeling, it is difficult for the moisture to evaporate and drain quickly, which is very likely to cause the color steel tile to rust.

SBS waterproofing membrane is not resistant to high temperatures. After being melted and solidified many times, the membrane is highly prone to delamination and losing its adhesive force.

The torching/hot-melt method damages the paint surface of the color steel tile, leading to easy rusting

When using modified asphalt waterproofing membranes for repair and leakage plugging

Their bonding stability is poor, they cannot achieve lasting sealing, water leakage occurs, and this leads to the accelerated corrosion of the metal plates.

In summer, the metal surface temperature is high.Phase separation is particularly prone to occur, and small molecule oil migrates to the interface between the material and the metal roof, causing a decrease in adhesion and eventually separation.

When the temperature is low in winter, the physical adsorption and mortise-tenon effect with the base surface decrease. Under the effect of the tremor of the metal roof, interface separation occurs. Then, when there is a rainstorm in summer, leakage is prone to occur.When the rainwater cannot be discharged in time between the waterproofing layer and the metal roof, it will accelerate the corrosion of the metal roof.

3 Cover-type protection lacks sealing function

When using polymer waterproofing membranes such as TPO and PVC for repair

Not only will it fail to play a waterproofing role, but it will accelerate the rusting of the roof instead, causing even greater harm of backfire.

Using common exposed waterproofing membranes such as TPO and PVC for repair is a kind of "water-blocking" in a shielding way rather than real "waterproofing". The material sheets not only cannot be firmly bonded and sealed with the metal plates, but also are too stiff. It is very difficult for them to fit closely on the special-shaped metal roof, resulting in rainwater intrusion and ponding. Instead of achieving the waterproofing effect, it makes the rainwater accumulate between the waterproofing layer and the metal roof and cannot drain out. The long-term ponding and soaking of the metal plates in a water-rich and oxygen-rich environment will accelerate the rusting process.

The waterproofing membrane cannot be sealed and bonded with the metal plate, and the air tightness and water tightness of the system are poor.

The sheet of PVC waterproofing membrane is stiff, and it is difficult to be fully adhered and sealed on the special-shaped metal roof.Moreover, it is not resistant to aging and large areas of degumming may occur.




"Protection > Waterproofing",

The requirements for the protective layer are more stringent than those for the waterproofing layer.

The waterproofing layer of buildings and the protective layer of metal roofs have similarities, but there are also significant differences.The core of the waterproofing layer is to prevent water from entering the building.The core of the protective layer is to integrate with the metal roof,bond and seal to isolate water vapor and oxygen from corroding the metal surface and extend the service life of the roof.

Object / Comparison items	Building waterproofing layer	Metal roof protective layer
Application purpose	Prevent water from penetrating into the building.	Prevent rust and leakage, protect the protected object by sacrificing itself, and extend its service life.
Application field	Mainly applied to the water-facing parts such as the basement, bathroom, and roof of buildings.	Specifically refers to the protective layer installed on the metal roof, mainly used for steel structure or color steel plate roofs.
Characteristics of the application environment	The vast majority of waterproof layers are concealed and non-exposed.	Exposed.
Influencing factors	The main environment in contact is the water environment, and the application environment is relatively stable and mild.	The environment is more complex and harsh. It is necessary to consider not only the large deformation characteristics of the metal roof, but also the influence of various external factors such as wind, frost, rain, snow, water, light, oxygen, dust, and heat. More importantly, the outdoor weather resistance, especially the ability to resist ultraviolet aging, should be comprehensively considered.
Requirements for material performance	Good mechanical and physical properties for blocking water, draining water and to prevent water from penetrating into the building.	Long-term bonding and sealing with the metal roofs, to isolate the metal roof from water vapor and oxygen, and be flexible and crack-resistant at the same time, especially weather-resistant, durable, and resistant to ultraviolet aging.

Protection > Waterproofing

The value generated by protection is far greater than that of waterproofing.The performance requirements for the protective layer of metal roofs are more demanding than those for waterproofing.

Waterproofing = No leakage

Protection = A+B+C

A **Leakage prevention Rust prevention**

Superior sealing performance, flexibility and crack resistance
Windproof, rainproof and leakproof, with better water tightness and air tightness!

B **Reducing the temperature and noises**

Cooling and heat insulation, energy conservation and environmental protection
Can reduce the roof temperature by 10°C - 25°C

C **Weather resistance and durability**

Weather-resistant and corrosion-resistant
Avoiding minor repairs every 3 years and major repairs every 5 years

03

How can the maintenance of metal roofs be more effective?

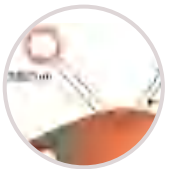
◎ Based on the 3 major objective environments of metal roofs, to achieve effective protection, it is necessary to follow the "3 Golden Standards".

◎ The external environment puts forward 5 major requirements for the protective materials of metal roofs.

There are
"three major objective factors" for metal roofs

① External factor: The complex and changeable climate environment

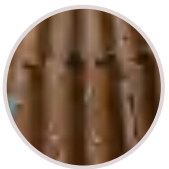
Wind, frost, rain, snow, sun exposure



- Metal roofs are exposed to the outside all year round especially to the ultraviolet rays from the sun.
- Facing changes in temperature and humidity of the environment, being exposed to acidic substances and electrolyte particles in the atmosphere, and withstanding external forces such as wind uplift, rain erosion, and heavy snow accumulation.

② Internal factor: The characteristics of the metal itself

Containing iron, good heat conduction, prone to deformation

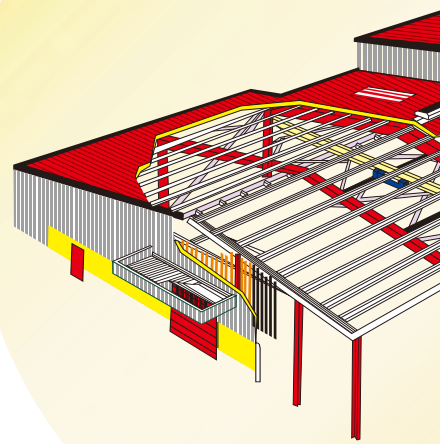


- Color steel tiles contain a large amount of iron and are prone to rust.
- The thermal conductivity of metals is high. Affected by temperature, the thermal expansion and contraction of the metal itself cause the color steel plate to be in a mobile state for a long time, resulting in deformation.

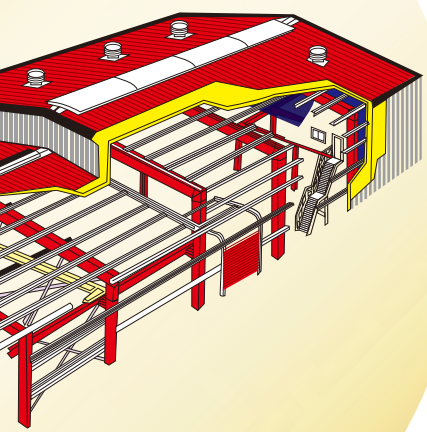
③ Structure: Complex structure with many detailed nodes

Grooves, ridges, holes, nails, lap joints

- The steel plates of the metal roof are rigidly lapped. Once deformed, the gap is large, and the backflow of rainwater causes leakage.
- Various detailed nodes are difficult to seal, and the connection of different materials with asynchronous stress is prone to generating gaps.



"3 Golden Standards"
for effective protection of metal roofs



Golden Standard 1

Bonding and sealing

- Can prevent corrosive substances from entering:
- The protective layer is fully adhered to the base surface without water channeling.
- It should have good tack retention, air tightness, and water tightness to play an effective role in anti-corrosion and waterproofing, and have self-healing properties.

Golden Standard 2

Weather resistance and durability

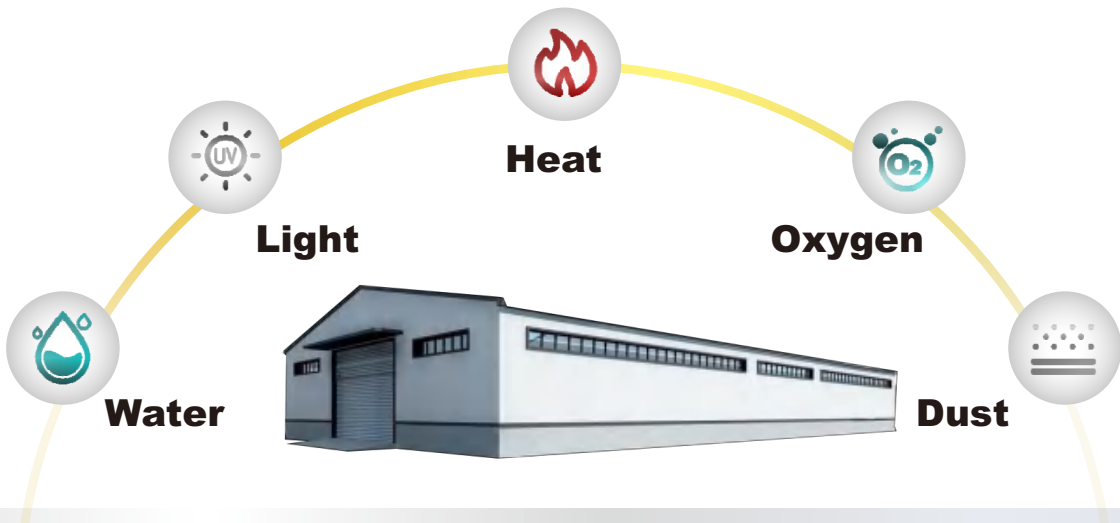
- Can avoid aging and have a longer lifespan:
- The protective layer should have good weather resistance and resistance to ultraviolet aging to resist the influence of sunlight, rainwater, and various corrosive substances on the protective layer.

