
CALCIUM SILICATE ANCIENT BUILDING
ROOFING TILE 硅钙古建瓦
广胜佳
GUANG SHENG JIA
NEW ROOF MATERIAL

INTRODUCTION 简介

CALCIUM SILICON ANCIENT BUILDING TILE was independently developed in 2018 by the Tianjin **Guang shengjia R&D team**. The national intellectual property organization examined it and issued many patent certifications. It is classified as a "Eco-friendly and energy-saving building material product" by the respected Chinese Building Materials Association.

It has been registered with the China Copyright Protection Center (National Copyright Registration -2019-F-00732679), and both the front and back of the tile carved the Guangshengjia anti-counterfeiting logo.

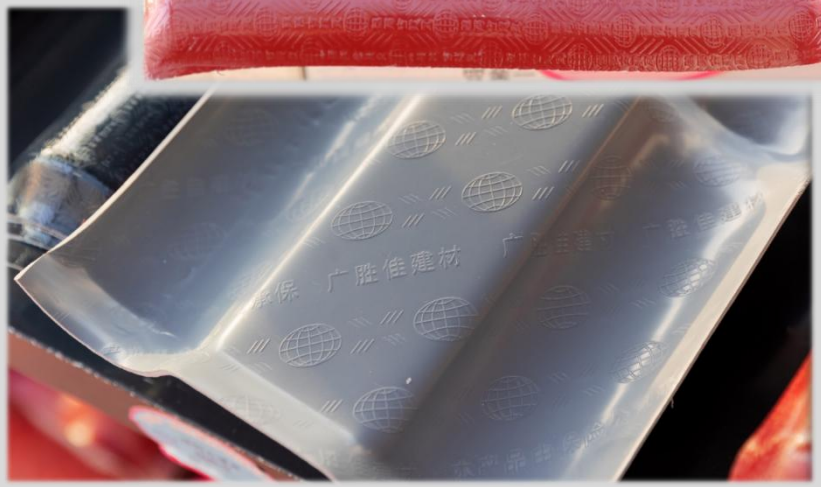
广胜佳硅钙古建瓦于2018年由天津广胜佳产品研发团队自主研发成功。经国家知识产权机构审查并授予多项专利认证。被中国权威建筑材料协会评定为“绿色环保节能建材产品”。已在中国版权保护中心进行登记（国作登记-2019-F-00732679）,瓦体正、背面具有广胜佳防伪标识。

Front Anti-fake logo

正面防伪-硅钙古建瓦

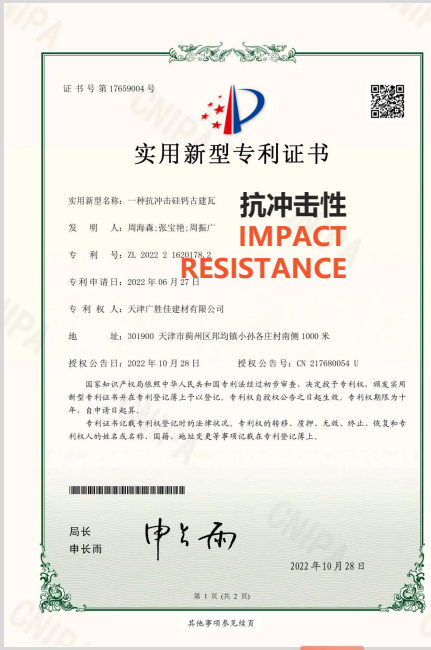
Back Anti-fake logo

正面防伪-广胜佳建材



ANTI-FAKE LOGO 防伪标

PATENT CERTIFICATE 专利证书


证书号第17659004号

实用新型专利证书

实用新型名称：一种抗冲击硅钙古建瓦

发 明 人：周海森;张宝艳;周振广

专 利 号：ZL 2022 2 1620178.2

专利申请日：2022年06月27日

专 利 权 人：天津广胜佳建材有限公司

地 址：301900 天津市蓟州区邦均镇小孙各庄村南侧1000米

授权公告日：2022年10月28日 授权公告号：CN 217680054 U

国家知识产权局依照中华人民共和国专利法经过初步审查，决定授予专利权，颁发实用新型专利证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。专利权期限为十年，自申请日起算。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

局长 申长雨

2022年10月28日

第1页(共2页)

其他事项参见续页

抗冲击性
IMPACT
RESISTANCE

01


证书号第17513646号

实用新型专利证书

实用新型名称：一种新型防腐[illegible]

发 明 人：周海森;张宝艳;周振广

专 利 号：ZL 2022 2 1603[illegible].1

专利申请日：2022年06月[illegible]

专 利 权 人：天津广胜佳建材有限公司

地 址：301900 天津市蓟州区邦均镇小孙各庄村南侧1000米

授权公告日：2022年10月04日 授权公告号：CN 217537578 U

国家知识产权局依照中华人民共和国专利法经过初步审查，决定授予专利权，颁发实用新型专利证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。专利权期限为十年，自申请日起算。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

局长 申长雨

2022年10月04日

第1页(共2页)

其他事项参见续页

防腐性
CORRSION
RESISTANCE

02


证书号第17507757号

实用新型专利证书

实用新型名称：一种保温式硅钙古建瓦

发 明 人：周海森;张宝艳;周振广

专 利 号：ZL 2022 2 1660835.6

专利申请日：2022年06月29日

专 利 权 人：天津广胜佳建材有限公司

地 址：301900 天津市蓟州区邦均镇小孙各庄村南侧1000米

授权公告日：2022年09月30日 授权公告号：CN 217577965 U

国家知识产权局依照中华人民共和国专利法经过初步审查，决定授予专利权，颁发实用新型专利证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。专利权期限为十年，自申请日起算。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

局长 申长雨

2022年09月30日

第1页(共2页)

其他事项参见续页

保温性
HEAT
PRESERVAT
ION

03


证书号第17522870号

实用新型专利证书

实用新型名称：一种复合式硅钙古建瓦

发 明 人：周海森;张宝艳;周振广

专 利 号：ZL 2022 2 1631000.8

专利申请日：2022年06月27日

专 利 权 人：天津广胜佳建材有限公司

地 址：301900 天津市蓟州区邦均镇小孙各庄村南侧1000米

授权公告日：2022年10月04日 授权公告号：CN 217537577 U

国家知识产权局依照中华人民共和国专利法经过初步审查，决定授予专利权，颁发实用新型专利证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。专利权期限为十年，自申请日起算。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

局长 申长雨

2022年10月04日

第1页(共2页)

其他事项参见续页

复合式瓦
COMPISTE
TILE

04

ORIGIN 灵感来源

INSPIRATION

Why we research and develop CALCIUM SILICON ANCIENT BUILDING TILE ?

