

Skin and Facade
表皮与立面

Materials
材料

Structure
结构

Shape
造型

Detail
细部

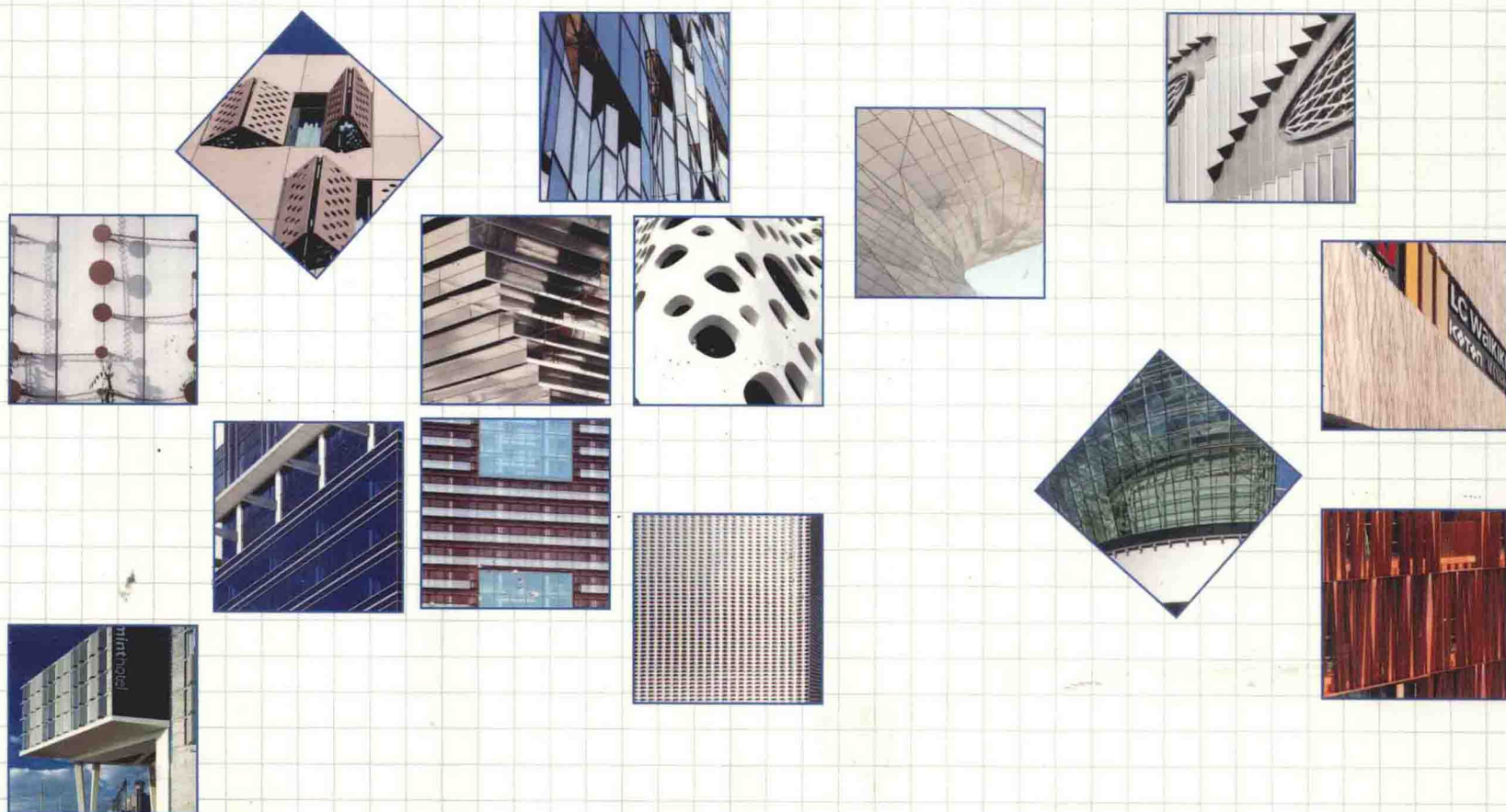
101

World's New Buildings

101 世界最佳新建筑

佳图文化 编

III



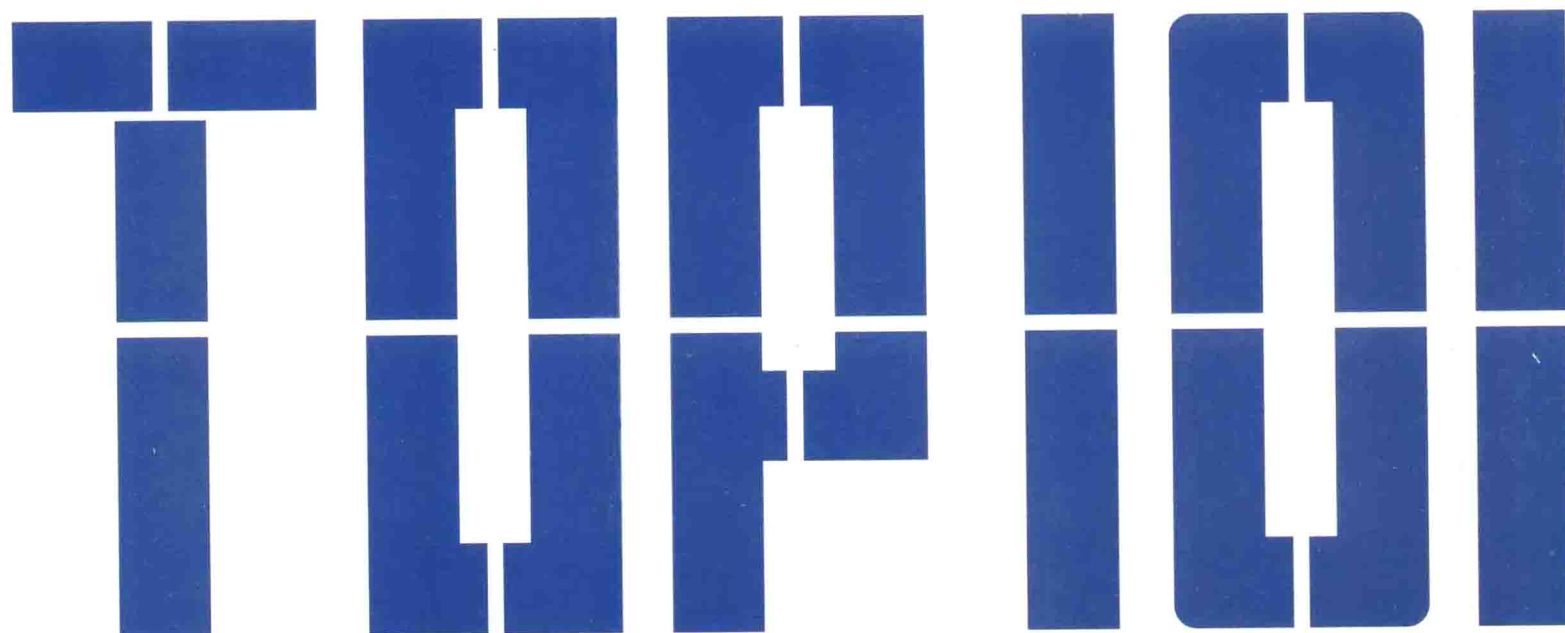
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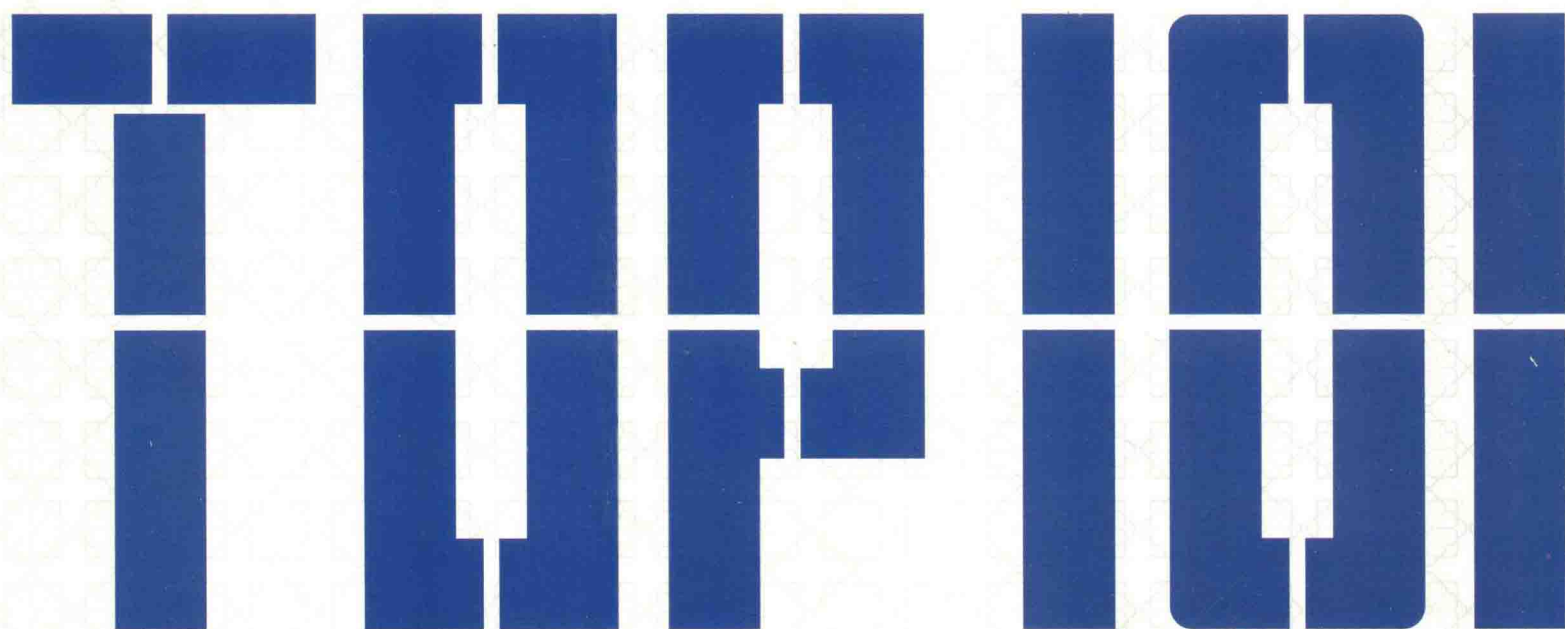
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Country and Region
项目分布国家及地区

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America 美洲
Asia 亚洲
Oceania 大洋洲
Africa 非洲

United Kingdom 英国
France 法国
Switzerland 瑞士
Spain 西班牙

Russia 俄罗斯
Austria 奥地利
Norway 挪威
Finland 芬兰

The Netherlands 荷兰
Italy 意大利
Slovenia 斯洛文尼亚
Croatia 克罗地亚



The United States of America 美国
Canada 加拿大
Columbia 哥伦比亚
China 中国

Korea 韩国
Japan 日本
Turkey 土耳其
Saudi Arabia 沙特阿拉伯

Philippines 菲律宾
Indonesia 印度尼西亚
UAE 阿拉伯联合酋长国
Israel 以色列

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Preface 前言

As a new sequel of the bestseller - TOP 101 World' s New Buildings I and II, the book has been greatly recommended by many world-class architectural institutes. The book focuses on the new buildings of the whole world with high starting point and wide scope. It has selected the latest great projects from Italy, Russia, Spain, France, UK, Switzerland, The Netherland, Norway, Austria, Croatia and Slovenia of Europe; USA, Canada and Columbia of America; China, Japan, South Korea, Turkey, Saudi Arabia, the Philippines and Indonesia of Asia.