Golden Standard 3

Conformable and crack-resistant

- Can cope with the long-term tremor and deformation of the roof:
- The protective layer should be soft and conformable, with good elasticity and anti-fracture tensile strength to adapt to various vibrations and displacements of the roof.
- The five challenging and destructive external environmental factors that metal roofs have to face

The five challenging and destructive external environmental factors that metal roofs have to face



Water

The surface of the metal roof is usually relatively smooth,and the adhesion of ordinary waterproofing materials may not be sufficient to firmly attach to the metal surface,resulting in weak bonding, prone to detachment or leakage.

Light

The vast majority of waterproofing materials are not for exposed use.When exposed to the external environment for a long time,ultraviolet rays will cause oxidation, yellowing, embrittlement and other phenomena on the surface of the material.The change of temperature will cause the expansion and contraction of the material,causing deformation, cracking and other phenomena.Pollutants in the atmosphere, such as acid rain and chemical gases, will react with waterproofing materials, accelerating their aging and deterioration.

Heat

The metal roof will be affected by high temperatures under the sun exposure.Ordinary waterproof materials may not be able to withstand the high temperatures on the surface of the metal roof,resulting in material softening, deformation or loss of the functions.

Oxygen

Dust

The metal roof is prone to erosion by factors such as the atmosphere, rainwater and chemical substances.And the corrosion resistance of ordinary waterproofing materials is usually insufficient to deal with these situations,and it is prone to corrosion or damage.

5 Major Criteria for Selecting Metal Roof Protection Materials

The properties and surface characteristics of metal roofs are very different from those of other materials (such as concrete, bricks and tiles, etc.).To ensure the effectiveness and durability of protection,There are five key performance requirements for materials for the protection of metal roofs:

Weather Resistance:	The protective material needs to have good weather resistance,It can resist the influence of extreme climate conditions such as ultraviolet rays, high temperatures, and low temperatures on the metal roof.Ensuring its long-term stability and aesthetic appearance.
Corrosion Resistance:	Metal roofs are exposed to different environmental conditions,such as humidity, salt spray, chemicals, etc. Therefore, the protective material needs to have excellent corrosion resistance.It can resist the erosion of corrosive factors/mediums and extend the service life of the metal roof.
Sealing Performance:	The protective coating or other protective materials need to have good adhesion.It should be firmly bonded and sealed on the metal surface to prevent peeling or falling off,ensuring the durability of the protective effect.
Compatibility:	The protective material should be compatible with the metal roof material, should not have adverse reactions or damage the metal surface, ensuring the reliability and stability of the protective effect.
Wear Resistance:	Metal roofs may be affected by factors such as wind, rain, and mechanical damage.Therefore, the protective material needs to have good wear resistance, be able to resist surface wear,and maintain its original performance and appearance.

04

Comprehensive protection solution for metal roofs

- ◎ SF-CPS Self-Fusion Type Special Multi-functional Protective membrane
- ◎ 2 major protection technologies: rust prevention and leak prevention, more weather-resistant
- ◎ 3 major protection functions: Enable metal roofs to be reused for another 20 years
- ◎ 1 step for rust fixation, 3 steps for sealing, and 4 steps for effective protection
- ◎ Product description of Xiniupi's comprehensive protection series for metal roofs

XI NIU PI

SF-CPS Self-fusion Type Special Multifunctional Protective Membrane

Three major functions

Dedicated to enabling metal roofs to be reused for another 20 years!

Leakage prevention
Rust prevention

Superior sealing performance, flexibility and crack resistance
Windproof, rainproof and leakproof, with better water tightness and air tightness!

Reducing the temperature and noises

Cooling and heat insulation, energy conservation and environmental protection
Can reduce the roof temperature by 10°C - 25°C

Weather resistance and durability

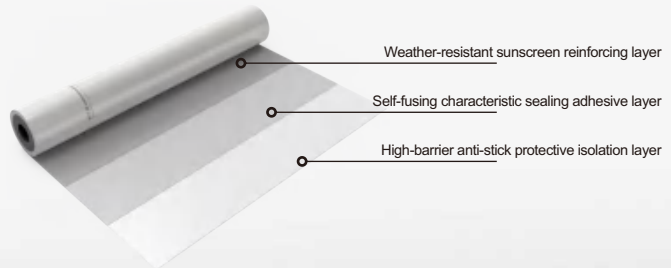
Weather-resistant and corrosion-resistant
Avoiding minor repairs every 3 years and major repairs every 5 years

School-enterprise Cooperation Joint Research and Development

- Xiniupi Waterproofing Technology Co., Ltd.
- The scientific research team of Professor Li Guangtao from Tsinghua University

XI NIU PI SF-CPS Self-fusion Type Special Multifunctional Protective Membrane

The Xiniupi Self-Fusion Type Special Multi-functional Protective membrane is produced by using an ultra-weather-resistant special function fluorocarbon composite film as the surface sunscreen reinforcing layer, grading and compounding various special function rubbers to form a self-fusing characteristic sealing adhesive layer, and using a high-barrier anti-adhesion release film as the isolation layer.

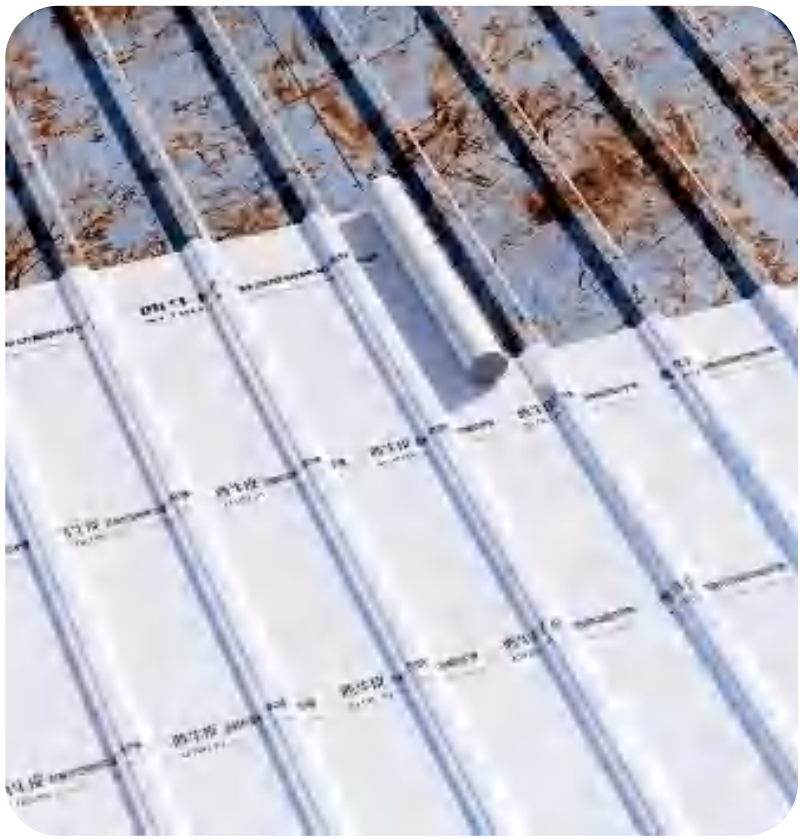


Schematic diagram of the structure of the Xiniupi Self-Fusion Type Special Multi-functional Protective membrane

This product can be sealed and bonded to the metal surface of buildings and structures and integrated as one.It has the characteristics of blocking the penetration of water, water vapor, oxygen, acids, alkalis, salts and other corrosive factors. It can also reflect solar heat to a certain extent and reduce the noise caused by wind and rain. Preventing building leakage and rusting of metal surfaces.It can also reflect solar heat to a certain extent and reduce the noise caused by wind and rain.It is an exposed functional protective membrane that protects metal buildings from leakage and rust during long-term exposure.

This product is paved and constructed by using the fusion dry bonding method. There is no need for torching or heating, and no harmful or irritating gas emissions. It is safe and environmentally friendly.

XI NIU PI SF-CPS Self-fusion Type Special Multifunctional Protective Membrane Three Characteristics



01/ Special for metal roof protection

02/ Self-fusion for long-term sealing more durable

03/ Military-grade protection more reliable

The first protective material evaluated using the life assessment concept of military equipment.Not only passing laboratory compliance tests, but also passing actual environmental verification tests,ensuring the durability and stability of the product under different environmental conditions.

