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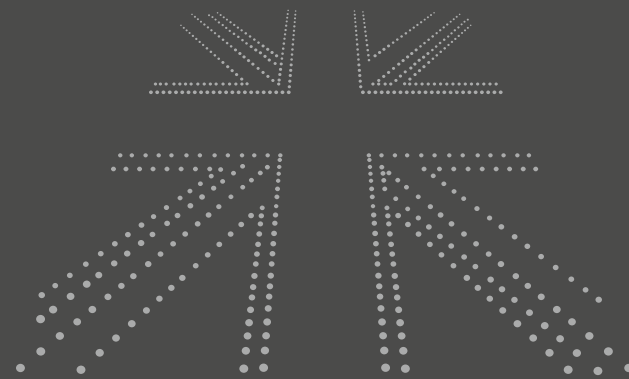


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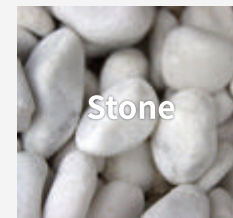
LIME PAINT

STYLE FROM ENGLAND

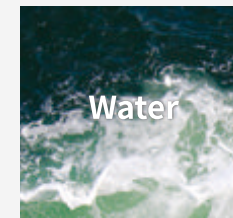


Four natural forces that create

Lime



Stone



Water



Fire



Time



In our modern society, we expect immediate results.
Building products are no exception.

在我们的现代社会中,我们期望取得立竿见影的效果。
建筑产品也不例外。

What does this have to do with lime?

这和石灰有什么关系?

Lime can look old fashioned or brand new, poor or rich, a rare specialty or a very common item, according to cultures, countries and their local traditions.

Hydrated lime, air-hardening lime, lime milk, pure lime, seasoned slaked lime, names used in marketing by many paint and plasters manufacturers promoting lime finishes.

我们可以根据石灰的老旧程度,或者是国家对待它的专业程度来判断一个国家、文化和当地传统的是否悠久。
熟石灰、空气淬火石灰、石灰乳、纯石灰、熟石灰,由许多油漆和膏药制造商名称用于促进石灰完成。

This booklet wishes to inform the reader about the simple concepts related to the history and behavior of lime that often, for painters and plasterers.

An endangered knowledge that we want to keep alive.

We will speak about stones, wood, water, fire and time, we won't reinvent anything new, we'll learn together the roots of the binder used by our ancestors, that thanks to the passion and professionalism of few technicians, is still available today, in full respect of the English tradition in restoration and decoration of our buildings.

这本小册子希望告知读者一些关于石灰的简单的概念与历史,而这些是一种我们想要延续下来的濒危信息。

我们将谈论石头、木、水、火和时间,我们不会重新发明新的东西。

我们将一起学习我们的祖先所使用的粘合剂的根源,这多亏了我们专业的技术人员,充分尊重英国传统恢复我们的建筑和装饰,使它们今天仍然保存完好。

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Mann introduce

曼恩岛介绍

The Isle of Mann , also known simply as Mann , between the islands of Great Britain and Ireland. It has an area of around 572 square kilometers .Most of the island's resources are not artificially mined, very primitive.

曼恩岛,也叫曼岛,位于英格兰与爱尔兰间的海上岛屿。这一座被天然隔断的岛屿,面积大概有572平方公里。岛上的资源,大多都是没有经过人工开采的,非常原始。

The Mann is mainly hilly, because of the difference of altitude, the distribution of plants varies from low to high. The green grass on the coast is extinct, covered by an endless stream of ochre, a large number of green vegetation covering more than 80 percent of the area.

曼恩岛的地形基本以丘陵为主,因海拔高度不同,植物分布也由低及高呈现各异。海岸上绿色的草地就绝迹了,被连绵不绝的赭红色的欧石楠类植物覆盖,绿色植被众多,覆盖面积超过80%以上。

The Isle of Man has a temperate oceanic climate. Average rainfall is higher than averaged over the territory of the British Isles, because the Isle of Man is far enough from Ireland for the prevailing south-westerly winds to accumulate moisture. and the vast vegetation resources gave the abundant rainfall gave an adequate water supply ", Niarbyl river".