There are six chapters, including Shopping Mall, Office Building, Hotel Building, Transportation and Sports Building and Art Building, etc. All these public buildings are innovative and representative, attached with technical drawings such as site plans, layouts, plans, elevations, sections, CAD construction drawings, detail drawings, renderings, and 3D models. Also each project is exhibited with professional built photos, notes and diagram form. In addition, the book has described these projects from various aspects such as keywords and features, overview, façade and skin, shape and structure and materials, which will be a great reference for the workers in the architecture industry.

As a masterpiece reflecting the latest global buildings, we try to respect the originals with the ideas of innovation, ecology, and energy conservation to ensure it is scientific, useful and perspective.

本书是继《101 世界最佳新建筑》前两本在国内外热销后的全新续篇，受到世界各地顶级建筑机构的热烈好评及大力支持。全书放眼全球，起点高，涉足领域广，精选了来自欧洲的意大利、俄罗斯、西班牙、法国、英国、瑞士、荷兰、挪威、芬兰、奥地利、克罗地亚、斯洛文尼亚，美洲的美国、加拿大、哥伦比亚及亚洲的中国、日本、韩国、土耳其、沙特阿拉伯、菲律宾、印尼等国家和地区的最新代表案例。

全书共分 6 大章节，包括大型购物中心、办公建筑、酒店建筑、交通体育建筑、医疗建筑以及艺术建筑等。书中展现了极具创新精神又具有代表性的最新公共建筑佳作，大量的总平面图、规划图、平面图、立面图、剖面图、CAD 施工图、节点详图、效果图、三维模型图等珍贵详细的技术图纸，同时每个案例都精选专业的建成实景图，另还配以注解和图示；此外，本书从项目关键词与亮点、项目概况、立面与表皮、造型与结构以及材料运用等各方面进行精炼概括和提炼，相信这些必将为建筑工作者提供参考借鉴，激发其创作灵感。

作为一本整体反映当今全球范围内新建筑的代表性精品大作，我们力求做到尊重原创，创新、生态、节能概念至上，以确保本书的科学性、实用性和前瞻性。

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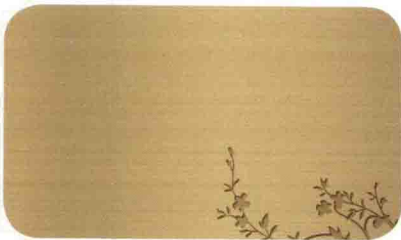
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The facade materials Introduction and analysis 立面材料简介及分析

Metal Facade 金属立面

In metal wall or roof system, metal materials are used in stead of traditional building materials. With strict standards for the production of metal panels as well as for the assembly techniques of the wall and roof system, metal materials are widely promoted and applied. For the facade design of buildings, metal materials such as metal panel, perforated metal, wire mesh, metal grill, clad metal sheet, metal sandwich panel, woven wire mesh and so on.

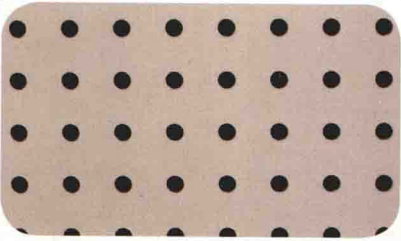
金属墙面以及屋面系统是使用金属材料替代传统材料建造建筑物墙面以及屋面的一项建筑技术。无论是金属板材的生产还是墙体屋面的成套技术均有多项严格的标准，这对于金属材料的运用和推广起到了重要的作用。在建筑立面中，最常用的金属制品有金属板、穿孔金属板、金属网、金属格栅、复合金属薄板、金属夹芯板、金属编织板等。



Metal Facade 金属板

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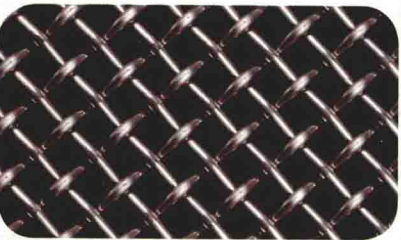
该材料具有较好的耐磨性。金属覆面体系在近年来被广泛的应用，这种体系易于连接，通常用隐形的卡子固定在支撑的结构上。预制金属板可以创造出精致的立面效果，尤其从远处看，呈现出不同肌理的金属表皮外观。这是在建筑外立面中运用非常广泛的一种金属制品。



Perforated Metal 穿孔金属板

Perforated metal is made through the metal stamping and sheet metal manufacturing process. The perforation diameter can be less than 1mm or long to 500mm, and the distances between holes can be different. The holes can be perforated in straight line or out-of-line, in round, square or other shapes. Perforated materials are very versatile. For lightweight decorative elements to load-bearing structural components, perforated metal offers unique opportunities to combine strength, functionality and beauty. Perforated metal is also an excellent means of achieving sustainable design objectives.

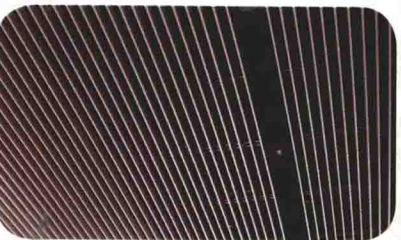
这种金属板最主要的特点是在金属薄板上通过电脑控制打孔，穿孔直径可以小于 1mm，大的孔径可达 500mm，并且可以有不同的间距。穿孔可以沿着直线或者采用偏移的方式，可以是圆的、方的或者是其他不同的装饰性的形式。穿孔金属板易于加工，生产方式高度工业化，具有丰富的表面肌理，使其成为一种经济的、通用性的建筑材料。



Wire Mesh 金属网

Wire mesh is usually used for facing. The manufacturing process will not bring any waste. Metals such as iron, steel, aluminum and lightweight alloy as well as cooper, nickel and zinc can be processed by cutting or stretching for wire mesh. This product will be used as the translucent door, or used in curtain wall and facade.