Technology 1:
Self-fusing interface sealing technology

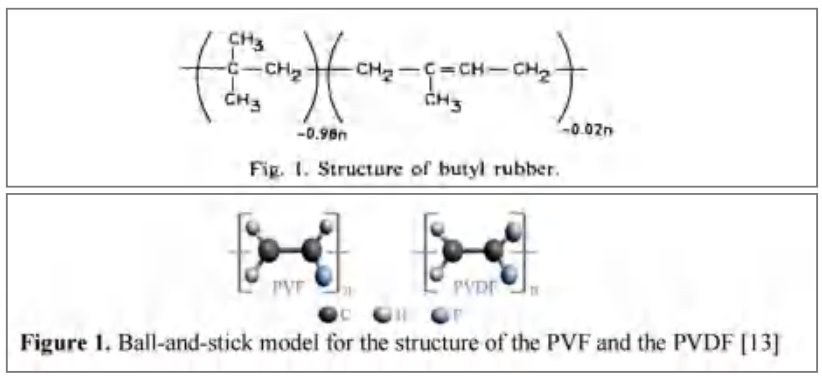
Giving the protective membrane excellent sealing function, preventing leakage and rust

The bonding technology was specially developed for the sealing of metal interfaces.This technology was developed and upgraded in a targeted manner by Xiniupi in collaboration with Professor Li Guangtao's team from Tsinghua University based on the CPS reactive bonding interface technology and products that won the "national double awards".

The rubber compound produced using this technology has the characteristics of stable bonding at high and low temperatures, comprehensive bonding of points, lines and surfaces, adaptive long-term bonding, strong bonding force, stronger bonding over time, and integration with the base surface, achieving long-term anti-crack sealing and solving the common problems of traditional materials in the real environment:"Unstable bonding, short-term bonding, incomplete bonding", "bonding first and then detaching"and deteriorating bonding.

Gradation compounding:

The sealant layer of the protective membrane is a self-fusing special sealant:It is based on special functional rubber,Using the gradation compounding process, after the special functional rubbers of different molecular weights are directionally modified, they are graded and compounded, and then nanoscale or molecular-level blending is achieved through kneading and shearing, forming a special weather-resistant sealant with self-fusing function, which has excellent creep and adhesion properties at different temperatures.



Molecular structure of special functional rubber

The Xiniupi Protective membrane is fused, bonded and sealed with the base surface to prevent leakage and rust.

Fusion sealing:

The sealant has the advantages of strong comprehensive performance such as high bonding force,irreversible bonding, and multi-interface bonding ability.Especially, it has excellent bonding characteristics with the metal base surface.Therefore, it can achieve sealing protection for the metal base surface and prevent the corrosion of the metal base surface by high-pressure water vapor and other corrosive substances.

Bonding characteristics of the self-fusing sealant:

1 Stronger bonding over time:

After bonding with the metal base surface, as time goes on, it remains at a high bonding force level;

2 Smart bonding:

For small areas of the base surface that are not fully covered during initial bonding, it can achieve fusion bonding through self-creep and form an integral whole,Sealing and bonding;

3 Durable bonding:

Compared with the bonding of traditional materials, this product, being a specially functional macromolecular rubber substance with a graded composition, does not have the phenomenon that small molecular substances are prone to segregation and migration. It can ensure a firm bond between the protective membrane and the metal substrate, and there will be no delamination due to changes in ambient temperature.

Excellent bonding stability:

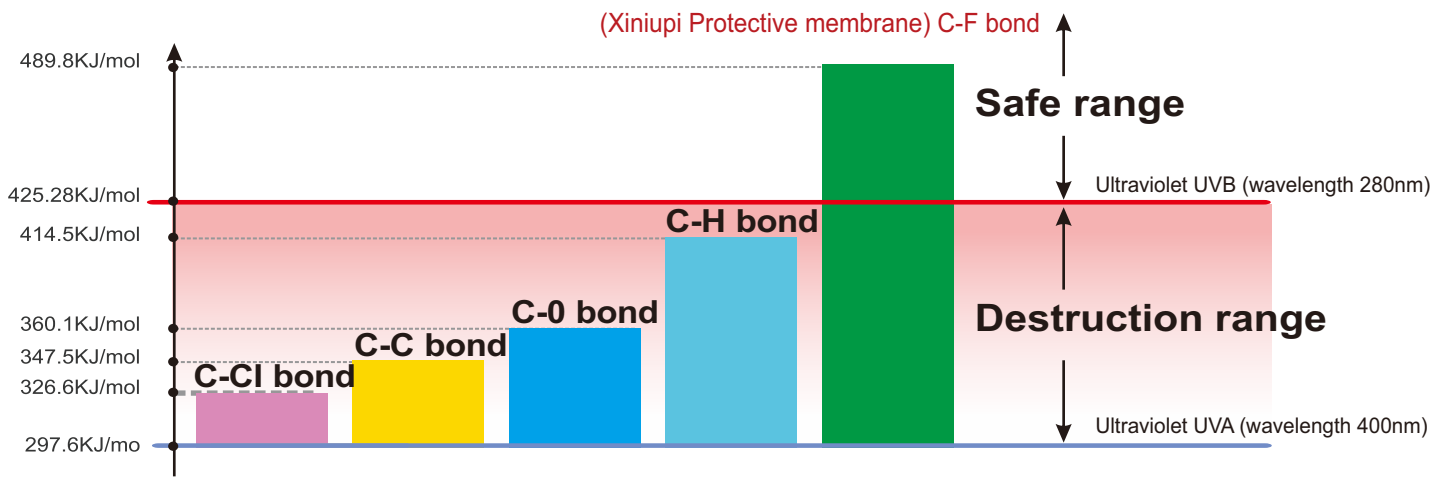
It can maintain durable bonding with the base surface at different temperatures

Boiling experiment:
The Xiniupi Protective membrane is not affected by the cycle of heat and humidity, water vapor swelling, and base layer movement, and adheres persistently to the color steel tile.

Technology 2:
Inherent ultraviolet resistance technology

Enables the protective membrane to have excellent ultraviolet resistance performance, weather resistance and durability.

The surface reinforcing layer of the protective membrane is a special functional composite film that is intrinsically resistant to ultraviolet rays.It is flexible and crack-resistant, with a smooth and dense surface, which can reflect solar heat to a certain extent, reduce energy consumption and improve the indoor environment.At the same time, it is a material rich in fluorine elements, with excellent weather resistance and strong inherent ultraviolet resistance capability.

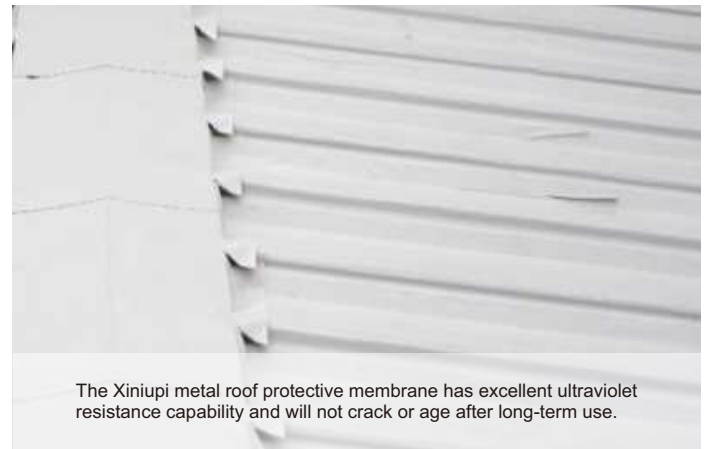


Schematic diagram of the destruction range of ultraviolet rays on different chemical bonds

The Xiniupi Protective membrane adopts the inherent ultraviolet resistance technology:

Rich in C-F bonds, it has excellent ultraviolet resistance.
Ultraviolet rays cannot destroy its structure, and it is weather-resistant and durable.

The solar radiation that can reach the Earth's surface contains 6.8% ultraviolet rays, 38.9% visible light and 54.3% infrared radiation.Among them, ultraviolet rays have the most serious damage to organic substances.The ultraviolet rays that can reach the Earth's surface are mainly concentrated in the wavelength range of 280-400nm.It has a strong destructive effect on organic substances with chemical bond energy lower than 425.28KJ/mol.However, organic substances with bond energy higher than this range, such as special functional composite films, because the bond energy of the F-C bond is as high as 489.8KJ/mol,It has strong inertness to ultraviolet rays. Ultraviolet rays cannot open its chemical bonds to cause damage to it.Therefore, it has excellent ultraviolet resistance.This ability is called inherent ultraviolet resistance.



The Xiniupi metal roof protective membrane has excellent ultraviolet resistance capability and will not crack or age after long-term use.

Other materials are not intrinsically ultraviolet-resistant:

They resist the damage of ultraviolet rays to their structure through external additives, and their lifespan is limited.

Many materials, in order to form or increase their ultraviolet (UV) resistance capabilities, attempt to achieve the UV resistance effect by injecting additives such as UV absorbers or shielding agents. However, their UV resistance capabilities and durability are related not only to the types and amounts of the external additives but also to the formulations and processing techniques of the materials.