由于曼恩岛距离爱尔兰盛行的西南风足以积聚水分,加上曼恩岛拥有一个温和的海洋气候以及广阔的植被资源,因此岛上的平均降雨量要比英伦群岛的平均降水量高得多,丰富的降雨量给予了“尼亚比尔河流”充足的水源补给。

The river, however, contains an ancient isle of pebbles, probably in the thousands of years ago the pebbles are the local people to use used as building materials, now this ancient cobblestone long after washing clean water, make the surface becomes exceptionally smooth and white pebbles.

然而,这条河蕴藏着一种古老的曼岛鹅卵石,大概在几千年前这种鹅卵石就被当地的人们用来做为建筑的原材料而使用,如今这种古老的鹅卵石长期经过无污染河水的冲刷,使得这些鹅卵石的表面变得格外光滑与洁白。



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STYLISH HOUSE FOR ENVIRONMENTAL LIFESTYLE



SCCP



Advantages & Disadvantages

使用石灰基的优势和缺点

Lime paint has a number of advantages, but also has some disadvantages.

The advantages are:

- It is an environmentally friendly natural product; Because of the very specific effects of Lime paint a very unique finish will be achieved:
- The breathability of the paint once dry prevents any problems with moisture:
- The application of SUPER WAX will make the wall surface repellent from water and easily cleaned with a damp cloth.
- Lime is naturally flame retardant;
- Lime is moss and mold repellent.

Unfortunately Lime paint also has some disadvantages:

- Since Lime paint does not seal the pores of the wall, dirty patches may appear. The ManX can be applied as a protective layer to seal the paint. Although the sealer is very matt, the paint will lose its powdery appearance.
- When the walls are being renovated Lime paint can be painted over with any type of paint. However, it's necessary to first lightly sand the wall, apply a layer of ManX followed by the layer. When this is done the new paint can be applied. Through this process, the new paint can adhere properly to the old layer.
- Besides indoor use of Lime paint it can also be used outdoors. Your house gets a very distinctive look. But be beware: It will absorb moisture and dirt faster than regular exterior paints. You should therefore be aware that after 5 to 7 years a new layer of Lime paint should be applied in order to maintain the required color and appearance.

石灰基涂料有许多优点,但也有一些缺点。

优点是:

- 它是一种环保的天然产品,因为石灰石的颜色非常独特,所以它的外观非常独特。

应用上墙:

- 油漆的透气性一旦干燥可以防止任何问题。

水分:

- 使用超蜡 SUPER WAX的时候将会使墙面防水。

用湿了水的布可以轻松清洁。

- 石灰是天然的阻燃剂;
- 石灰是苔藓和防霉剂。

不幸的是,石灰基涂料也有一些缺点:

- 由于石灰涂料不能封闭墙壁的毛孔,脏的补丁可能会堵塞。

出现。曼岛石灰基的表面密封可以作为一个保护层来密封底层涂料。虽然是哑光的,但油漆会失去它的粉状外观。

- 在墙面翻新的时候,石灰涂料可以涂在任何一种油漆上。然而,有必要对墙体进行轻微的打磨,涂上一层涂料,然后再涂上一层墙。这样做之后,新的涂料就可以应用了。通过这一过程,新的涂料可以很好地附着在旧层上。

- 除了室内使用的石灰油漆外,还可以在户外使用。你的房子看起来很独特。但是要注意:它会比普通的外墙涂料更快地吸收水分和污垢。因此,你应该知道,在5到7年后,为了保持所需的颜色和外观,应该使用一层新的石灰漆。

Lime, a material directly from the past

石灰，一种直接来自古老的材料。

The first binder ever used by human kind to build his home was clay. Mixed with water and spread over reed structures creating areas protected from rain, cold and wind. Afterwards, using clay mixed with straw, left to dry under the sunlight was created the first brick.

Later on, by mixing slaked lime with clay or Volcanic ashes, human kind obtained the first hydraulic lime able to set even in presence of water.