Resin tiles are highly favored by many consumers due to their vivid colors,

ease of shipping, simplicity of installation, and other benefits.

However, many people who enjoy resin tiles have to KEEP them AWAY because of their

SHORT service life, susceptibility to deformation, and cracking.

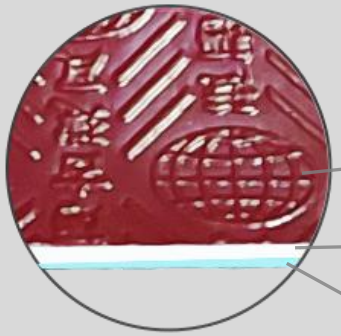
Why the resin tiles are easy to deform and crack?How to improve this shortcoming?

So we start to R&D the new product,and succeed in 2018

为什么我们研发硅钙古建瓦产品?

很多客户非常喜欢树脂瓦，因为它颜色艳丽，运输方便，安装便捷等等，但是因为树脂瓦容易变形、开裂，使用寿命短，让喜欢它的人们望而却步。为什么树脂瓦易变形、开裂，怎么样能改善它的这个弱点？沿着这个思路，我们开始新品研发之路，历时两年，终于2018年开发成功。

STRUCTURE 结构

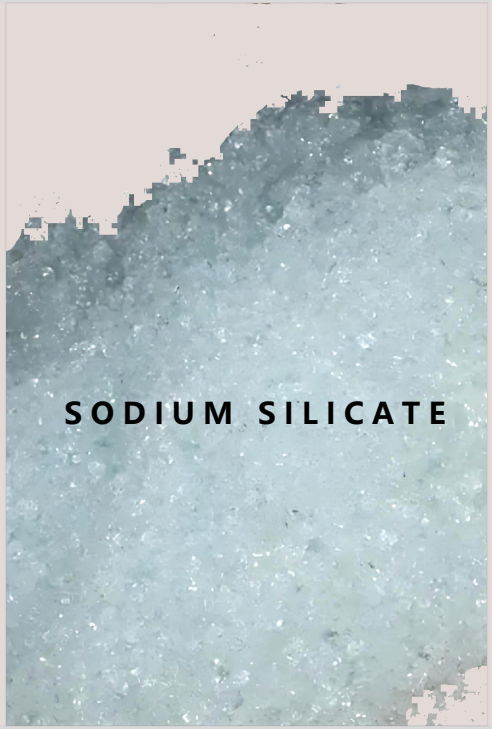


CALCIUM SILICON ANCIENT BUILDING TILE use the three-layer co-extrusion structure and HERE technology .

- **Surface layer** - PMMA film protective layer
- **Middle Skelon layer** - sodium silicate+ Nano-modified calcium
- **Bottom layer** - Add insulation powder + PVC protective layer on the basis of core material.

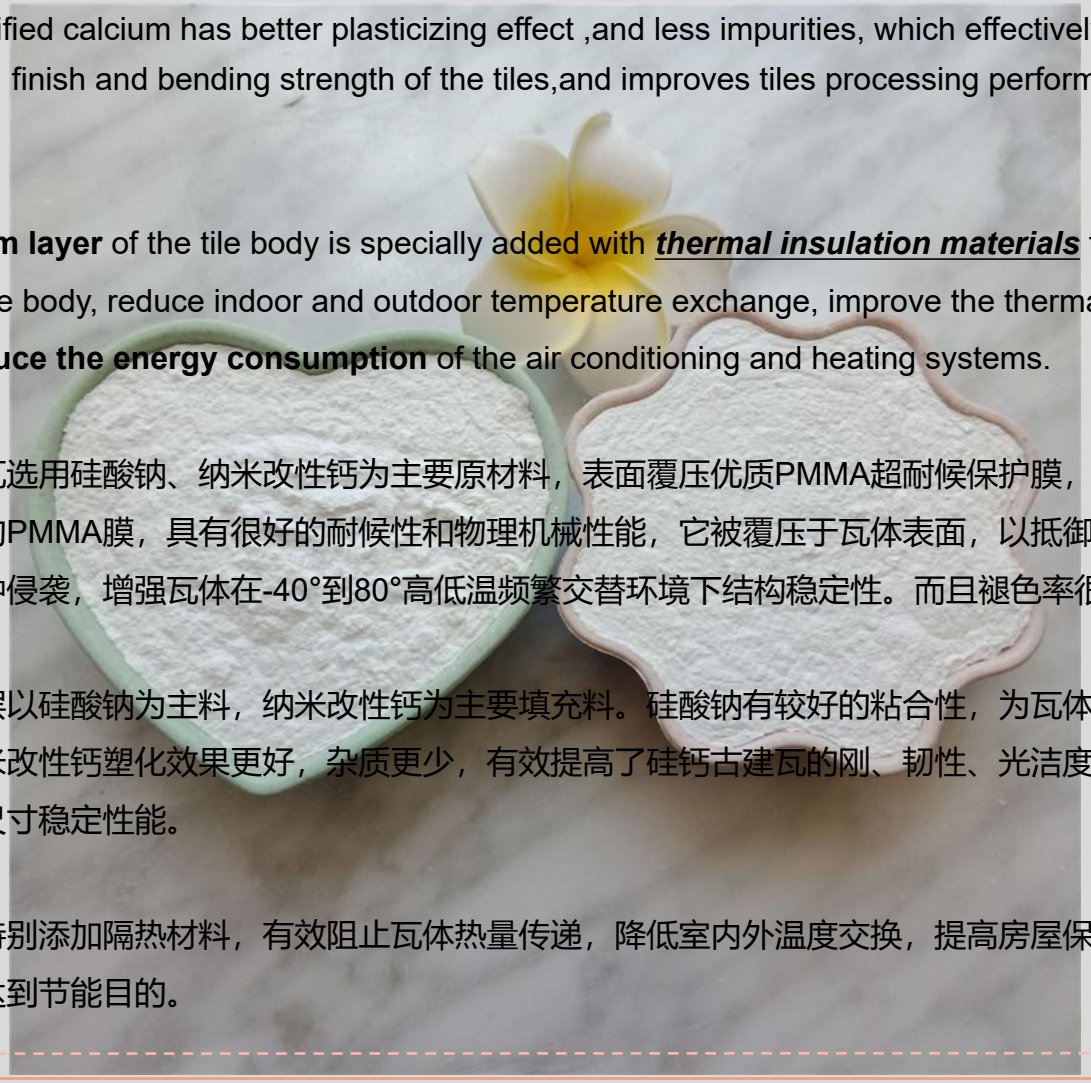
硅钙古建瓦运用了三层共挤结构和HERE复合技术:
表面保护层 - PMMA膜保护层
中间骨架层 - 核心材料“硅酸钠+纳米改性钙”
底面隔热层 - 在核心材料基础上添加隔热粉+PVC 保护层