Deficiencies of non-intrinsic ultraviolet-resistant materials:

1、If the ultraviolet absorbers or converters are not evenly distributed in the substrate, it will lead to local aging of the material, resulting in a decline in the overall performance of the material.

2、Ultraviolet absorbers themselves contain many active functional groups and are at risk of being oxidized in the environment, thus losing their functions of absorbing and converting ultraviolet rays. As a result, the substrate is completely exposed to the action of ultraviolet rays and ages rapidly.

Therefore, its ultraviolet resistance duration is relatively limited. For example, the coatings related to metal roofing may experience phenomena such as aging, cracking, and peeling, losing their protective functions. The conclusion is that materials with inherent ultraviolet resistance are more durable and reliable than those withou

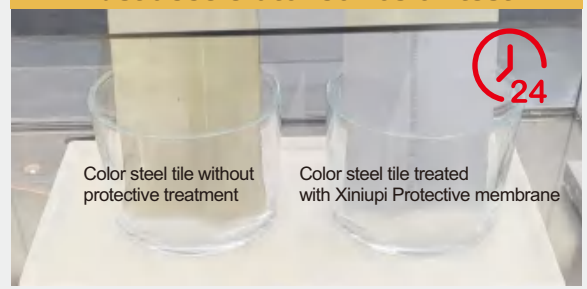
Ordinary metal coatings have aged, cracked and delaminated under the action of ultraviolet rays.

Leak prevention and rust prevention

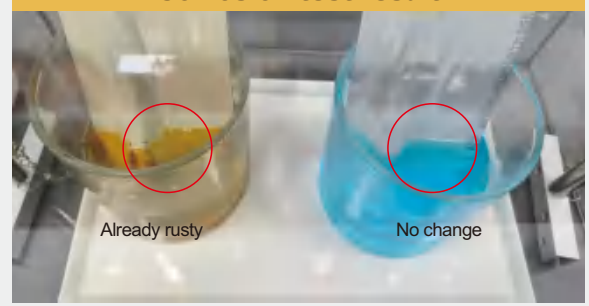
- The protective membrane and the metal roof panel are self-fusing and bonded, integrated, sealed and crack-resistant with reliable air tightness and water tightness.
- It can effectively prevent substances such as water, vapor, acid, alkali, salt, etc. from invading the metal panel, ensuring that the metal roof does not rust or leak.
- Ensuring structural safety and realizing the long-term use function of the roofs.

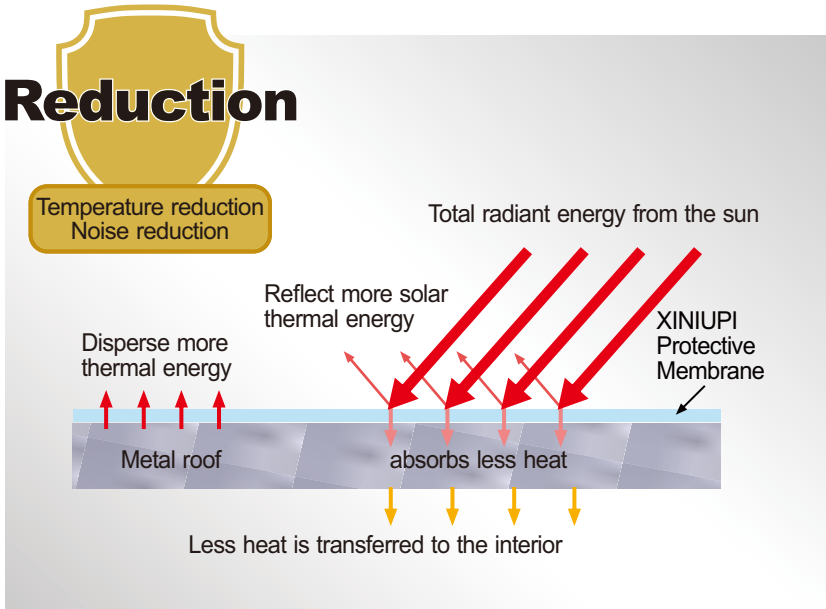
Put the color steel tile without protective treatment and the color steel tile treated with the Xiniupi Protective membrane into a container with an appropriate amount of rust accelerator at the same time. After a 24-hour test:The surface of the color steel tile treated with the Xiniupi Protective membrane has no change.

Rust accelerator corrosion test



Corrosion test result





■ Cooling:

The protective membrane has excellent solar light reflection function

It greatly reduces heat accumulation on metal roofs due to direct sunlight, thereby reducing the use of cooling equipment such as air conditioning and saving energy, lowering operational costs.

■ Noise reduction:

The protective membrane has excellent damping performance

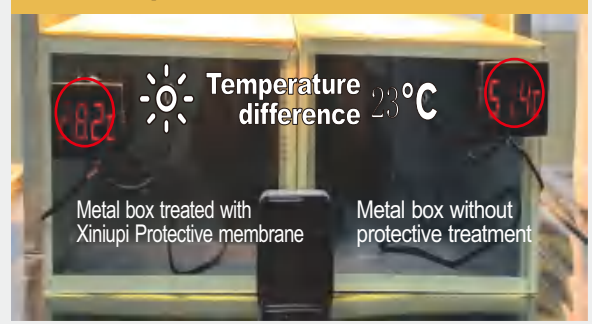
During rainy days, the protective membrane can absorb the energy of rainwater hitting the roof, effectively reducing the vibration amplitude of the roof, thus fulfilling the functions of shock absorption and noise reduction.

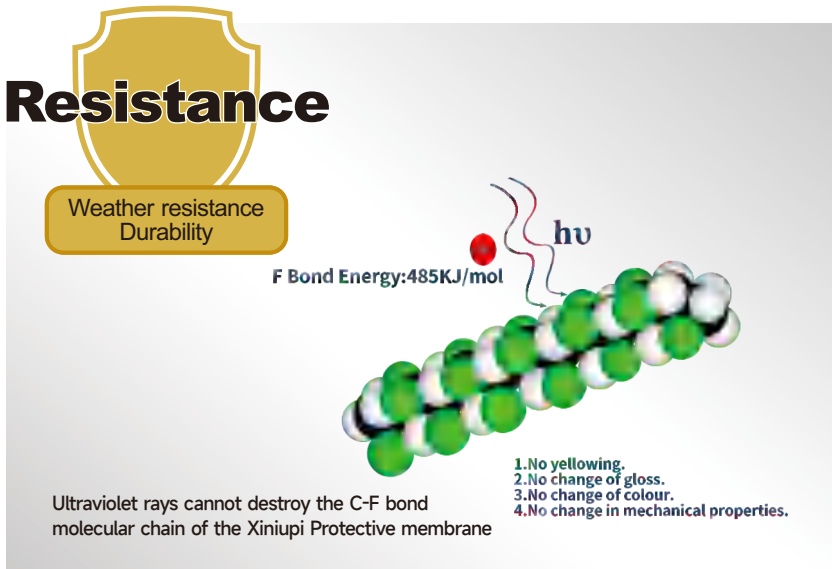
Put the metal box without protective treatment and the metal box treated with the Xiniupi protective membrane under the heating lamp for irradiation at the same time.After testing:

The surface temperature of the metal box treated with the Xiniupi Protective membrane is lower.

Heating lamp cooling test

Test result of the inner surface temperature of the top of the metal box



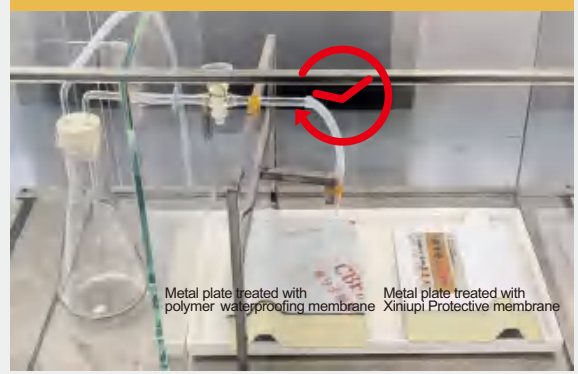


- The protective membrane is composed of a special functional composite film that is intrinsically resistant to ultraviolet rays and a self-fusing special functional rubber adhesive layer.It is the first building material evaluated using the life assessment concept of military equipment. It can be durably applied in various environments and enable the metal roofs to be used for another 20 years.
- The molecular structure of its surface layer film material determines its inherent ultraviolet resistance. It can work in environments such as ultraviolet light, oxygen, water, acid, alkali, salt, etc. for a long time. The performance is stable and unchanged, and the weather resistance is extremely strong.
- The self-fusing special adhesive is based on special functional rubber and adopts a gradation compounding process to compound various functional rubbers and functional additives,making it have stable bonding and sealing performance and excellent weather resistance.