该金属饰面的生产过程不造成任何的浪费，仅仅是对于薄板切割或者张拉成型，这个过程适用于铁、钢、铝和轻质合金，以及铜、镍、锌等。该材料具有良好的稳定性，相对轻质，可以创造出具有弹性的立面形式。金属网可以用于面向建筑开放空间的半透明的门帘，以及起到阻隔视线作用的幕墙、立面等。



Metal Grill 金属格栅

Metal grill is usually made of steel, stainless steel or aluminum by extruding or electric welding. Crossed lattices can be designed in with different sizes. The boarder of the grill will be embedded in the framework. With flexible sizes, this kind of product is an important facade material. It is usually used in facade decoration, interior decoration and external wall facade.

该材料通常由钢、不锈钢或者铝制作，经过工业方式挤压或者电焊而成。交叉形态的正交条形格子可制作成不同的间距。格栅边缘嵌入并固定在边框上，金属格栅可制作成任何尺寸，是一种重要的立面元素。在建筑的立面装饰、室内装修以及外墙的立面上应用较多。



Metal Cladding 复合金属薄板

Cladding is usually used as floorboard or shingle with coating. This product is often achieved by extruding two metals through a die as well as pressing or rolling sheets together under high pressure. Though it is relatively expensive, it is widely used for its stability, lightweight and easy processing.

该材料常用作楼面板或者墙面板，其完成面通常覆盖有一层保护膜。复合金属薄板价格相对较贵，但是它们具有良好的稳定性并且质量较轻；同时这种材料的加工简便，工业化生产程度较高，从而可以制作出精良的、经济的立面。



Metal Sandwich Panel 金属夹芯板

Metal Sandwich Panels have different surface textures. And the installation and fixing is easy. They need little maintenance and can bear a standard 80mm-thick shingle with a span ranging from 5m to 6m. This kind of material is usually used as surface and partition wall.

该金属材料可以有不同的表面肌理，安装就位非常简便，金属夹芯板一般只需要极少的维护，它能够荷载一块 80mm 厚的标准墙面板，跨度可达 5 ~ 6m。常用于建筑的立面以及隔墙。



Woven Wire Mesh 金属编织物

This product is often woven with round or flat metal wire, strap or cable of stainless steel, titanium, nickel or copper. Woven metal is usually stable and can be used for large area without joints. They are great for sun-shading and screening, or used as security fencing and partition. Woven wire mesh needs little maintenance and is easy to clean. They are usually used as decorative surface.

该材料是用圆的或者扁平的金属丝、带子或索编织形成，常用材料包括不锈钢、钛、镍甚至铜。金属编织物有良好的稳定性，可用于超大的面积而中间没有接缝或者连接件。它们很适合用于遮阳和遮挡视线，也可以用于安全栅栏甚至分隔物。这种类型的材料需要很少的维护，且易于清洁，一般用于建筑表皮的装饰。

Tile Facade 砖材立面

Tiles are widely used in construction because of excellent durability and fine texture. Colorful tiles will well decorate the buildings. Moreover, they are easy to clean, fireproof, waterproof, wear-resistant and corrosion-resistant, and need little maintenance. They are often used in the areas with heavy air pollution. According to their functions, tile materials can be classified as exterior wall tiles, interior wall tiles, indoor floor tiles, outdoor floor tiles and special tiles. And according to the processing technology, tiles used for facade include six categories:

砖材因为其坚固耐用，具备很好的耐久性和质感而被广泛的运用到建筑工程当中。砖材的色彩鲜艳，具有丰富的装饰效果，并具有易清洗、防火、抗水、耐磨、耐腐蚀和维护费用低等特点。适宜于在环境污染比较大、空气灰尘多的地区。按适用场所分类，可分为外墙砖、内墙砖、室内地砖、室外地砖、特殊用砖。立面砖材按工艺及特色大致分为六类：



Glazed Tile 釉面砖

Glazed tile is a type of ceramic tile covered with a glaze to make it stain and water resistant. There are two kinds of glazed tiles: glazed ceramic tile and glazed porcelain tile. The former is made of ceramic with strong absorption capacity, weak rigidity and red back; while the later is made of porcelain with weak absorption capacity, strong rigidity and gray back. Glazed tiles can be glazed with different patterns and colors. In addition to being used for flooring, glazed tiles can be used to create accents in walls and doorways, and as trivets for hot spots.

所谓釉面砖就是砖的表面经过烧釉处理的砖，一般可分为陶制釉面砖和瓷制釉面砖两种。陶制釉面砖由陶土烧制而成，吸水率较高，强度相对较低，背面颜色为红色；瓷制釉面砖，即由瓷土烧制而成，吸水率较低，强度相对较高，背面颜色是灰白色。釉面砖表面可以做各种图案和花纹，色彩和图案比抛光砖丰富，因为表面是釉料，所以耐磨性不如抛光砖。釉面砖被广泛用于墙面和地面装修。



Full-body Tile 通体砖

Full-body tile is made from rock fragments by high-pressure pressing. After being polished, it is hard like stone with low absorption capacity and wear resistance. They are widely used in flooring of living rooms, doorways and outdoor paths. Most of the anti-slip tiles are full-body. Full-body is designed without glaze, and its surface has the same color and material as its back. Its rough surface will not cause strong reflection, thus it is widely used in the decoration of the interior and exterior spaces.