Material Introduction 材料介绍



The surface layer **PMMA film** have many of advantaces,such as good weather resistance 、strongly physical and mechanical properties. It is covered on the surface of the tile to resist various invasions such as ultraviolet rays, wind and acid, alkali and salt substances in the natural environment, and enhance the structural stability the tile under the environment of frequent alternation of high and low temperatures from -40° to 80°. And the fading rate is very low.

The middle core skeleton layer is made of sodium silicate and nano-modified calcium. Sodium silicate has good adhesion, which makes the tiles has good tensile strength and toughnes.



Nano-modified calcium has better plasticizing effect ,and less impurities, which effectively improves the rigidity, toughness, finish and bending strength of the tiles,and improves tiles processing performance and dimensional stability.

The **bottom layer** of the tile body is specially added with ***thermal insulation materials*** to effectively prevent heat transfer from the tile body, reduce indoor and outdoor temperature exchange, improve the thermal insulation performance of the house,**reduce the energy consumption** of the air conditioning and heating systems.

硅钙古建瓦选用硅酸钠、纳米改性钙为主要原材料，表面覆压优质PMMA超耐候保护膜，经三层共挤技术加工而成。我们选用的PMMA膜，具有很好的耐候性和物理机械性能，它被覆压于瓦体表面，以抵御自然环境中紫外线、风吹日晒等各种侵袭，增强瓦体在-40°到80°高低温频繁交替环境下结构稳定性。而且褪色率很低。

核心骨架层以硅酸钠为主料，纳米改性钙为主要填充料。硅酸钠有较好的粘合性，为瓦体较好的抗拉强度和韧性提供基础。纳米改性钙塑化效果更好，杂质更少，有效提高了硅钙古建瓦的刚、韧性、光洁度以及弯曲强度，改善瓦的加工性能和尺寸稳定性能。

瓦体底层特别添加隔热材料，有效阻止瓦体热量传递，降低室内外温度交换，提高房屋保温性能，从而降低空调和采暖能耗，达到节能目的。

CLASSIFICATION 分类

In order to accommodate varying customers needs, we have created three product categories.

Quality low to high：***Common tile; Heat Insulation tile; Enhanced Heat Insulation tile.***

To distinguish ,Use diferent color for the bottom.

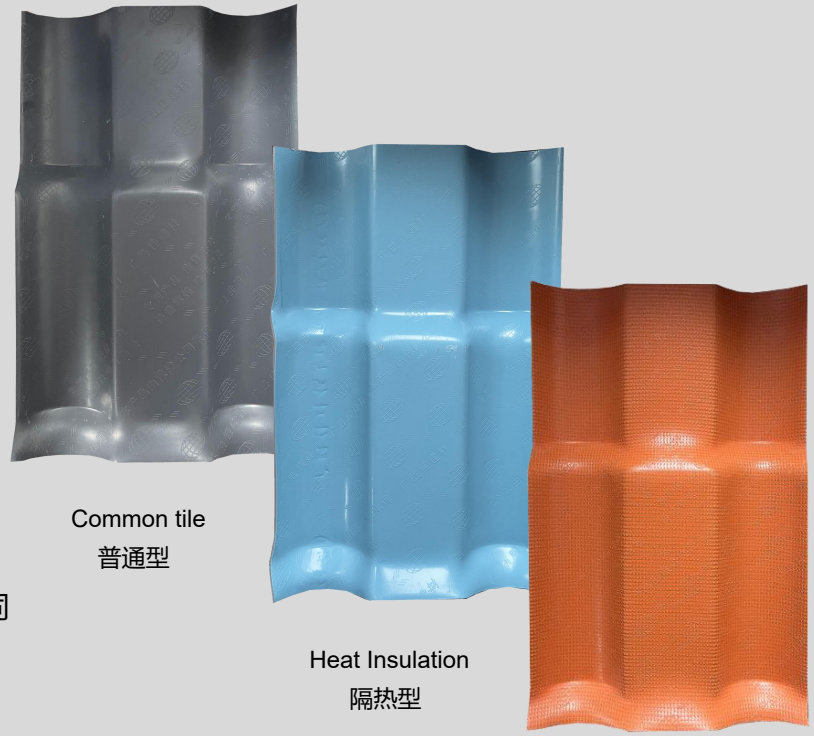
Customers have the options of selecting ***PMMA*** in 2 distinct thicknesses:***0.08mm*** and ***0.3mm***. The weather resistance of the 0.3mm PMMA is more better than the 0.08mm's

Accept custom.