人类用来建造他的家的第一个材料是粘土。与水混合和扩散簧片结构创建区域免受雨、寒冷和风力。后来用粘土和稻草混合，阳光下晾干创造了第一个砖。

后来，通过混合与粘土水化石灰或火山灰，人们获得第一个水硬石灰的存在。

During the Medieval England lime was widely used as construction material. Even today, we can still see buildings and monuments in very good structural condition thanks to the technical and physical properties of this natural and fantastic binder.

在英国的中世纪以来，石灰被广泛地用作建筑材料。即使在今天，得益于技术和良好的粘合剂，我们仍然可以看到建筑和古迹状况非常好的结构。

Thousands of years ago, certainly nobody could know the chemical reactions and the physical principles behind the beautiful decorative results; their experience on the jobsites was the only real source of knowledge.

Today, we fully understand these phenomena and put this knowledge to work in our lime products whose formulations have been improved and proven over time.

几千年前，肯定没人能知道背后的化学反应和原始装饰效果，他们在工作场所的经验是唯一真正的知识来源。

今天，我们完全理解这些原理，把这些知识在我们的石灰产品的配方改进和证明。


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From stone back to stone

从石头回到石头

We'll start from stone and go back again to the state of stone after a series of events that will transform it, separate some elements and eventually recreate its natural mineral essence, without affecting its naturalness, durability, and vapor permeability.

我们将从石头后,再次回到石头的状态的一系列事件,将改变它,单独的一些元素,并最终重建其天然矿物精华,而不影响其自然,耐用性和透气性。



Stone



Lime milk



Firing of the limestone



Seasoning



Formulation and production



Cooked limestone



Application

The mineral

矿物质

The mineral used is river limestone, washed and cleaned by the same element in which can be found in nature, the water.

It is essentially made up of calcium carbonate, rich with magnesium carbonate.

The presence of magnesium in the mineral may require longer production time, but it imparts a much higher tenacity and abrasion resistance to the final applied decorative finish.

An important feature especially for exterior plasters and exterior ManX stuccos.