该材料是将岩石碎屑经过高压压制而成，表面抛光后坚硬度可与石材相比，吸水率更低，耐磨性好，被广泛用于厅堂、过道和室外走道等装修项目的地面，多数的防滑砖都属于通体砖。通体砖表面不施釉，而且正面和反面的材质和色泽一致，因此得名。同时由于其表面粗糙，光线照射后产生漫反射，反光柔和不刺眼、对周边环境不会造成光污染，被广泛用于室内的大厅、过道、墙面和室外的外墙、走道、广场等区域的装修。



Polished Tile 抛光砖

Polished tile comes from full-body tile by polishing the surface. Compare to full-body, polished tile is smooth, hard and more resistant. They are suitable for many interior spaces like balcony and external walls except the bathroom and kitchen. With penetration technology, polished tile can be created to imitate stone or wood. The biggest characteristic is that it is harmless without any radioactive element. Moreover, there is almost no chromatic aberration for a same batch of products. Polished tiles are usually used for floor and external wall because of the lightweight and skid resistance.

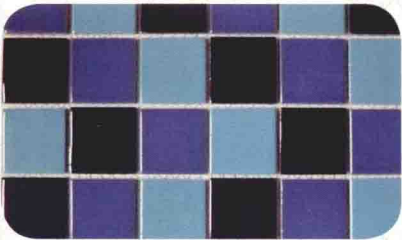
该材料是通体砖坯体的表面经过打磨而成的一种光亮的砖。相对通体砖而言，抛光砖表面要光洁得多。抛光砖坚硬耐磨，适合在除洗手间、厨房以外的多数室内空间中使用，比如用于阳台，外墙装饰等。在运用渗花技术的基础上，抛光砖可以做出各种仿石、仿木效果。其最主要的特点是无放射元素，不会对人体造成伤害；同时基本可控制无色差，抛光砖经精心调配，同批产品花色一致，基本无色差。由于其砖体轻、重量轻以及防滑的特点，抛光砖经常被用作地面铺装、外墙立面等。



Vitrified Tile 玻化砖

Vitrified tile is a tile which has been processed in such a way that it has very very low porosity (and water absorption) which make it stain resistant and very strong like natural stone. Ceramic tile with a water absorption rate lower than 0.5% is called vitrified tile. And the polished vitrified tile is hard and scratch resistant with low absorption capacity and little chromatic aberration. Free of radon gas, vitrified tile bears stable physical performance, thus it is environmental friendly to be widely used in the living rooms and entrance areas instead of natural stone.

该材料作为一种常见的外墙砖，其具有天然石材的质感。吸水率低于 0.5% 的陶瓷都称为玻化砖，抛光砖吸水率低于 0.5% 也属玻化砖，将玻化砖进行镜面抛光即得玻化抛光砖，因为吸水率低的缘故其硬度也相对比较高、不容易有划痕、色差小。这种产品不含氡气，各种理化性能比较稳定，符合环境保护发展的要求，是替代天然石材较好的瓷制产品，广泛用于客厅、门庭等地方。



Mosaic Tile 马赛克砖

Mosaic tiles are a classification of tiles used for external walls. Usually a big mosaic tile is composed of tens of smaller pieces. They are made of various materials including ceramic, porcelain, marble and glass. Glass mosaic can be cut by machine on the single side or double sides, or it can be cut by hand. Non-glass mosaic products include ceramic mosaic, stone mosaic, metal mosaic, photoluminescent mosaic, etc. Today, mosaic tiles are popular for creating elaborate patterns like those found on floors and walls.

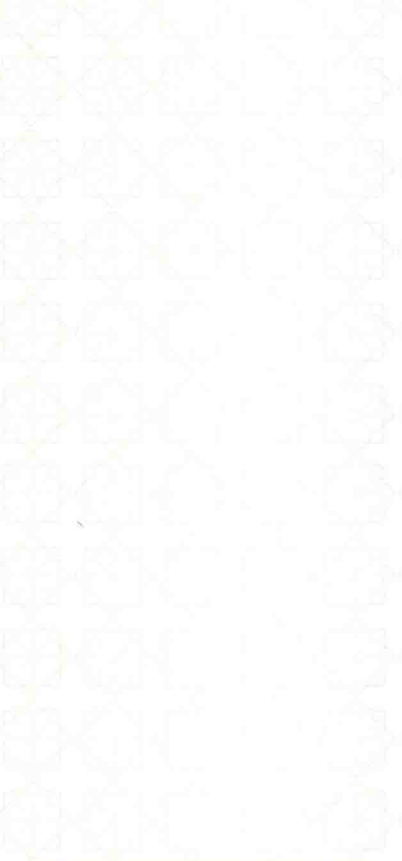
该材料是一种特殊的外墙砖，它一般由数十块小块的砖组成一个相对的大砖。一般分为陶瓷马赛克、大理石马赛克、玻璃马赛克。马赛克按照材质、工艺可以分为若干不同的种类，玻璃材质的马赛克按照其工艺可以分为机器单面切割、机器双面切割以及手工切割等，非玻璃材质的马赛克按照其材质可以分为陶瓷马赛克、石材马赛克、金属马赛克、夜光马赛克等等。马赛克砖主要用于墙面和地面的装饰。



Rustic Brick 仿古青砖

Rustic tile is a building material made from clay to offer a rustic, natural look. Clay comes from aluminum silicate minerals after years of weathering. When the clay is totally baked for tiles, it will turn red to be red bricks; while when it is half baked and cooled by water during this process, FeO will generate and result in black color and black bricks. This tile features influence from ancient Chinese art and architecture, along with a distressed, natural finish. Then Rustic tiles are mainly used for the renovation of historic buildings or for the facade decoration of cultural buildings or some stylish buildings.