为了满足不同客户的需求，我们创建了三个产品类别。

品质从低到高分别是常规型、隔热型、加强隔热型。为了区分，底部使用不同的颜色。在这个基础上客户可以选择两种不同厚度的 PMMA膜：0.08 毫米和 0.3 毫米。0.3毫米PMMA耐候性远比0.08毫米的好

接受定制。



Common tile
普通型

Heat Insulation
隔热型

Enhanced Heat Insulaton
加强隔热型

ADVANTAGE 优点

Weather Resistance

The surface is coated with PMMA,which has super weather-resistant. It provides good protection against UV rays and various erosion in nature when exposed to nature for an extended period of time.Long-lasting color,5% of rate fade in 15 years

耐候性

表面覆压具有超强耐候性的PMMA膜，保护长时间暴露在大自然中的瓦体抵御紫外线、以及来自自然界的各种侵蚀。颜色持久，15年内褪色率5%

Impact Resistance

The tile uses high-strength materials and HERE composite technology, which makes the product has super impact resistance and load resistance, 3 times that of similar products.Not afraid of heavy rain, hail and constructor trampling

抗冲击性

瓦片采用高强度材料和HERE复合技术，使产品具有超强的抗冲击性和抗荷载性，是同类产品的3倍。不怕大雨、冰雹和施工人员的踩踏

Super Stability超强稳定性 & Energy Conservation节能

Low Expansion and Contraction

The thermal expansion and contraction rate of calcium silicate ancient building tiles is much lower than that of synthetic resin tiles, Very close to the expansion and contraction rate of steel.Between -40°Celsius and 80°Celsius, the structure is relatively stable,not easily deformed.

低热胀冷缩率

相对于树脂瓦，硅钙古建瓦的热胀冷缩率很低，基本接近彩钢的胀缩率。在-40° - 80°之间，结构性能相对稳定，不易变形。

Energy Conservation

The thermal conductivity of the tile body is less than 0.325 w/h,which makes it very easy todecrease temperature transmission between indoor and outdoor spaces, store heat, insulate, preserve energy, and lower carbon emissions

节能

经相关实验测试，瓦体导热系数小于0.325w/h，可以大大减少室内外之间的温度传递，储温隔热，节省能源，减少碳排放。

Fire Resistance 防火 & Corrison Resistance 耐腐

Fire Resistance

Calcium Silicon ancient building tiles are made of B1 grade fireproof raw materials,it makes the tiles have good fireproof performance
and ensure that they extinguish instantly when they are removed from the source of fire.

防 火

硅钙古建瓦所用原材料都属于B1级防火，这让瓦有很好的防火性能，一旦离开火源，会立即熄灭。

Corrison Resistance

Silicon calcium ancient building tiles have excellent stability.Proven by corrosion test ,it can resist corrosion from various chemicals such as acid,alkali, and salt. So definitely it can resistant to acid rain, corrosive gases, and the high salinity coastal environment.

耐 腐 蚀

硅钙古建瓦性能稳定，经腐蚀试验证明，可抵抗酸、碱、盐等各种化学物质的腐蚀。因此，它绝对可以抵抗酸雨、腐蚀性气体和海边的高盐环境。

Eco-friend 环保 & Easy Install 安装便捷

Eco-Friendly

Professional testing has demonstrated that it is devoid of volatile and radiating chemicals.
Conserving energy and protecting the environment during installation, use, and manufacture.When its useful life comes to an end, it can be recycled 100%.

环 保 产 品

专业检测表明，它不含挥发性和放射性化学物质，生产、安装和使用过程中节能环保，也不会排放任何污染物，当其使用寿命结束时，可以100% 回收利用。

Easy Install

The weight of the tile is approximately 5.7 kg/square meter. The single tile is large, light, and easy to carry.Tile cutting is easily , and it can be installed in a flexible and straightforward manner. There is less risk during construction, which saves time and effor, save cost.

安 装 方 便 快 捷

瓦的重量约为5.7公斤/平方米，单片面积大、重量轻、便于搬运。瓦体容易切割，安装灵活简便，施工风险小，省时省力，节约成本。

Soundproof 隔音 & Maintenance 免维护

Soundproof

Because calcium silicon ancient construction tiles have a relatively high density, sound can be somewhat prevented from spreading. Additionally, it has good sound insulation due to the unique curved surface structure and material qualities.

隔 音

硅钙古建瓦密度相对较高，可以一定程度上阻止声音的传播。再加之特殊的曲面结构和材料属性，让其有较好的隔音效果。

Maintenance Simply And Fast

Silicon calcium ancient building tiles do not require maintenance under normal use conditions, because they are durable, not easy to deform, not easy to fade, and very clean after rainning. They will not grow green moss and grass like clay and cement tiles. Even if they are harmed in bad weather, repairs and replacements would be quickly and simply.