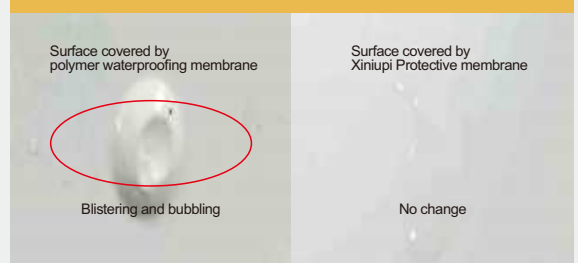
Drop concentrated sulfuric acid (concentration 98%) on the surface of the metal plate covered with polymer waterproofing membrane and the metal plate treated with Xiniupi Protective membrane.After a 24-hour test:

The Xiniupi Protective membrane is resistant to oxidation and corrosion, and the covered surface has no change.

Concentrated sulfuric acid weather resistance and corrosion resistance characteristic test



Test results of weather resistance and corrosion resistance characteristics



Xiniupi comprehensive protection solution for metal roofs

01/ SF-CPS Self-fusion Type Special Multifunctional
Protective Membrane

02/ **Special Purpose Interface Treating Agent**

03/ **Joint Sealing Tape**

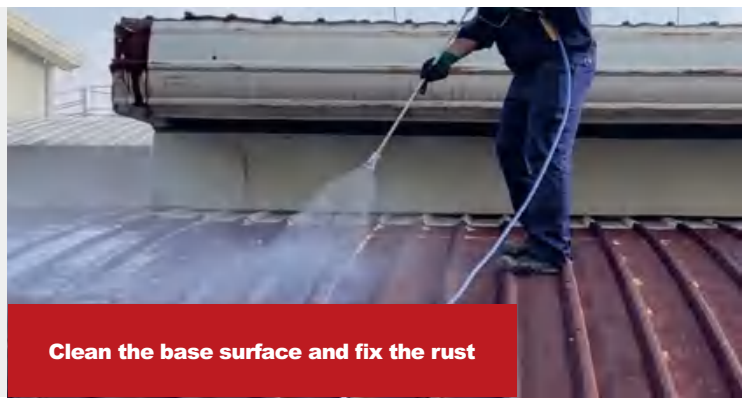
04/ **Joint Sealant**

1 rust fixation and 3 sealings
4 steps for metal roof protection

01/ Base treatment

Special Purpose Interface Treating Agent

Rust removal and rust fixation on the base surface to enable better integration of the protective membrane and the base surface

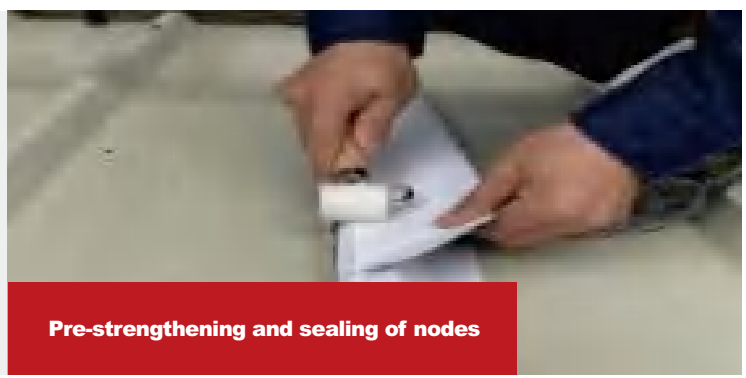


Clean the base surface and fix the rust

02/ Post-node strenthening

Sealing tape

Before laying the protective membrane on a large surface, the essential parts such as nail holes and seams of the metal roof should be pre-strengthened with sealing tape to ensure the sealing performance and reliability of the joint areas.



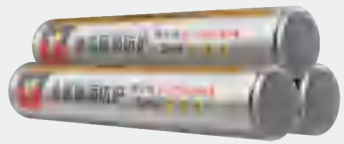
Pre-strengthening and sealing of nodes

03/ Large surface laying

SF-CPS Self-fusion Type Special Multifunctional
Protective Membrane

Use the self-fusing special function protective membrane to seal the large surface of the metal roof.

Fusing and bonding with the base surface to form an overall continuous seal and achieving overall protection effect.



Large surface self-fusing seal

04/ Post-node strengthenin joint sealant

Strengthen the weak links and relevant points to provide an extra layer of protection for the nodes and joints.

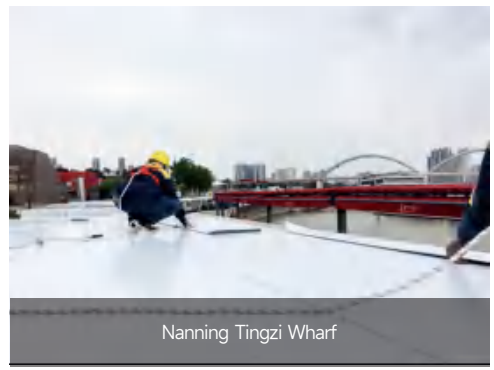
Post-node strengthening and sealing

Engineering application cases of Xiniupi metal roof protective membrane (partial):

Hong Kong Laboratory


Volkswagen Factory of Changchun FAW Group (Changchun)


Quzhou Jiangshan Xigu Technology Factory Building


Nanning Tingzi Wharf


Roof of Guangzhou Baiyun Airport International Cargo Terminal 1


Changsha Boda Industrial
Park Factory Building (Changsha)


Meiya Building Materials Market (Tianjin)


Jinwo Industrial Park Center (Qinzhou)


Production Workshop Factory Building
of Rishengda (Changzhi, Shanxi Province)

The Forbidden City (Beijing)

SF-CPS Self-Fusion Type Special Multi-functional Protective Membrane

Product Description

Product technical indicators

The implementation standard of Xiniupi Self-Fusion Type Special Multi-functional Protective membrane is: "protective membrane for Building Metal Surfaces" (T/CBMF 266-2024) / "protective membrane for Building Metal Surfaces" (Q/XNP 34-2024)

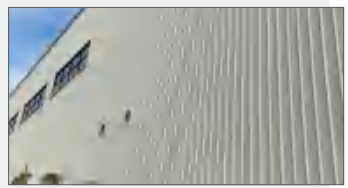
Serial Number	Performance	Classification Item			Classification Item	
					Type I	Type II
1	Basic Performance	Tensile Performance	Tensile Force/(N/50mm)		≥450	≥180
			Elongation at Maximum Tensile Force/%		≥50	≥180
			Phenomenon during Tension		There is no separation between the bonding adhesive layer and the covering material	
2		Tear Force/N			≥20	≥25
3		Peel Strength /(N/mm)	protective membrane and protective membrane (Lap Edge)	Without Treatment	≥1.0	
				Water Immersion Treatment		
				Heat Treatment		
			protective membrane and Metal	Without Treatment	≥1.0	
				Water Immersion Treatment		
				Heat Treatment		
4		Oil Permeability/Number of Sheets			≤1	
5		Tack Retention Time/min			≥45	
6		Heat Resistance (100°C, 2 h)			No flowing, dripping, slip ≤ 2 mm	
7		Water Resistance (23°C×14d)	Appearance		No cracks, delamination, blisters or fragmentation	
			Water Absorption Rate/%		≤1	
8		Hot Water Resistance (98°C×24h)	Tensile Force/(N/50mm)		≥450	≥180
			Elongation at Maximum Tensile Force/%		≥50	≥180
9		Low Temperature Flexibility (-40°C)			No cracks	
10		Dimensional Change Rate/%			±1.0	±2.0

Serial Number	Performance	Classification Item		Classification Item	
				Type I	Type II
11	Basic Performance	Thermal Stability		No bulging, flowing, and the maximum curling of the edge of the covering material does not exceed 1/4 of the side length	
12		Stress Relaxation/%		≤35	
13	Barrier	Performance Oxygen Permeability/[cm²/(m²·24h·0.1MPa)]		≤50	≤150
14		Water Vapor Transmission Rate/[g/(m²·24h)]	Thickness Specification < 1.2mm	≤20	
			Thickness Specification ≥ 1.2mm	≤6	
15		Water Impermeability (0.3 MPa, 120 min)		Water Impermeable	
16	Aging Resistance Performance	Thermal Aging (80°C, 14d)	Tensile Force Retention Rate/%	≥90	
			Maximum Tensile Force Elongation Retention Rate/%	≥80	
			Low Temperature Flexibility (-38°C)	No cracks	
17		Artificial Climate Accelerated Aging[a]	Appearance	No blisters, no cracks, no delamination, no bonding of the covering material, no holes	
			Bonding with Metal Base Surface	The bonding surface does not debond or fall off	
18	Anti-corrosion	Performance Salt Spray Resistance		≤ Grade 1	
19		Resistance to Chemical Liquids (Resistant to Acid, Alkali and Salt)	Tensile Force/(N/50mm)	≥450	≥180
			Elongation at Maximum Tensile Force/%	≥50	≥180
			Appearance	No blisters, no cracks, no delamination, no bonding of the covering material, no holes	

[a]When the product is used exposed, artificial climate accelerated aging should be tested, and the shortest aging time should not be less than 6000h.

Scope of Application

1. It is mainly used for the protection of building metal surfaces that require leak prevention and rust prevention, such as building metal roofs and metal exterior wall surfaces.
2. It can also be used for the rust prevention protection of various metal surfaces such as metal containers, pipes, and equipment; as well as building protection that requires reflecting solar heat and reducing noise.