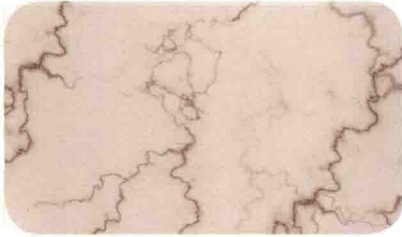
该材料是粘土烧制的，粘土是某些铝硅酸矿物长时间风化的产物，具有极强的粘性而得名。将粘土用水调和后制成砖坯，放在砖窑中煅烧便制成砖。粘土中含有铁，烧制过程中完全氧化时生成三氧化二铁呈红色，即最常用的红砖；而如果在烧制过程中加水冷却，使粘土中的铁不完全氧化而生成低价铁（FeO）则呈青色，即青砖。主要用于历史建筑的修复、文化建筑以及个性建筑的立面装饰等。



Stone Facade 石材立面

Natural stone is the stone extracted from natural rocks and is one of the earliest building materials in the history of mankind. Most of the natural stones have high strength, good durability and rich reserves and are easily mined, and have been favored, often used for walls, floors, roofs, building components and sculptures, etc. At first, it is largely used as structural and decorative material, but now it is no longer used as structural material but just as decorative material inside and outside of the building. Due to the natural characteristics, it always brings a deep and solemn sense of culture and history. Marble, granite, slate, sandstone and travertine are the common building stones.

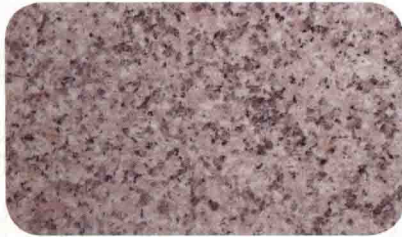
天然石材是指在自然岩石中开采所得的石材，它是人类历史上应用最早的建筑材料之一。由于大部分的天然石材具有强度高，耐久性好，蕴藏量丰富，易于开采加工等特点，因此被人们所青睐，常被用作墙体、地面、屋顶、建筑构件、雕塑等材料来使用。石材在建筑中最初主要作为结构以及装饰材料出现，发展到今天，石材作为结构材料几乎已经绝迹，一般仅作为建筑内外表皮装饰材料使用。由于石材的天然特性，它经常能给人带来深厚凝重的文化感和历史感。常见的建筑石材主要有大理石、花岗石、板岩、砂岩以及凝灰石。



Marble 大理石

Marble is a non-foliated metamorphic rock composed of recrystallized carbonate minerals. It has exquisite, solid texture, various beautiful colors and patterns, but it could easily get weathered and has poor wearing resistance. It would gradually lose its luster after a long-term exposure in the outdoor, therefore, generally it used only for interior decoration, such as indoor walls, floors, railing, window sill, service counter and the facing of elevator room. However, pure white marble and green coloration are the exception, they are pure in quality and stable and durable enough to resist the outdoor condition.

该种石材属于变质或者沉淀的磷酸盐类岩石，其组织细密、结实，有各种美丽的颜色以及花纹。大理石纹理美观，花色繁多，品种丰富。然而易风化、耐磨性差，长期暴露在室外条件下会逐渐失去光泽，一般只用于建筑室内装饰面，例如室内墙面、地面、栏杆、窗台板、服务台、电梯间门脸的饰面等。少数的大理石如汉白玉、艾叶青等质纯、杂质少且比较稳定耐久的品种可用于室外。



Granite 花岗石

Granite is a common type of igneous rock which is granular and phaneritic in texture. This rock consists mainly of feldspar, quart and mica. It has fine texture, wear-resisting, pressure-proof and anticorrosion, almost can be used for various indoor and outdoor conditions. Compared to marble, most granites are lack of peculiar texture, just have color spot or in pure color, and color and texture are the only superiority to demonstrate their performance. Granite is largely used for wall footing, exterior wall facing, and even high-rise and super high-rise external mounting curtain wall (after technic processing).

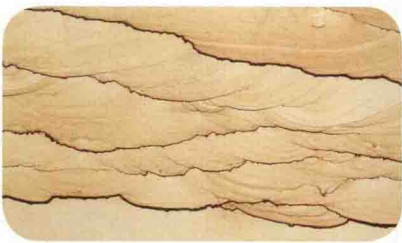
该种石材属于火成岩，其主要成分为长石、石英、云母等，它结构细密、耐磨、耐压、防腐，几乎可以用于室内外各种条件之下，其表现一般为均匀颗粒状以及发光云母颗粒，除少数品种以外，大部分花岗石的表现效果较为单一，与大理石相比缺少特殊的花纹，主要靠整体色彩和质感显示效果。多用于建筑的墙基础和外墙饰面，利用技术加工，可在高层和超高层外挂石幕墙。与大理石相比，花岗石石材没有彩色条纹，多数只有彩色斑点、纯色。



Slate 板岩

Slate is a fine-grained, foliated, homogeneous metamorphic rock derived from an original shale-type sedimentary rock composed of clay or volcanic ash through low-grade regional metamorphism. It is the finest grained foliated metamorphic rock. When expertly "cut" by striking parallel to the foliation, with a specialized tool in the quarry, many slates will form smooth flat sheets of stone which have long been used for roofing and floor tiles and other purposes. Its hardness and abrasability are weaker than that of granite but stronger than that of marble. It has low water absorption and has acid proof and resistant to weathering. It is relatively cheap and a building material with high cost performance. It is largely used for roof tiles, exterior floor, interior floor and exterior walls.

该种石材属于水成岩，天然板岩拥有一种特殊的层片状纹理、纹理清晰、质地细密，沿着片理不仅易于劈分，而且劈分后的石材表面显示出自然的凹凸状纹理，可制作成片状用于墙面、地面铺装等，显示出自然亲切的视觉感受。同时，板岩还经常被用作片屋瓦。板岩的硬度和耐磨度介于花岗石和大理石之间，具有吸水率低、耐酸、不易风化等特点，板岩价格相对便宜，是一种性价比相当好的建筑用材。主要用于建筑屋面瓦、外部地板、内部地板和外墙。



Sandstone 砂岩

Sandstone forms from beds of sand in low-lying areas on the continents with a long period of accumulation and crustal movement. Sandstone is a honed stone produces no strong reflected light and is visually soft and warm. Compared with marble and granite, sandstone has zero radiations, no harm to human body, and is suitable for large area application. It has almost the same durability as that of marble and granite, and is resistant to weathering and not easily gets tarnished. It is largely used for exterior wall, interior decoration and garden landscape.