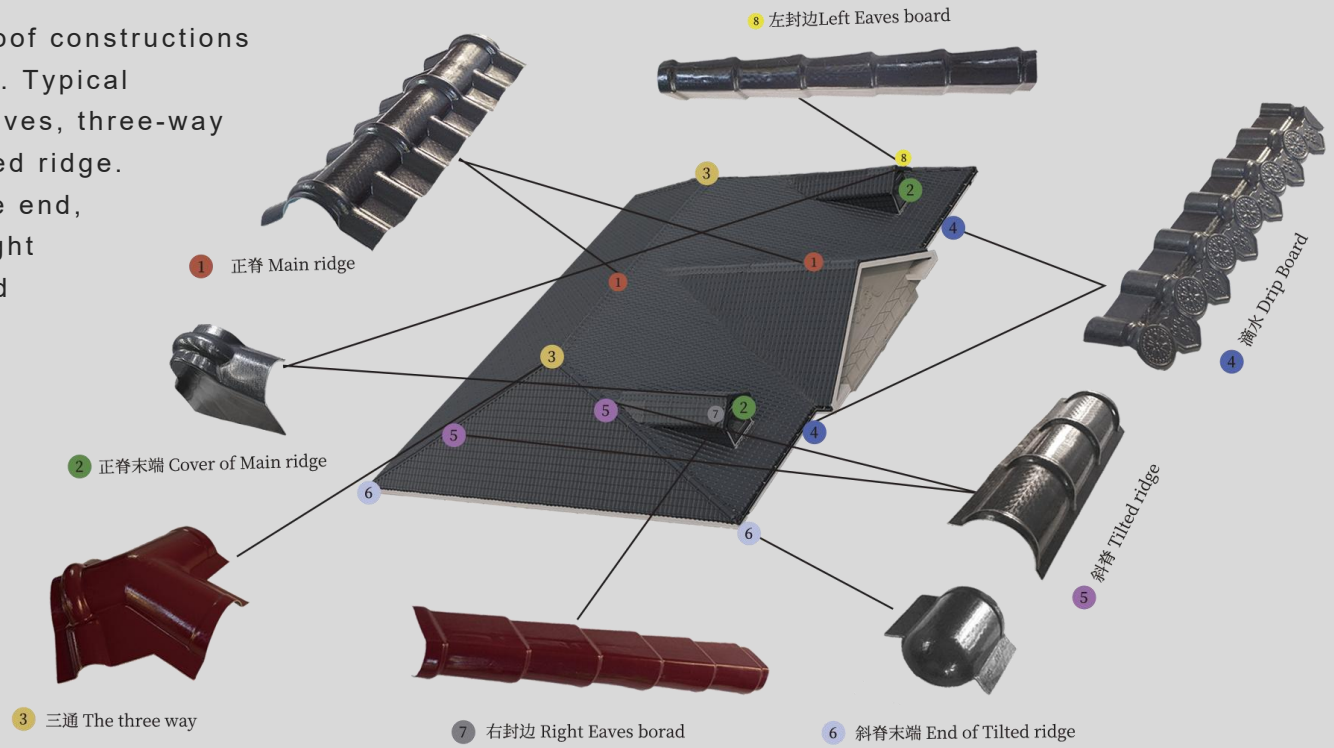
后 期 维 护 方 便 快 捷

硅钙古建瓦在正常使用环境下，是不需要维护的，因为从性能上它经久耐用，不易变形，不易褪色，雨过如新，不会出现陶土、水泥瓦长绿苔花草的现象。即便遭遇恶劣天气造成的破损，局部维修更换也快捷简单。

ACCESSORIES 附件

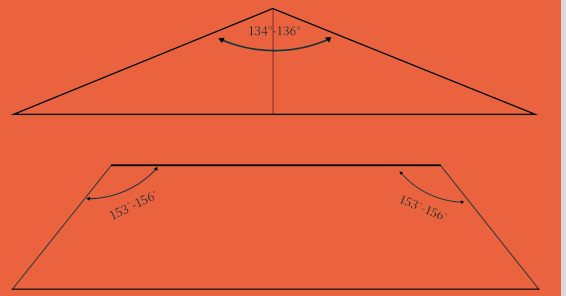
Two-slope and four-slope roof constructions are the most common types. Typical attachments include drip eaves, three-way eaves, top ridge, and slanted ridge. Top ridge cover, tilted ridge end, side edge sealing on the right and left, gable flashing, and so on.

常见屋面结构为两坡、四坡屋面，常用配件有正脊、斜脊、三通、封边、滴水檐、正脊封、斜脊封、左右封边、泛水板等等



RANGE OF ROOING SLOP
适用坡面

*ROOF SLOP should among 22° - 80°
*屋面坡度在22°-80°间



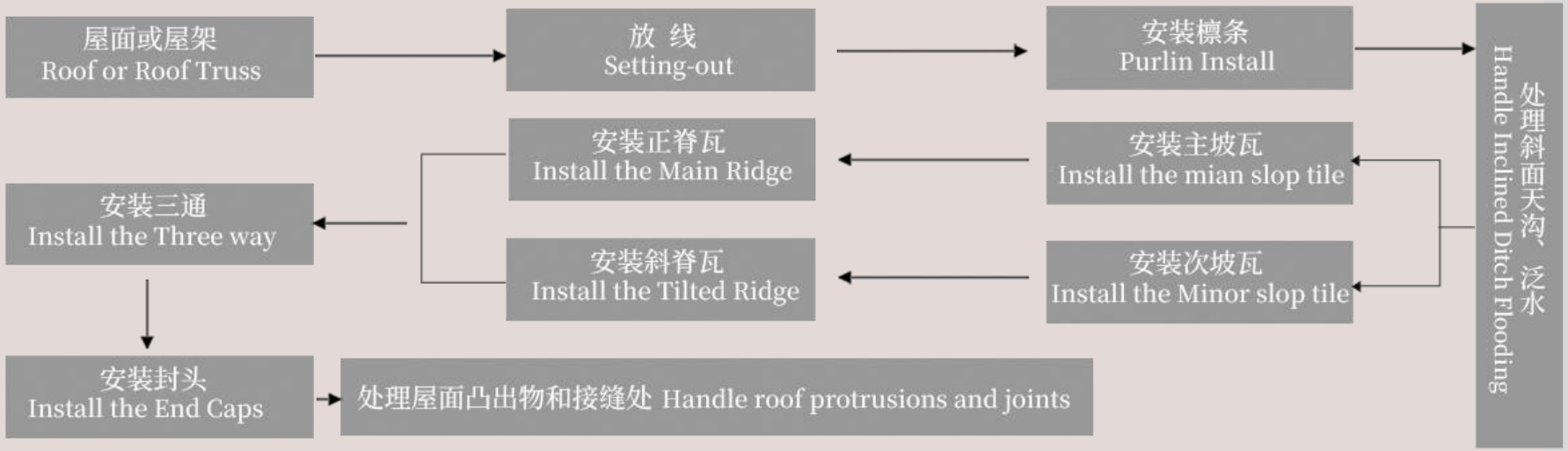
FIXED KITS

We independently developed the **HOLE-EXPANDING SELF TAPPING SCREWS** and **SEALING WATERPROOF CAPS**， More easy,More safe