使用的矿物是在自然界中找到的石灰石。

它本质上是由碳酸钙、富镁碳酸盐岩结合而成的。

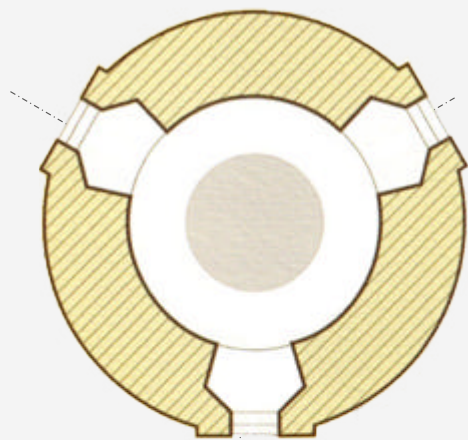
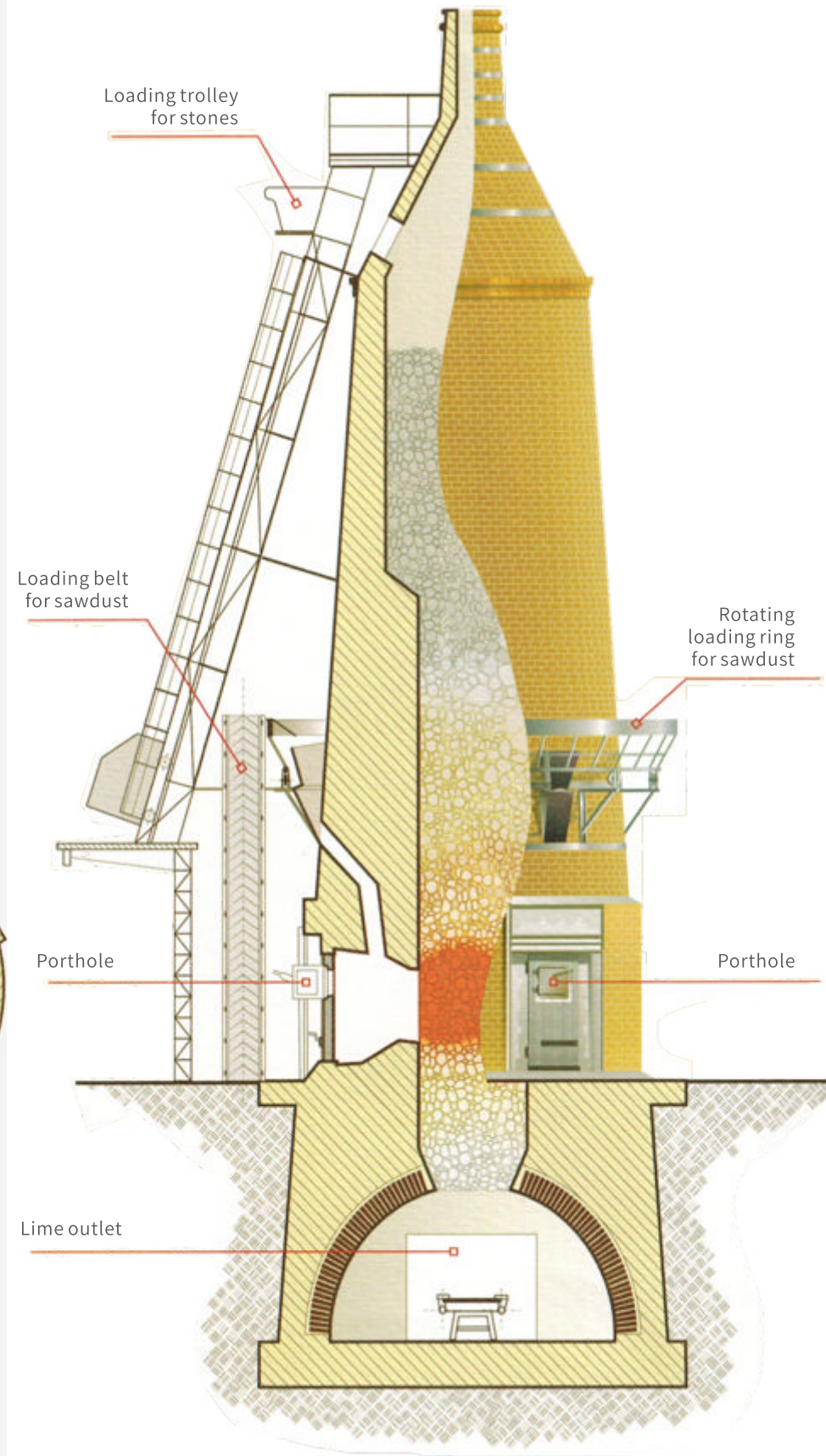
镁的矿物的存在可能需要较长的生产时间,但同时会带来一个更高的韧性和耐磨性,最后应用饰面。

这是一个重要的特征,特别是对于外部的石膏和外部的石灰基产品。



Lime production

石灰的生产



Cross-section of the furnace with the three portholes

The fuel

燃料

Simple sawdust and wood chips, by-products of the close sawmills and furniture industries.

Different mixtures ensure an optimal firing temperature in different weather conditions.

我们会挑选一些上了年份的木头作为最佳的燃烧材料,在不同的天气条件下,以不同的混合物来保证最佳的燃烧温度。

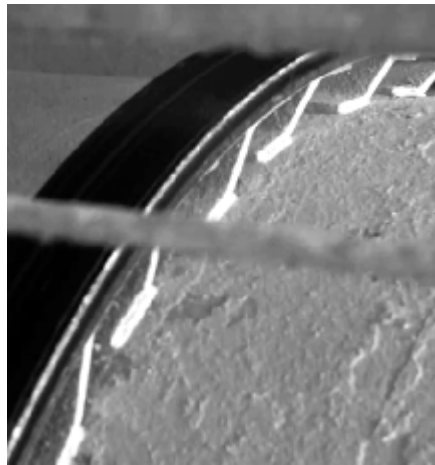


The firing

焚烧

The cooking process of these stones is very slow and steady, with an average temperature of 900 degrees (about 1650 degrees Fahrenheit), a process that takes about seven days. At this stage, calcium carbonate and magnesium carbonate release carbon dioxide, reducing the weight of the stones by a third.