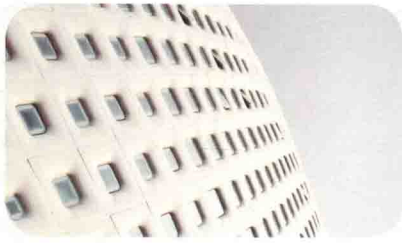
该材料由沙粒经过水流冲蚀沉淀于河床之上，经过长时间的堆积和地壳运动而成。砂岩是一种亚光石材，不会产生强烈的反射光。视觉柔和亲切。与大理石以及花岗岩相比，砂岩的放射性几乎为零，对于人体毫无伤害，适合于大面积的应用，砂岩在耐用性上可以比拟大理石、花岗岩，它不易风化和变色。多用于建筑外墙、室内装饰、园林景观等。



Travertine 凝灰石

Travertine, also known tufa, often has many pores on the surface. Travertine is a terrestrial sedimentary rock, formed by the precipitation of carbonate minerals from solution in ground and surface waters or geothermally heated hot-springs. It is a quick process, and some organics and gases can't be released timely, therefor pores come into being after solidification, forming a beautiful texture. In case of stone cracks, particular attention should be paid to the connection details of the slabstone while it is used for curtain panel. Travertine has clean texture and exists in white, tan, red and cream-colored varieties. The cream-colored is the most common one (most of them are from Italy) that use for façade wall, reflecting a modern style of classic calm rather than sensationalism.

凝灰石又称石灰华、钙华，由于表面常有许多孔隙而俗称洞石，它是钙质碳酸盐在富含石灰的河流、湖泊或者池塘里快速沉淀而形成的，由于沉淀速度快，钙质碳酸盐中的一些有机物和气体不能及时释放，长久固化后便产生了孔隙，形成了美丽的纹理。在作为幕墙板材时应该特别注意石板的连接细节，防止石材裂缝的产生。凝灰石的纹理清晰，色彩有白色、灰褐色、红色、黄色等，最常见的为柔和的米黄色系（多产自意大利），一般在立面幕墙上运用比较多，体现一种经典沉稳而非哗众取宠的现代风格。



Fiber-Reinforced Concrete 纤维混凝土

Fiber-reinforced concrete (FRC) is concrete containing fibrous material which increases its structural integrity. It contains short discrete fibers that are uniformly distributed and randomly oriented. Fibers include steel fibers, glass fibers, nylon fibers, etc. Compared with ordinary concrete, FRC has high ultimate tensile and flexural strength, especially the toughness.

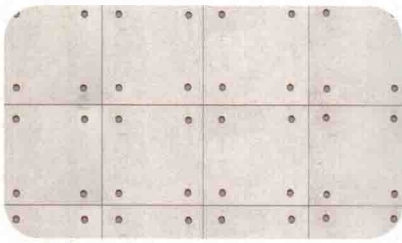
纤维混凝土指水泥混凝土中掺入适量散乱短纤维以提高抗裂、抗冲击等性能的复合材料。常用的纤维有钢纤维、玻璃纤维、尼龙纤维等。与普通混凝土相比，纤维混凝土具有较高的抗拉与抗弯极限强度，尤以韧性提高的幅度为大。



Aerated Concrete Block 加气混凝土砌块

Aerated concrete block is a new building material that is lightweight, polyporous, can be nailed, sawn and planed, and has high performance of heat insulation, fire resistance and certain shock resistance. In addition, it is environmentally friendly and largely used for high and low rise buildings.

加气混凝土砌块是一种轻质多孔、保温隔热、防火性能良好、可钉、可锯、可刨和具有一定抗震能力的新型建筑材料。这种优良的新型建筑材料还具有环保等的优点，被广泛使用于高低层建筑中。



Fair-Faced Concrete 清水混凝土

The fair-faced concrete is known as decorative concrete for its great decorative effect. It is defined as a kind of one-forming concrete without any additional ornament, but serving its function as a natural and solemn facing of the building itself. Fair-faced concrete has smooth surface, uniform color, clear edges and corners, free of clashing and pollution, just need to be coated with one or two layers of transparent protectants. It can be widely used for ancient buildings, municipal bridges, sports venues, highway guardrails and external wall base of large factory.

清水混凝土又称装饰混凝土，因其极具装饰效果而得名。它属于一次浇注成型，不做任何外装饰，直接采用现浇混凝土的自然表面效果作为饰面。它表面平整光滑、色泽均匀、棱角分明、无碰损和污染，只是在表面涂一层或两层透明的保护剂，显得十分天然、庄重。可广泛应用于古建筑物、市政桥梁、运动场馆、高速公路的护栏、大厂房等外墙基面涂装。



Carbon Cast Steel 碳素铸钢

Carbon cast steel is a precast concrete that reinforce carbon fiber grilling to cope with the reinforcement force and shear transfer during construction. Due to carbon fiber reinforcement is corrosion resisting, it doesn't require too much concrete to cover the carbon steel precast concrete products. Compared to the traditional precast concrete and competitive construction methods, its durability has been improved, and even lighter and stronger than before.

碳素铸钢是一种用碳纤维格栅加固以应对施工过程中的加固力或剪力传递的预制混凝土。由于碳纤维加固结构抵抗腐蚀，因此碳素铸钢预制混凝土产品不需要过多的混凝土覆盖，与传统的预制混凝土和有竞争力的建筑方法相比耐久度有所提高，重量更轻且持久力更强。



Translucent Concrete 透明混凝土

Translucent concrete is made of ordinary concrete and fiber with light-transmissive properties. Its stiffness is greatly enhanced by a special chemical additive and it is as strong as traditional concrete. At night, when the light transmitted through various translucent concrete, a dreamy color world has been created. In the daytime, abundant natural light may reduce the use of indoor light, thus saving energy.