Self-tapping screw -- 1022A Colored galvanized steel
Sealing waterproof cap material -- ASA plastic

我们自主研发了扩孔自攻钉和密封防水帽，让安装更简易，使用更安全
扩孔自攻钉材质： 1022A镀彩锌钢
密封防水帽材质： ASA

About Installation关于安装

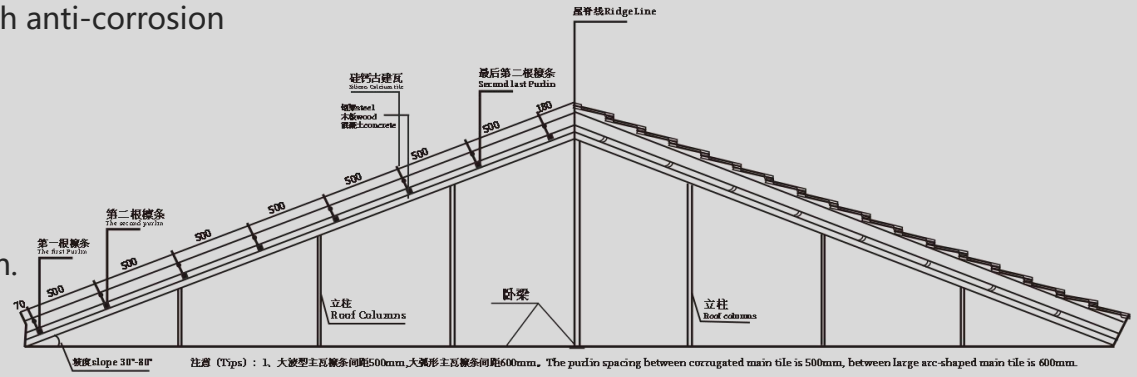


安装流程图 Installation Flow Chart

Purlin installing 檩条安装

I. Common purlin materials and sizes for roof trusses (mm): 60x40 wood strips, 60x40x3 square steel tubes, 100x50xC steel.

II. Metal purlins must be galvanized square tubes, and welding points must be painted with anti-rust oil. Wooden purlins must be painted with anti-corrosion oil or soaked in asphalt oil. The distance between the first purlin and the ridge line should be 180mm to facilitate the installation of ridge tiles, and the spacing between other purlins should be less than 600mm. The distance between the last purlin and the eaves among 30~70mm



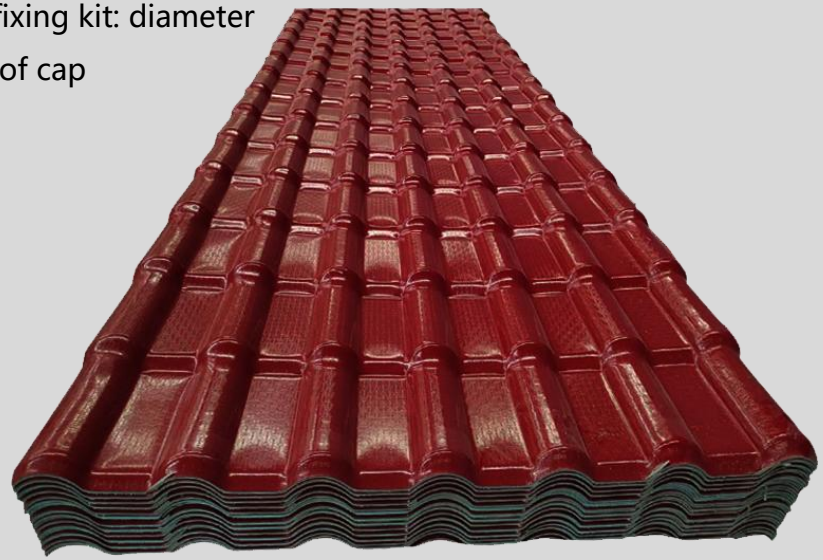
屋面檩条间距示意图

I. 屋架常用檩条材料及尺寸（mm）：60x40木条、60x40x3方钢管、100x50xC型钢。
II. 金属檩条必须采用镀锌方管，焊接点必须刷防锈油。木檩条必须刷防腐油或浸沥青油。第一根檩与屋脊线的距离是180mm，以方便安装正脊瓦，其它檩条间距600mm。最后一根檩距离檐口30~70mm。

Main Tile Installing 主瓦安装

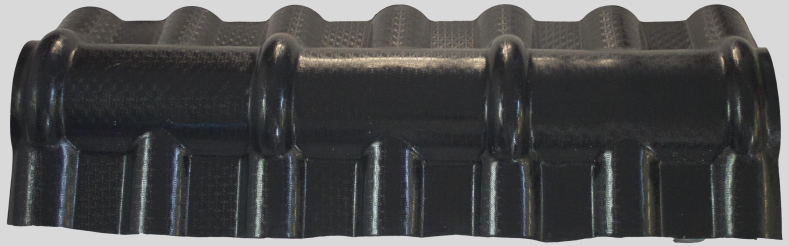
The installation of the first tile is the most important. Make sure that the bottom edge of the tile is perpendicular to the CC1 (CC2) or DD1 (DD2) line and cannot be tilted. After the position is corrected, fix the tile at the center position (wave crest) of the lowest purlin and the tile. To prevent tilting and unevenness caused by one-way overlap, the main tiles should be installed horizontally one up and one down, that is, the second tile buckles the first and third tiles, the fourth tile buckles the third and fifth tiles and overlaps one tile wave each, and so on. During the installation process, check the verticality of the bottom edge of the tile and the construction line at any time, and install the fixings after confirmation. The longitudinal installation should overlap a complete section length of the tile. The main tile installation of the two-slope roof should be carried out simultaneously on both sides to ensure that the wave crest of the ridge tile installation matches. Special fixing kit: diameter 6.3mm, length 75mm-140mm selftapping screw + ASA sealing waterproof cap