What we get is a corrosive substance, unstable, highly hygroscopic, called calcium oxide (and magnesium oxide), also known as rapid lime.



The slaking

漫长的反应过程

What is obtained is a “fresh”, it is left to rest in pits where the seasoning process begins.

It takes a minimum of 3 months for the lime used in preparation of mortars, or a minimum of 24 months for that used as binder for finishing coatings, such as the Manx lime based finishes.

During the seasoning two different and complementary reactions take place, one is chemical, the other is physical. Both are extremely important to obtain a high quality lime.

它离开了原始的矿洞开始了风化的过程，获得的是新鲜的石灰。

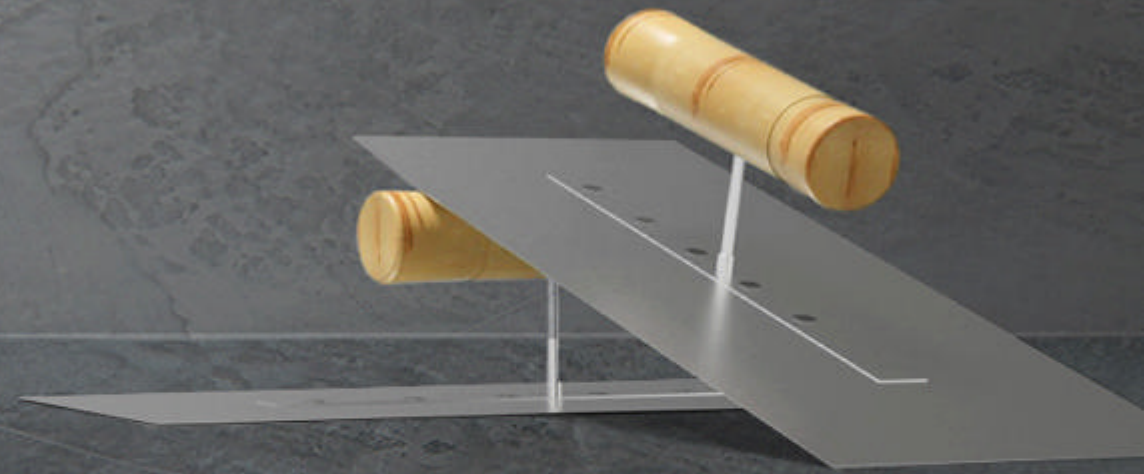
用于制备砂浆的石灰最少需要3个月的时间，或至少需要24个月的时间作为粘合剂用于罩面涂层，如ManX石灰基涂料。

在风化过程中发生两种不同的互补反应，一种是化学反应，另一种是物理反应。这两个对获得高质量的石灰是非常重要的。



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MAN X





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Lime seasoning

石灰基的形成

From a chemical point of view, the hydration of the two oxides goes on at different speed for lime and magnesium. Magnesium oxide needs a much longer time than calcium oxide to become hydroxide.

The 16% content of Magnesium in the mineral is very important, it gives to the final applied finish an immediate abrasion resistance and an excellent weather resistance with the aging.

从化学角度来看,石灰和镁这两种氧化物在不同速度下进行水合作用,氧化镁需要比氧化钙长得多的时间变成氢氧根。矿物中16%的镁含量非常重要,它赋予最终覆盖的涂层以即时耐磨性和极佳的耐老化性。

During the long seasoning the physical change becomes more and more important.

After the initial stage in which the solution of calcium and magnesium hydroxide has a very low viscosity, the grassello changes its structures becoming more creamy and “greasy”. Grassello was originally named after this physical state, “grasso” means fat, “grassello” means “fatty and greasy substance”.

After 3 months the seasoned slaked lime is creamy and tender; after 24 months of continuous hydration, the particles morph from macro to micro crystals in an orderly structure, oriented by a weak electricity.