General Specifications

The width is 1000mm;
The thickness is 0.6mm;
The area of a single roll is 20m².

Packaging, Storage and Transportation

1. During transportation and storage, products of different types and specifications should be stacked separately and not mixed; avoid impact, extrusion, sun exposure and rain, and the storage temperature should be (-5~45)°C.
2. The product is stored upright(vertical) in a single layer.
3. During product transportation, prevent tilting or side pressure, and cover with tarpaulin if necessary.

Precautions

1. The construction environmental temperature for the protective membrane should not be lower than 5℃. When the construction temperature is lower than 5℃, heating and adhesion-promoting measures should be adopted.
2. Before paving the protective membrane, it shall be ensured that the base surface is clean, dry, free of oil stains, dust, and other loose substances.
3. Anti-slip flat-soled shoes shall be worn throughout the construction process, and spiked shoes are strictly prohibited.
4. It is strictly forbidden to place sharp objects directly on the completed protective layer without protective measures, and heavy objects or transportation equipment shall not be transported on the unprotected protective layer.
5. In case of damage, timely repair shall be carried out.

Shelf life: Under normal transportation and storage conditions, when the product is unopened, the shelf life of this product is 12 months.

Special Purpose Interface Treating Agent

Matched With Xiniupi Self-Fusion Type Special Multifunctional Protective Membrane

Product Description

Product Introduction

This product is a one-component new type of metal base treatment material composed of special rust conversion active substances, polymer emulsions, and various functional additives. It is a professional construction application supporting material for Xiniupi Self-Fusion Type Special Multi-functional Protective membrane.

This product is water-based, environmentally friendly, has strong permeability and sealing property, and is convenient for construction. It is mainly used for the base treatment of building metal materials with rust phenomenon. After construction, a hard sealing layer with extremely strong adhesion to the original metal base is formed, which can effectively improve the sealing and bonding effect of Xiniupi Self-Fusion Type Special Multi-functional Protective membrane and the original base.

Product Features

1. It is used for the surface treatment of building metal materials with rust phenomenon to improve the adhesion between Xiniupi Self-Fusion Type Special Multi-functional Protective membrane and the rusted metal base;
2. It replaces the traditional grinding and rust removal process, and can be brushed manually or sprayed mechanically to improve construction efficiency and construction quality;
3. Cold construction, no need for torching or heating, and no harmful substances are released during the process, which is safe and environmentally friendly.

Implementation Standard

Q/XNP 37-2024

"Special purpose interface treating agent matched with functional protective membrane for constructions' metal surface protection"

Scope of Applicationa

Applied on the surface of rusted building metal materials, it has the effect of improving the adhesion between the functional film for protecting building metal surfaces and the rusted metal base.

Construction Method

Base surface cleaning:

Before applying this product, clean the rusty surface thoroughly, requiring no oil stains, no visible water, no debris, no dust, and no loose rust.

Construction of this product:

1. No water is needed during construction. Stir evenly and apply directly.
2. It can be applied by brushing, rolling or spraying, and apply this product evenly on the rusty surface.
3. If the rusty surface is severely rusted, a second application can be carried out 24 hours after the first application until the base surface requirements for the construction of the Xiniupi Self-Fusion Type Special Multi-functional Protective membrane are met.
4. The next process can be carried out after the coating solidifies to form a hard and closed layer.

Packaging, Storage and Transportation

1. This product is a water-based product, non-flammable and explosive, and can be transported as general goods.
2. During transportation and storage, it should be protected from sun exposure and rain, and packaging damage should be avoided.
3. The transportation and storage temperature is (5 to 45)°C: When the transportation or storage temperature is lower than 5°C, corresponding heat preservation measures should be taken to prevent this product from freezing, demulsifying and being damaged by freezing.
4. During transportation and storage, it should be protected from sun exposure and rain, and packaging damage should be avoided.
5. The transportation and storage temperature is (5 to 45)°C: When the transportation or storage temperature is lower than 5°C, corresponding heat preservation measures should be taken to prevent this product from freezing, demulsifying and being damaged by freezing.

Precautions

1. This product should be stirred evenly before use, and it is prohibited to be mixed with other products.
2. The construction environment temperature should be (5 to 45)°C. Construction is not suitable when the humidity is more than 85% or in exposed environments without shelter during rain or in frost environments.
3. If it comes into direct contact with the skin or eyes, rinse immediately with clean water.
4. Clean the tools with water in time after construction. Unused materials should be sealed and stored tightly.
5. Reference dosage: One kilogram of this product can be applied to an area of approximately (8 to 10) square meters (The specific dosage should be adjusted according to the rust situation of the base surface at the construction site and the type of construction tools).
6. If it comes into direct contact with the skin or eyes, rinse immediately with clean water.
7. Clean the tools with water in time after construction. Unused materials should be sealed and stored tightly.

Shelf life: Under normal transportation and storage conditions, when the product is unopened, the shelf life of this product is 12 months.

Joint Sealing Tape

Matched With Xiniupi Self-Fusion Type Special Multifunctional Protective Membrane

Product Description

Product Introduction

This product is composed of a weather-resistant polymer film covering material, a bonding adhesive layer, and an isolation protective layer. It is a tape that can be tightly bonded to the building metal base and the self-fusing special function protective membrane, and is an application supporting material for the Xiniupi Self-Fusion Type Special Multi-functional Protective membrane.

The bonding adhesive layer of this product is formed by a specific production process after using special functional rubber material as the functional material, through kneading, shearing, and achieving nano-scale or molecular-level fusion with functional compatible materials. It is homogeneous and compatible with the bonding adhesive material of the Xiniupi Self-Fusion Type Special Multi-functional Protective membrane.

This product has various protective application functions such as strong sealing and bonding force, irreversible bonding, multi-interface bonding ability, convenient construction, and excellent aging resistance. It plays the role of sealing and anti-seepage, and rust prevention and corrosion protection on the surface of the adhered object.

It is mainly used for the strengthened sealing treatment of detailed node parts such as the lap joints of metal tiles, the nail holes of metal tiles, the lap joints and closures of functional films for protecting the building metal surface, and can also be used for the rust prevention and leakage prevention treatment of partial applications of metal buildings.

Product Features

1. Excellent creep and crack resistance performance, and can adapt to a certain degree of deformation of the base surface.
2. Strong chemical inertness, resistant to long-term ultraviolet irradiation, and erosion by corrosive media such as acids, alkalis, and salts.
3. It can be integrated and bonded with the base surface, with long-lasting sealing effect and is not prone to the phenomena of peeling and delamination.

Implementation Standard

Q/XNP 38-2024

“Joint sealing tape matched with functional protective membrane for constructions’ metal surface protection”

Scope of Applicationa

1. Strengthened sealing treatment of detailed node parts such as the lap joints of metal tiles, the nail holes of metal tiles, the lap joints and closures of functional membranes for protecting the building metal surface.
2. Rust prevention and leakage prevention treatment of partial applications of metal buildings.

Packaging, Storage and Transportation

1. During transportation and storage, products of different types and specifications should be stacked separately and not mixed; avoid impact, extrusion, sun exposure and rain, and the storage temperature should be (-5 to 45)°C.
2. The product is stored flat, and the stacking height should not exceed 5 layers.
3. During product transportation, prevent tilting or side pressure, and cover with tarpaulin if necessary.

Construction Method

1. Clean the base surface. It is required to be free of oil stains, visible water, debris, dust, loose objects and rust.
2. Peel off the release film on the surface of this product and paste it on the base surface to make it closely adhere to the surface of the adhered object.
3. After the construction is completed, the next process can be carried out. If there is any damage, it should be repaired in time.

Precautions

1. The base surface should be kept clean, dry and free of oil stains.
2. Construction is suitable in an ambient temperature of (5 to 45)°C (heating can be used to assist adhesion in a low-temperature environment).
3. Select products of different models and specifications according to the actual engineering needs.
4. When used in combination with materials containing organic solvents, ensure that the organic solvent components have volatilized before applying this product to avoid swelling and damage.

Shelf life: Under normal transportation and storage conditions, when the product is unopened, the shelf life of this product is 12 months.

Joint Sealant

Matched With Xiniupi Self-Fusion Type Special Multifunctional Protective Membrane

Product Description

Product Introduction

This product is an environmentally friendly, solvent-free, one-component neutral protective sealant. It is a professional matching node sealing material for the outdoor exposed environment application of Xiniupi Self-Fusion Type Special Multi-functional Protective membrane.

This product has excellent weather resistance, sealing performance, and low-temperature flexibility. It has good tracking performance for the displacement of the base layer caused by thermal expansion and contraction. It can be firmly and durably sealed and bonded to the surfaces of various building materials such as Xiniupi Self-Fusion Type Special Multi-functional Protective membrane, metal, glass, and plastic. It can also be applied to the caulking, sealing, and leak-proof treatment of various types of doors, windows, interior and exterior walls, and non-structural glass curtain walls.