第一张瓦的安装最为重要，一定要保证瓦底边与CC1(CC2)或 DD1(DD2)线垂直不得倾斜，位置摆正后，在最下端檩条和瓦的中心位置(波峰)处将瓦固定。为防止单向搭接造成的倾斜和不平整现象，主瓦横向安装要一上、 一下排列，即第二张瓦扣压第一张瓦和第三张瓦，第四张瓦扣压第三张和第五张瓦并各搭接一个瓦波，依次类推。安装过程中要随时检查瓦底边与施工线的垂直，确认无误后再将固定件安装齐全。纵向安装要搭接瓦的一个完整节长。两坡屋面主瓦安装应两侧同步进行，以确保正脊瓦安装的波峰吻合。



Main Ridge Installing 正脊安装

To avoid the ridge tile and the main tile overlapping at the same position, the first ridge tile needs to be cut in half. When installing, press the large end against the small end of the other tile, and fix it on the purlin together with the main tile after alignment. If the ridge angle does not match the slope, do not press hard to correct it.



为避免正脊瓦与主瓦重叠点在同一位置，第一块正脊瓦需切掉一半使用。安装时，大头扣压另一块的小头，摆正后与主瓦一起固定在檩条上。若正脊角度与坡度不符，切勿用力按压进行矫正

Tilted Ridge & Its End Installing 斜脊和斜脊末端安装

The tilted ridge tile is generally used on the triangular bevel of the multi-slope roof. It is installed after the main tiles on both sides are installed. When installing, buckle the big head to the small head, and then press the bottom edge on the bevel of the main tiles on both slopes. Fix it to the purlin with the main tiles with self-tapping screws. Pay attention to adjus -tment at any time during the installation process to avoid skewness.

斜脊瓦一般用在多坡屋面的三角形斜边上，两侧主瓦安装完毕后进行安装。安装时将大头扣压于小头，再将底边压在两坡主瓦的斜边上，
与主瓦一起用自攻螺钉固定在檩条上，安装过程中随时注意调整，避免歪斜.

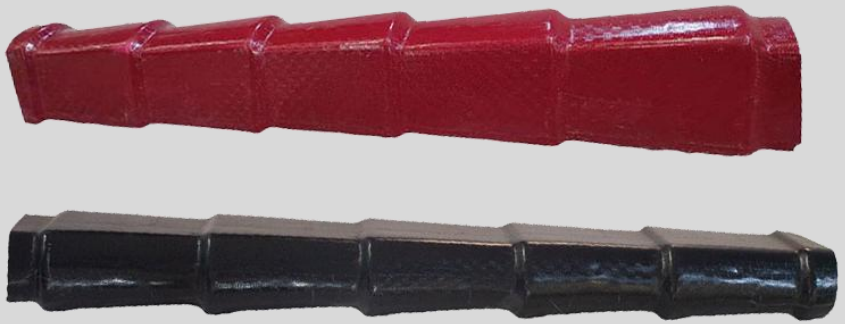
The Three Way Installing 三通安装

Three-way ridge tiles are used to connect three-slope roofs. They can be installed only after the main ridge and the tilted ridge are installed. When installing, place one side under the main ridge tile and the other two sides on the tilted ridge tile, and fix them to the purlin with a special fixing kit. Note: If the angle of the three-way tile is not correct, do not use force to correct it. You can use a heating tool such as a heat gun to soften it, and then press it by hand to adjust the angle (wear heat-insulating gloves)

三通脊瓦用于三坡屋面的连接，正脊、斜脊安装完成后才可安装。安装时，将一边搭在正脊瓦下面，另两边搭在斜脊瓦上面，用专用固定套件固定于檩条。
注意：三通瓦角度不对，不要用力矫正，可以用热风枪等加热工具其软化，再用手按压调整角度（戴隔热手套）

The Side Cover Installing 侧封边安装

The side cover is generally used for two-slope roofs,and there are left and right sides. When installing, first buckle the corrugated side on the main tile, then use a special fixing kit to fix it together with the main tile on the steel frame, and finally, fix the side to the wall with ordinary screws.



侧封边一般用于两坡屋面，有左、右之分。安装时先将有波纹的一边扣放于主瓦上，然后用专用固定套件连同主瓦一起固定在钢架上，最后，将侧面用普通螺丝固定在墙体上。

Installing of Drip Eave board 滴水檐安装

The installation of the dripping eaves should be carried out simultaneously with the main tiles, and the corrugated part should be overlapped below the main tiles. Note that the wiring must be laid out before installation to ensure that the drip eaves and the bottom edge of the main tiles are parallel to the horizontal line simultaneously, and then use a fixing set to fix them to the purlins together