在漫长的风化过程中,物理的变化变得越来越重要。

在初始阶段,钙和氢氧化镁溶液的粘度很低,熟石灰改变了它的结构变得更加光滑细腻和油腻。熟石灰最初是以这个物理状态命名的,“slaked”指的是普通熟石灰,“lime”的意思是“含有油脂的熟石灰”。

3个月后,经过风化的熟石灰呈乳脂状和柔软;经过连续水合24个月后,颗粒从宏观变为微晶体,结构有序,以弱电为导向。



Formulation and production

配方和生产

In order to obtain a high quality final product it is essential to start with high-quality raw materials and use them wisely in balanced recipes developed and optimized to perform according to the final use or requirements.

为了获得高质量的最终产品，必须从高质量的原材料开始，并明智地使用它们，按照最终的使用或要求，开发和优化平衡配方。

In the production of a paint, a plaster or a stucco, important variations may happen in:

生产涂料、石膏或石灰基产品，重要的变化可能发生在：

- **Temperature** 温度
- **Viscosity** 年度
- **Structure** 结构
- **Color** 颜色

The structure and workability of a coating is determined by the correct selection of the aggregate.

涂层的结构和可加工性是由整体的正确选择决定的。

Lime materials are prone to a wider variation range than in most industrial processes. Therefore, process control is essential to a good finished product.

与大多数工业生产过程相比，石灰材料的变化范围更大。因此，最重要的是过程控制好成品。



Over the English territory can be found aggregate of high quality in a wide variety; from the dolomite stones to white Carrara marbles. The specific crystalline structure of the minerals reflects the sunlight in a unique and unmistakable way, enriching the colors and giving the typical warmth and delicate effects of a natural finish to walls.

在英国领土上，可以发现各种各样的高质量原材料。从白云石到白色卡拉拉石材。特定的矿物晶体结构反映了阳光的重要性，丰富的颜色和，温和的颜色将会在墙面上起到为妙的效果。



In the preparation of ManX plasters it is important to avoid the addition of high volumes of air. Air bubbles can make the application very difficult but a minimum presence is important for a fluent application and easy polishing.

在准备曼岛石灰基的材料时，避免与大量的空气接触是很重要的。气泡的存在可以说会让整个反应过程变得非常困难，但对一个流畅的过程和简单的抛光来说，减少气泡的存在是很重要的。

For tinting it is necessary to use inorganic pigments like natural earths and iron oxides. For easy dispersion of the pigments in a wet lime base it is necessary to work with liquid colorants.

为了着色，必须使用无机颜料，如天然地球和铁氧化物。为了便于在浆状石灰基础上分散颜料，有必要使用无机的液体颜料。



Coloring of lime finishes has to comply with few simple natural factors:

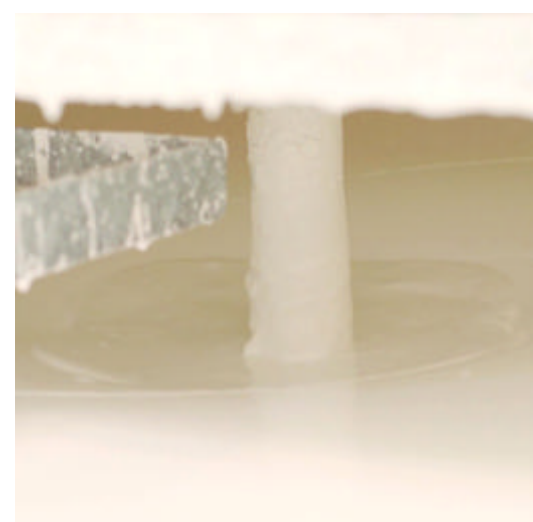
着色的石灰完成必须遵守一些简单的自然因素：

alkali-resistance maximum pigment loading	Maximum pigment loading
加入耐碱性的色浆	最大色浆使用量

use of inorganic pigments
使用无机颜料

too much pigment in a lime finish cannot wet immediately the base over a certain threshold, but the tinting process will go on slowly and in an uncontrollable way in cans, or even worse will never wet a saturated base.