透明混凝土由普通混凝土和玻璃纤维组成，这种新型混凝土可透过光线。透明混凝土跟传统混凝土一样坚固，原因是一种特殊的化学添加剂大大增加了它的坚硬度。夜晚，光线透过不同玻璃质地的透明混凝土，营造出梦幻的色彩效果，而自然光的射入也可以减少室内灯光的使用，从而节约能源。

Glass Facade 玻璃立面

The function of glass as construction material is more than lighting; it is required for lighting adjustment, insulation, security (bullet-proof, burglarproof, fireproof, radiation-resistant, electromagnetic proofing), art deco etc. The types and processing way of glass have obtained new development with the continuous development of demands. New types i.e. laminated glass, ion exchange glass, ceramic enameled glass, chemical thermal decomposition glass, cathode sputtering glass etc lead to rapid increase of construction consumption. Glass has become the third largest construction material after concrete and steels.

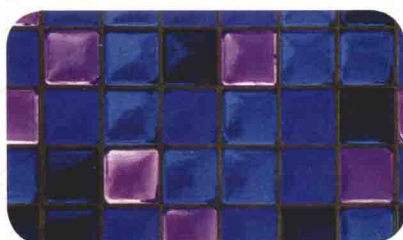
玻璃作为建筑材料，其功能不再仅仅是满足采光要求，而是要具有能调节光线、保温隔热、安全（防弹、防盗、防火、防辐射、防电磁波干扰）、艺术装饰等特性。随着需求的不断发展，玻璃的成型和加工工艺方法也有了新的发展。现在，已开发出了夹层、离子交换、釉面装饰、化学热分解及阴极溅射等新型玻璃，使玻璃在建筑中的用量迅速增加，成为继水泥和钢材之后的第三大建筑材料。



Low-E Glass Low-E 玻璃

LOW-E, Low Emissivity for short, is a energy-saving glass opposed to heat reflective glass. Its coating layer with high transmission of visible light and high reflection of far infrared brings superior insulation and transmission effect compared with ordinary glass and traditional coated glass for construction. It applies to architectures of transparent, highly permeable externals and natural lighting, effectively refraining from light pollution.

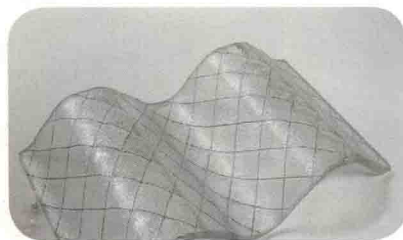
LOW-E 为英文 Low emissivity 的简称，又称低辐射镀膜玻璃，是相对热反射玻璃而言的，是一种节能玻璃。其镀膜层具有对可见光高透过及对中远红外线高反射的特性，使其与普通玻璃及传统的建筑用镀膜玻璃相比，具有优异的隔热效果和良好的透光性。适用于外观设计透明、高通透性，自然采光的建筑物，可有效避免“光污染”。



Ceramic Enameled Glass 釉面玻璃

Ceramic enameled glass refers to glass with pretty colors or patterns made from cutting glass with a layer of colorful soluble glaze on the surface being sintered, annealed or steered to firmly agglutinate the glaze layer and glass. It applies to external wall finishes of architectures for its superior chemical stability and decorativeness.

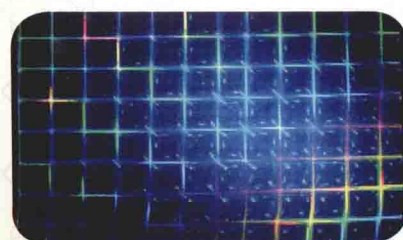
釉面玻璃是指在一定尺寸切裁好的玻璃表面上涂敷一层彩色的易溶釉料，经烧结、退火或钢化等处理工艺，使釉层与玻璃牢固结合，制成的具有美丽的色彩或图案的玻璃材料。它具有良好的化学稳定性和装饰性，适用于建筑物外墙饰面。



Wired Glass 夹丝玻璃

Wired glass, alias shatterproof glass is ordinary slate glass heated to be glowing red and soften, with preheating wires or wire netting being pressed into the middle. It's superior in fire proofing that it could shelter from flames and it will not crack in high temperature combustion; it will not cause injury by fragments. Additionally it is burglarproof that wire net is another shield behind the glass. It applies to roof and balcony windows etc.

夹丝玻璃又称防碎玻璃，是将普通平板玻璃加热到红热软化状态时，再将预处理处理过的铁丝或铁丝网压入玻璃中间而制成的玻璃。它的特点是防火性优越，可遮挡火焰，高温燃烧时不会炸裂，破碎时不会造成碎片伤人。另外还有防盗性能，玻璃割破还有铁丝网阻挡。适用于屋顶天窗、阳台窗等。



Laser Glass 镭射玻璃

Laser glass, alias holographic glass or laser holographic glass, is an innovative decorative glass product developed with latest holographic technology. It is a type of laminated glass that prefabricated laser holographic film is placed between two pieces of glass with laser holographic film technology to make a transparent surface but appearing colorful in different angles under the light refraction. It applies to architectures like bar, hotel and cinema etc.

镭射玻璃亦称全息玻璃或镭射全息玻璃，是一种应用最新全息技术开发而成的创新装饰玻璃产品。镭射玻璃是一款夹层玻璃，应用镭射全息膜技术把预制镭射全息膜夹在两层玻璃中间，形成表面透明，但在光线的折射下，从各种不同角度看可呈现不同的颜色。镭射玻璃常用于酒吧、酒店、电影院等建筑中。