滴水檐的安装要与主瓦同步进行，波形部分搭接于主瓦下方。注意安装前一定要放线，保证滴水檐和主瓦底边同步与水平线平行，然后用固定组套件将它们共同固定于檩条。

Installation of the Ridge Ends 正脊末端安装

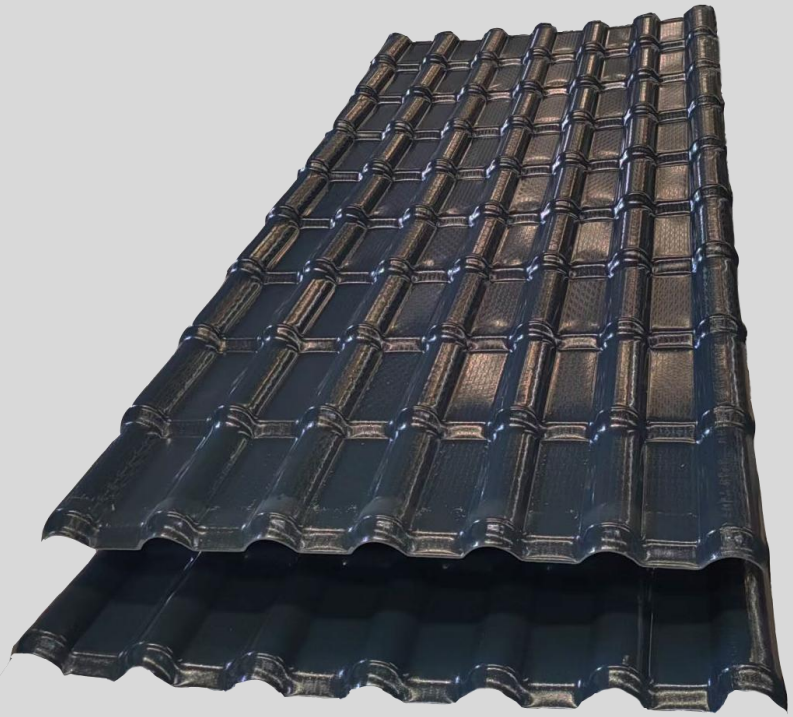
The end of the main ridge is mainly used for two-slope roofs. Install after the side sealing and main ridge installation are completed. Simply buckle it onto the main ridge naturally, and use the fixing kit to fix it with the main ridge and side edges.

正脊末端主要用于两坡屋面。在侧封边、正脊安装完成之后安装。将其自然扣在正脊上，用固定套件将其与正脊和侧封边固定好即可。

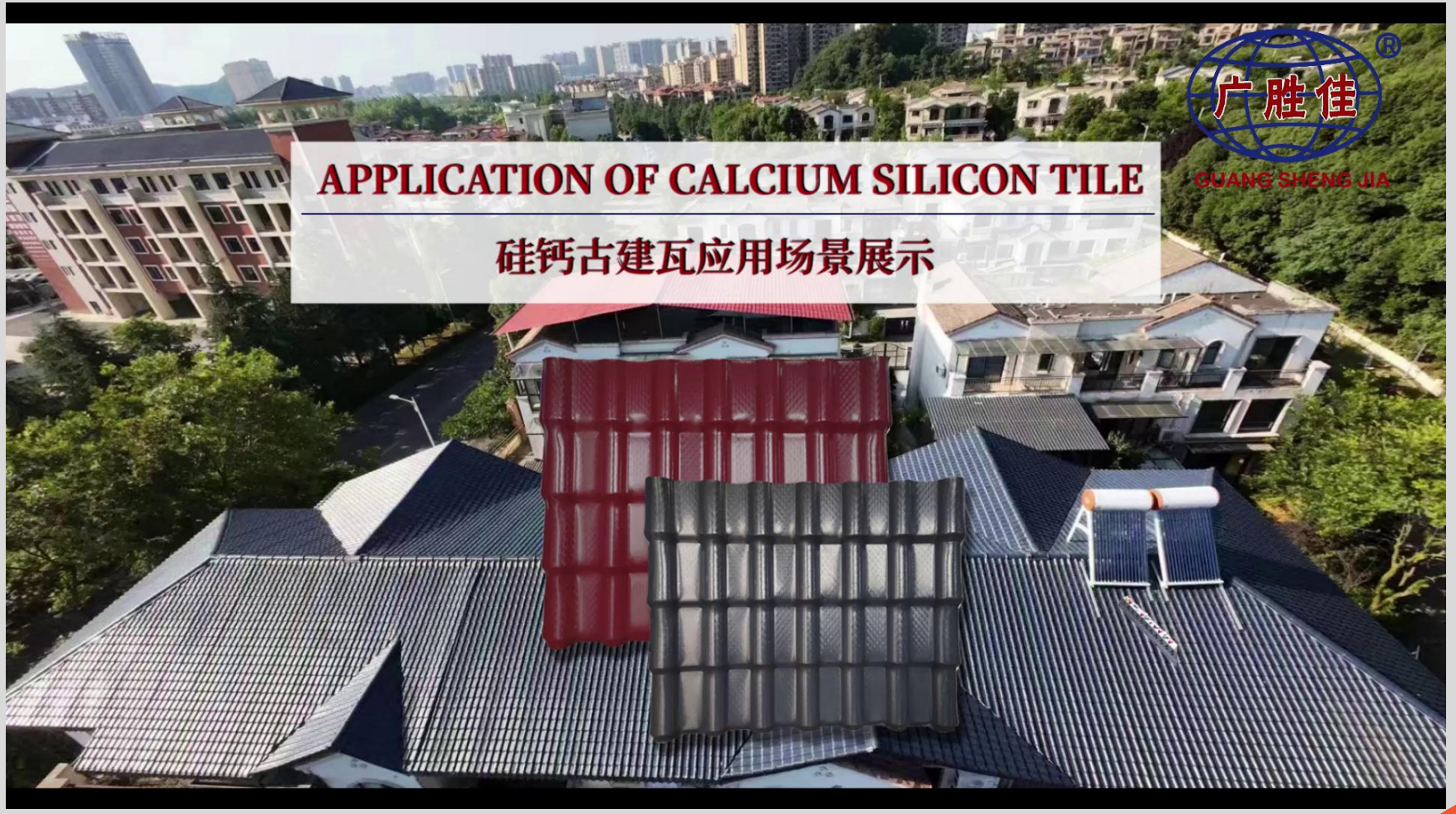
About overlapping 关于搭接

There will be horizontal and vertical overlaps during the installation process.Overlap a tile wave horizontally, and overlap a tile section vertically

安装过程中会有横向、纵向搭接。横向搭接一个瓦波，纵向搭接一个瓦节.



PROJECT CASE 工程案例



ENDING 结 束