在石灰基基料中加入太多的色素的话，将会使基底的湿度超过某个限值，但着色过程将变得非常缓慢和无法控制，更糟糕的是永远不会使基料饱和。



The completion of the lime cycle

石灰循环的完成

The finish is now ready to become stone again, over two years since it began the production process.

完成现在准备再次成为石头,这是两年多以来的生产过程。

The lime finish is applied by brush, trowel, sponge floated or steel troweled according to the desired final effect. A chemical reaction starts immediately while drying, the carbon dioxide present in the atmosphere combines with calcium hydroxide present in the coating. The calcium hydroxide becomes again calcium carbonate (lime stone), creating an extremely durable surfaces In our finish.

使用刷子、海绵球或不锈钢批刀来完成石灰基的最终效果。他们在干燥的时候会开始化学反应。大气中的二氧化碳与涂层中的氢氧化钙结合在一起。将会再次成为碳酸钙(石灰石),形成一个非常坚固耐候的表面。



Intrinsic features of lime based finishes

石灰基的表面材料

Mineral spatula stucco for interior and exterior walls
ManX is a unique wall finish made from a wide array of environmental ingredients. The components include binders with a specially treated lime base, natural pigments, inorganic oxides, and mineral additives ManX has a remarkable VOC(< 0.05) Originally designed for the restoration of renaissance ManX isle old architectures, ManX follows the traditional application technique used throughout the years. It enables surfaces to breath while maintaining a strong resistance to nature's wear and tear Thanks to its natural components, ManX is both an environmentally friendly product and a strong defence against abrasion and acid rain.

这是一种独特的墙面漆,由各种环保材料制成。这些部件包括具有特殊处理过的石灰基、天然色素、无机氧化物和矿物添加剂的粘结剂,它的VOC(< 0.05)具有显著的VOC(< 0.05),这是为了修复各种曼恩岛上的古老建筑而设计的,ManX沿用了英国许久而使用的传统应用技术。它使表面能够呼吸,同时由于其天然成分对自然的磨损和撕裂具有很强的抵抗力,ManX是一种环保产品,同时也可以对磨损和酸雨的具有防御能力。

Aesthetic features

审美特征

Good quality lime and aggregates create finishes with warm, comfortable and vibrant colors. The color depth on the walls enriches the architectural and design elements of the house.

优质石灰和骨料创建完成,温暖,舒适和充满活力的颜色。墙壁的颜色深度丰富了房子的建筑和设计元素。



Preservation and protection of the world's architectural heritage

保护世界建筑遗产

Conservation and preservation mean to ensure the transfer of the knowledge and the values of these works of art to the next generations, preserving the original characteristics wanted by the artists. Only through awareness of the need for preservation can this effort receive the deserved attention in this modern society. Every single restoration job undertaken by the English authorities is a result of series of analysis of the substrates: from the diagnostic tests to determine the reasons of the degradation of the initial construction materials to the learning of the original building technologies and procedures. Specific solutions that can restore the building and preserve it in the future can be elaborated only after detailed examinations.

保存的意思是石灰基系列产品的传承和这些艺术品的值到下一个世代,由艺术家想要保留原始的特征。只有通过意识到保护的必要性,这种努力才能在现代社会得到应有的重视。英国当局所进行的每一项修复工作都是对底物进行一系列分析的结果:从分析到初步确定建筑材料退化的原因,以及对原始建筑技术和流程的学习。只有经过详细的检查,才能在将来恢复建筑和保存它的具体解决方案。

ManX lime finishes for restoration of civic museums and palaces of historical interest. The ManX division of Manntree can provide technical solutions and support to architects and organizations involved in this fascinating activity worldwide. The know-how developed in decades of experience in this field can be shared with professionals who want to operate both in restoration and creation of structures in full respect of nature and environment.

Manntree的ManX可以提供技术解决方案,并支持参与世界范围内这一令人着迷的活动的架构师和组织。在这一领域几十年的经验中所开发的技术可以与那些希望在自然和环境的充分尊重下恢复和创造结构的专业人员分享。



University of Cambridge 英国剑桥大学



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