Product Features

1. Excellent elasticity, UV resistance, and weather aging resistance.
2. Excellent adhesion. No primer is needed. It can be firmly and durably sealed and bonded to the surfaces of various building materials such as Xiniupi Self-Fusion Type Special Multi-functional Protective membrane, metal, glass, and plastic.
3. Excellent air tightness and water tightness.
4. Excellent extrudability, which is conducive to construction.

Implementation Standard

GB/T 14683-2017
“Silicone and Modified Silicone Building Sealants"

Scope of Applicationa

1. It is suitable for the sealing and leak-proof treatment of various edge lapping joints of Xiniupi Self-Fusion Type Special Multi-functional Protective membrane.

2. It is suitable for the caulking, sealing, and leak-proof treatment of various types of doors, windows, interior and exterior walls, and non-structural glass curtain walls.

Construction Method

1. The construction surface should be clean, dry, and free of dirt.

2. If necessary, cut the pointed nozzle provided with the glue gun. This product needs to be in full contact with both sides of the sealing part.

Packaging, Storage and Transportation

1. Prevent sun exposure and rain, and avoid packaging damage.

2. The storage temperature should not be higher than 45°C.

Precautions

1. The construction temperature should be (5 to 45)°C.

2. Good ventilation should be maintained during construction and curing. Before the glue slurry has cured after glue application, it is not suitable to completely isolate the air.

3. Bonding tests should be conducted before the project starts.

Type: (SR)GB/T 14683-2017-I-Gw-35HM.

Shelf life: Under cool and dry conditions below 27°C and when unopened, the shelf life of this product is 12 months.

05 School-enterprise cooperation for 10 years, jointly developed

◎ Xiniupi, a national “double-demonstration” enterprise

◎ Technical cooperation with the scientific research team of Professor Li Guangtao from Tsinghua University

The university has been cooperating with the enterprise for 10 years to carry out technological innovation

Xiniupi and Professor Li Guangtao's research team from Tsinghua University jointly established the 311 Waterproofing Research Institute

Postdoctoral Innovation Practice Base

National Double-demonstration Enterprise

National Intellectual Property Demonstration Enterprise

Document No. 158 of the Letter from the National Intellectual Property Administration [2018]
Document No. 160 of the Letter from the National Intellectual Property Administration [2022]

National Intellectual Property Demonstration Enterprise is a key project carried out by the state to cultivate and form a group of demonstration enterprises with an intellectual property strategic management concept, comprehensive development of intellectual property creation, application, protection and management capabilities, outstanding comprehensive competitive advantages in intellectual property, and with industry influence and benchmarking.

National Technological Innovation Demonstration Enterprise

Document No. 204 of the Ministry of Industry and Information Technology [2019]
Document No. 304 of the Ministry of Industry and Information Technology [2022]

National Technological Innovation Demonstration Enterprise refers to enterprises that have important demonstration and guiding roles in aspects such as R&D and innovation investment, innovation cooperation, innovation team building, technological innovation output and benefits. The acquisition of this award represents the high recognition of the company's innovation ability, innovation level and innovation performance at the national level!

Mastering the core technology of modern building waterproofing and protection

Professional and dedicated, technological innovation • Product technology has won “national dual awards”

National Key New Product

Document No. 303 of the Ministry of Science and Technology [2014]

[National Key New Product] refers to a landmark product that has a significant role in ensuring and improving people's livelihood, has a major impact on the industry technology, achieves major technological breakthroughs, possesses core invention patents, and represents China's independent innovation ability and advanced level.
(Source: "Notice of the Ministry of Science and Technology on the Issuance of Relevant National Science and Technology Project Plans in 2014")

China Patent Excellence Award

Document No. 63 of the National Intellectual Property Administration [2014]

[China Patent Award] is a government department award specifically given by the National Intellectual Property Administration to inventions and creations granted patent rights and is recognized by the World Intellectual Property Organization (WIPO).

[Novelty Search Report] As of 2014, the "CPS Reaction Bonding Waterproofing Membrane Patent Technology" of Xiniupi Waterproofing (formerly Golden Umbrella Waterproofing) is the only waterproofing membrane patent technology in the country's waterproofing membrane category that has won the China Patent Excellence Award (Data from the official website of the National Intellectual Property Administration and the special novelty search report of the Guangxi Zhuang Autonomous Region Institute of Scientific and Technical Information).

Xiniupi Waterproofing Technology Co., Ltd.

Mastering the Core Technology of
Modern Building Waterproofing and Protection

Xiniupi Waterproofing Technology Co., Ltd. is a rare national dual-demonstration enterprise (National Technological Innovation Demonstration Enterprise and National Intellectual Property Demonstration Enterprise) in China's building materials industry. It is a national key new product research and development and production base, a postdoctoral innovation practice base, and a leading enterprise in concrete building sealing and waterproofing in China. In 2017, it was rated as one of the top ten most influential brands in the waterproofing industry and became a high-quality supplier of waterproofing materials for national-wide government-runned public housing projects.

The company has focused on the field of modern building waterproofing and protection for more than 30 years, mastering the core technology of modern building waterproofing and protection. Its products and technologies have won two major national honors: the China Patent Excellence Award (Document No. 63 of the National Intellectual Property Administration [2014]) and the National Key New Product (Document No. 303 of the Ministry of Science and Technology [2014]), and has been jointly and intensively promoted by four national ministries. It has edited and participated in more than 40 national, industry and regional standards, and its technology is in a leading position in the industry.

The fully sealed waterproofing technology and products for concrete buildings have been widely applied in numerous fields such as housing construction, urban transportation, airports, urban pipe galleries, etc., and have become the first choice for key national projects.

Meanwhile, the company is committed to the research and development of the "double protection, double reduction and durability" of metal roofs, focusing on enabling metal roofs to be used for another twenty years. It is a pioneer and innovator in multi-functional protection field for metal roofs.

National Dual-Demonstration Enterprise

National Key New Product R&D and Production Base
Two major science and technology parks rooted in South China and serving the world

Centralized production, maintaining a high level of technology and quality
The world's largest R&D and production base of CPS waterproofing membranes and protective membranes

10 Warehousing Service Centers

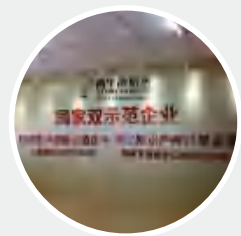
90% of areas in China can receive goods within 24 hours

(Production centers are close to seaports for convenient service of the global market):Nanning, Qinzhou, Nanjing, Changchun, Shanghai, Tianjin, Urumqi, Xi'an, Chengdu, Wuhan

300

Xiniupi Modern Building Waterproofing and Protection Application Demonstration Bases

New technologies, new materials and knowledge popularization of modern waterproofing and protection



300 Professional Service Teams

300 Central Cities
More than 300 professional service teams

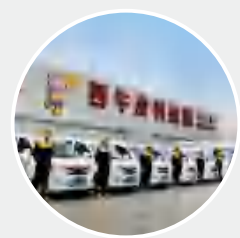
3000 Xiniupi Squads

serve tens of thousands of construction sites every year

Solve the "3 chaos" problems on the construction site through "militarization, mechanization and benchmarking of on-site management"

3000 Xiniupi Squad Service Vans

Serving the world, right beside you
Ready to provide professional waterproofing and protection construction guidance services for you at any time



National Key New Product R&D and Production Base

Mastering the Core Technology of
Modern Building Waterproofing and Protection

- National High-Tech Enterprise
- Research and develop and produce national key new products, and provide high-quality product services
- Specialized production of single-model products to avoid multi-model production on a single line to ensure product quality
- Strictly control product quality and won the 2016 Mayor's Quality Award of Nanning City (first place)
- Won more than 80 provincial and ministerial-level projects and honors

Xiniupi Technology Fortress

Technological innovation is the driving force for the development and progress of Xiniupi.

- **Global Science and Technology Innovation Center for Modern Building Waterproofing and Protection**

  Here, there are advanced concrete sealing waterproofing technologies in the construction industry and pioneering metal roof protection technologies.

- **Xiniupi 311 Waterproofing Research Institute**

  Built by the domestic top scientific and technological force led by Professor Li Guangtao from Tsinghua University and his team to create the top waterproofing and protection products in the field of waterproofing and protection in the construction industry.

- **Xiniupi Technology Center**

  Standardized Laboratory of China's Building Waterproofing Industry,

  Guangxi Concrete Sealing Waterproofing Engineering Technology Research Center,

  Guangxi Research and Development Center,

  Guangxi Certified Enterprise Technology Center

- **Expert Building**

  Gather top waterproofing and protection experts, only making waterproofing and protection products that can solve practical problems

Mastering the Core Technology of Modern Building Waterproofing and Protection

First Prize of Nanning Science and Technology Progress Award

Made significant contributions to promoting
the technological progress of the waterproofing industry

[Science and Technology Progress Award] The Nanning Municipal Government focuses on rewarding major scientific and technological achievements that have high technical content, good benefits, obvious role in promoting the technological progress of the industry and the whole society, and have a large influence in the organization and implementation of innovation plans in recent years. The project "Development and Industrialization of CPS Reaction Bonding Wet-laid Waterproofing Membrane" of Xiniupi Waterproofing (formerly Guangxi Golden Umbrella) has achieved remarkable results in technological innovation, product innovation, high-tech industrialization, promotion and application of advanced scientific and technological achievements, social welfare, and sustainable development. To affirm and commend this achievement: The People's Government of Nanning City awarded "The First Prize of Nanning Science and Technology Progress".

Major Contribution Award in Science and Technology

Breakthrough achievements and outstanding contributions
in solving the problem of building leakage

[Major Contribution Award in Science and Technology] is an award established by the Nanning Municipal Government to recognize and reward organizations or scientific and technical personnel who have made outstanding contributions to the scientific and technological progress and social and economic development of Nanning. Projects such as "The Development and Industrialization of CPS Reaction Bonding Wet-laid Waterproofing Membrane" of Xiniupi Waterproofing Company (formerly Guangxi Golden Umbrella) have obtained 4 authorized invention patents, 10 utility model patents, 40 valid invention patent applications, and 6 utility model patents. Its innovation and industrial driving ability is at the forefront in Nanning, setting an exemplary leading role for waterproofing enterprises in Nanning, Guangxi and even the whole country, and was awarded the "Major Contribution Award in Science and Technology of Nanning in 2015". (The statistical data in the text is as of May 2015)

Mastering the Core Technology of Modern Building Waterproofing and Protection

Nanning Mayor's Quality Award

[The Nanning Mayor's Quality Award] is the highest quality honor established by the Nanning Municipal People's Government, specifically awarded to enterprises or organizations in Nanning that implement the excellent performance quality management model, whose quality level and independent innovation ability are in the leading position in the same industry in Guangxi, and have achieved significant economic and social benefits. On November 9, 2016, the Nanning Municipal People's Government issued a document announcing the review results of the second Mayor's Quality Award. Xiniupi Waterproofing (formerly Guangxi Golden Umbrella) stood out among many excellent participating enterprises, won the first place, and its comprehensive score ranked first among the awarded enterprises!

Top Ten Most Influential Brands in China's Waterproofing Industry

On September 14, 2017, the organizing committee including China Enterprise News, the Editorial Department of Macroeconomic Management of the National Development and Reform Commission, the Huading Sinology Research Foundation of the Counsellor's Office of the State Council, and the "Discovering Brands" column of CCTV jointly held the "The Fourth Release Event of Evaluation Results of China's Brand Influence" in the Great Hall of the People in Beijing. Ten waterproofing enterprises that pursued excellence and kept improving in the work of building brand influence, fully embodying the spirit of craftsmanship, were jointly selected and awarded the title of "Top Ten Most Influential Brands in China's Waterproofing Industry".

Xiniupi Waterproofing (formerly Guangxi Golden Umbrella) was selected as one of the top ten most influential brands in China's waterproofing industry for "complying with the spirit of craftsmanship, pursuing excellence and continuous improvement, with outstanding brand effect, significant innovation benefits, complete service platform and first-class quality level".

Edit and participate in waterproofing standards at all levels such as national and regional ones.

Xiniupi Waterproofing (formerly Guangxi Golden Umbrella Waterproofing and Decoration Co., Ltd.) masters the core technology of concrete sealing and waterproofing. It has nearly 110 authorized patents related to sealing, waterproofing and protection technologies, and has edited or participated in over 40 standards at all levels of the country.

Category	Standard Name	Standard Number	Remarks
National standard	Wet-laid waterproofing membrane	GB/T 35467-2017	Chief Editor
National standard	Waterproofing membrane with self-adhesive layer	GB/T 23260-2009	Participate in Editing
National standard	Self-adhesive polymer modified bitumen waterproofing membrane	GB/T 23441-2009	Participate in Editing
National standard	Pre-laid waterproofing membrane	GB/T 23457-2017	Participate in Editing
Group standard	Technical specification for application of wet-laid waterproofing membrane with skin-core structure and hot-pressed cross-linked polymer base	T/CECS 1019-2022	Chief Editor
Group standard	Wet-laid waterproofing membrane with skin-core structure and hot-pressed cross-linked polymer base	T/CECS 10173-2022	Chief Editor
Group standard	Technical specification for application of pre-laid composite waterproofing membrane	T/CECS 1020-2022	Chief Editor
Group standard	Pre-laid composite waterproofing membrane	T/CECS 10174-2022	Chief Editor
Group standard	High-solid water-based rubber polymer high molecular waterproofing coating	T/CECS 10016-2019	Chief Editor
Group standard	Freshly prepared water-based rubber polymer composite waterproofing membrane	T/CECS 10017-2019	Chief Editor
Group standard	Technical specification for application of water-based rubber polymer composite waterproofing material	T/CECS 603-2019	Chief Editor
Group standard	Technical specification for application of wet-laid waterproofing membrane	T/CBMF66-2019	Chief Editor
Group standard	Waterproofing sealant at the connection of building components	JG/T 501-2016	Chief Editor
National atlas	Structure of building waterproofing system (XII)	Atlas number 19CJ40-12	Chief Editor
National atlas	Waterproofing Structure of Urban Comprehensive Pipe Gallery Project	Atlas number 19J302	Participate in Editing
.....	.....	.....	.....

The product standard reaches the world-leading level.

The product standard of Xiniupi freshly prepared waterproofing membrane was selected into the top 100 group standard application demonstration projects of the Ministry of Industry and Information Technology of China.

The product standard reaches the world-leading level and has won the top ten excellent standards of the China Association for Engineering Construction Standardization.

10 Outstanding CECS Standards Released On-Site

- **Jointly formulate product and application standards with domestic high-level scientific research institutions, universities, design units and application constructors.**

  The product and application standards of Xiniupi freshly prepared waterproofing membrane are group standards jointly formulated by Xiniupi and more than 30 units such as Tsinghua University, Tongji University, National Center for Quality Supervision and Inspection of Building Engineering, National Quality Supervision and Inspection Center for Polymer Engineering Materials and Products (Guangdong), China Municipal Northwest Design and Research Institute, and China Construction First Bureau!

- **Guided by the effectiveness and durability of waterproofing, and referring to the principle of standard formulation in Europe and America, a new standard for the application of waterproofing layers has been established.**

  The setting of waterproofing performance indicators in this standard not only pays attention to the conventional physical performance indicators of waterproofing materials, but also pays more attention to the performance indicators that are compatible with the actual application requirements of the project, thereby ensuring that the on-site environmental applicability and waterproofing durability of Xiniupi freshly prepared waterproofing membranes are much higher than those of traditional waterproofing materials.

International exchange and cooperation win the respect of the world with technological innovation.

Mastering the Core Technology of
Modern Building Waterproofing and Protection

FREUDENBERG
INNOVATING TOGETHER

Strategic cooperation with the German Freudenberg Performance Materials Group.

Infiana

Jointly develop international high-end waterproofing products with the German company Infiana.

The 8th Sino-German Economic and Technological Cooperation Forum was held in the Great Hall of the People(The National Parliament Building). The governments of the two countries designated 48 contracting teams. Xiniupi Waterproofing (formerly Guangxi Golden Umbrella Waterproofing and Decoration Co., Ltd.) participated in this signing ceremony as the only representative of waterproofing enterprises in China and reached strategic cooperation with the German company Infiana.

International exchange and cooperation win the respect of the world with technological innovation.

Mastering the Core Technology of
Modern Building Waterproofing and Protection

Valéron

Cooperate with the American company Valeron Strength Films to jointly develop intelligent waterproofing layers.

PAVAG FOLIEN AG
cross laminated films

Become a strategic partner of the Swiss company Pavag.

NARDINI

Cooperate for win-win results with the Italian company NARDINI.

Share resources with Henkel Dubai of Germany to solve the waterproofing problems of concrete buildings for customers.

Technical cooperation

with the research team of Professor Li Guangtao of Tsinghua University

Technology research and development of Xiniupi Self-Fusion Type Special Multi-functional Protective membrane
Cooperation project between Xiniupi and the research team of Professor Li Guangtao of Tsinghua University

Li Guangtao

Professor and doctoral supervisor of Tsinghua University
Outstanding Youth of the National Natural Science Foundation
Outstanding Youth of the National Natural Science Foundation

Chief scientist of Xiniupi
Waterproof 311 Research Institute

Research directions:
Supramolecular chemistry and molecular assembly
Colloid and interface chemistry
Nanomaterials chemistry
Functional thin film materials

Professor Li Guangtao of Tsinghua University led the team to visit the Xiniupi Science and Technology Park regularly for technical guidance and project breakthroughs.

Office Address: 6th Floor, Building A9, No. 88, Changhong Road, Qingxiu District, Nanning City
Addresses of Xiniupi Science and Technology Parks:
A: Xiniupi Science and Technology Park, Santang Town, Xingning District, Nanning City, Guangxi Province(Nanning)
B: No. 24, Lingang Avenue, Jinwo Industrial Park, Qinnan District, Qinzhou City, Guangxi Province(Qinzhou)
Telephone: 0771 - 5623151 **Fax:** 0771 - 5628560 **Website:** www.xnpfs.com