



砿工石造  
BENTU SURFACE

“中国潮州日用废瓷再生实验”

Experiment on the Recycling of Daily Waste Porcelain in Chaozhou, China

#01 项目概况 Project overview	03-04
#02 关于砛工石造 About Bentu Surface	05-06
#03 潮州陶瓷产业背景调研 Background research on the porcelain industry in Chaozhou	07-18
#04 废瓷再生实验 Waste porcelain recycling experiment	19-24
#05 深圳设计周 × 失体 Shenzhen Design Week × Wreck	25-38
#06 废瓷再生 × 装饰砖 “穗” Waste porcelain recycling × Decorative tile 'Wreckage'	39-62
#07 废瓷再生 × 公共家具 “梁” Waste porcelain recycling × Furniture collection 'Liang'	63-70
#08 废瓷再生 × 家具 “工” Waste porcelain recycling × Furnitruue 'Gong'	71-74
#09 材料信息 Material performance	75-76

# 《失体》

中国潮州日用废瓷再生实验

失体,有失体统,文化崩坏。2018年本土创造团队深入中国潮州日用陶瓷行业,尝试以实验家具与装置展览的形式,真实地呈现在这负载巨大产能与商业价值的古城背后,我们所看见的崩裂、破碎的文化体统,并尝试重塑其“体”。在探索是否有更多可能性的路上,我们继续前行。本着对世界的好奇和“万物平等”的物质关怀,我们想像能否把这种再生可持续材料带回日常,创造一种新的应用、新的审美、新的视觉艺术形式?

“面对未知,时刻好奇”。

## 展览

### 中国深圳

《失体—WRECK》中国潮州日用废瓷概念展

2018年4月20-30日,深圳当代艺术与城市规划馆四楼

### 中国香港

『另辟物径』永续设计联展

2020年1月17-2月16日, K11 Atelier King's Road2楼 HACC

### 中国沈阳

『另辟物径』永续设计巡展

2020年7月18-11月08日, 沈阳 K11 四楼艺术空间

# WRECK

Experiment on the Recycling of Daily Waste Porcelain in Chaozhou, China

WRECK, the destruction of decorum, the ruin of culture. BENTU went deep into daily-use ceramics industry in Chaozhou, China, and tried to reveal the disintegration of culture behind this ancient city with huge industrial capacity and commercial value by exhibiting experimental furniture and installation, trying to reshape both the material and decorum.

## Exhibition

### Shenzhen, China

‘Wreck’, Chaozhou, China Daily Waste Porcelain Concept Exhibition, April 20-30, 2018, Shenzhen Contemporary Art and Urban Planning Museum

### Hongkong, China

‘A new way of doing things’ Sustainable Design Group Joint Exhibition, January 17- February 16, 2020, K11 Atelier King's Road

### Shenyang, China

‘A new way of doing things’ Sustainable Design Group Touring Exhibition, July 18- November 8, 2020, K11

砼工石造

诞生于混凝土设计品牌本土创造的跨界实验。本着对世界的好奇和“万物平等”的物质关怀，一群捣鼓水泥的人，想要重新定义建筑材料在人居空间中的价值。在感觉、温度、质地、颜色中感知，在艺术与工艺中探索，让材料回归其本质。

设计品牌本土创造成立于 2011 年，作为一个极具实验性、探索性，无界限、跨界多产独立设计品牌，从事产品创新研发和设计。设计团队致力于以设计为基本手段，通过一系列的实验探索更多可能，让不同的材质回归它的本质，还原它的独特肌理，成为符合日常生活需求的产品。

材料概念

在材料使用上,我们以回收粉碎的废弃陶瓷或拆迁混凝土建筑废渣为骨料,混合超高性能混凝土一体浇筑而成。

在性能上,高密度混凝土的特性使产品抗渗耐污,更易清洁。

在环境影响方面,产品在生产过程中自然凝结,避免了烧制,能减少扬尘与用水污染,做到生产过程的环保最大化。而每个产品的投入使用,意味着当中 50% 的废弃材料真正实现回收利用。让产品渗透在日常生活的每一处,我们想为这个地球做得更多。

奖项

2015 EDIDA ELLE Deco 国际设计大奖, Elle Decoration 中文版《家居廊》

“伞”混凝土墙砖, 最佳墙面设计奖

2017 德国 IF 设计大奖, 汉诺威工业设计论坛

“六”混凝土墙砖, 织品、墙面与地板类别设计奖

2017 德国红点设计大奖, 德国红点设计博物馆

“影”混凝土墙砖, 材料与表层处理类别, 最佳产品设计奖

2018 意大利 A’ 工业设计大奖, 意大利 OMC Design Studios

“影”混凝土墙砖, 银奖

2018 家具与灯具设计十佳榜, 加拿大 Azure 杂志

“失体”项目, 最佳再生设计



BENTUSURFACE

A cross-border experiment born out of Bentu, a concrete design brand. With a curiosity for the world and a concern for "equality in all things", a group of cement tinkerers, who want to redefine the value of building materials in the human space, perceiving in sensation, temperature, texture and colour, exploring in esthetic and craftsmanship, bringing the material back to its essence.

Bentu, founded in 2011, is an experimental, exploratory, boundary-less, cross-border and prolific independent design brand, engaged in innovative product development and design. The design group is committed to using design as a basic tool to explore more possibilities through a series of experiments, allowing different materials to regain to their essence, restore their unique texture and become products that meet the needs of everyday life.

MATERIAL

Regarding the material application, we use recycled and crushed waste ceramics or demolition concrete construction waste as aggregates, mixed with ultra-high performance concrete cast in one piece. In terms of property, the high-density concrete answers the needs of impermeability and stain resistance. For the concern of environment, the products condense naturally during the production process, instead of firing process, reducing dust and water pollution, maximizing the environmental protection of the production process. The fact that each product is put into use means that 50% of the waste material is actually recycled. We want to do more for the planet by making our products in presence in every aspect of our daily lives.

Awards

2015 EDIDA ELLE Deco International Design Award, Elle Decoration Chinese version of

‘Home Gallery’,

‘Umbrella’ concrete wall tiles, Best Wall Design

2017 IF Design Award, Hannover Industrial Design Forum, Germany

‘Six’ concrete wall tiles, Design Award in the category of Weaving, Wall and Floor

2017 Red Dot Design Award, Red Dot Design Museum, Germany

‘Shadow’ concrete wall tiles, in category of Material and Surface Treatment,

Best Product Design

2018 A' Industrial Design Award 2018, OMC Design Studios, Italy

‘Shadow’ concrete wall tiles, Silver Award

2018 Top 10 Furniture and Lighting Design 2018, Azure Magazine, Canada

‘Wreck’ project, Best Recycled Design



# 广东潮州

## CHAOZHOU GUANGDONG



23 ° 40' 22 // N, 116 ° 38' 33 // E

中国瓷都（广东潮州），世界 70% 日用陶瓷的母体，也是全球最大的日用瓷生产基地。全球化浪潮席卷下，陶瓷产业将潮州与世界前所未有地紧密联结。当势不可挡的现代化进程打破传统社会秩序，过往格序工整的潮州古城连同以血缘为社会秩序的乡土文化，快速地消亡。

急剧发展为这片土地带来的，远不止如此。全球化的刺激下，传统的陶瓷产业畸形膨胀。一方面，需求刺激出庞大的产量，陶瓷企业雨后春笋般出现，占用大量本地劳动人口的同时，也吸引了大量外来农村人口流入打工。内部社会关系的重组，同时也掀起了年轻一代的个体意识觉醒。捆绑在这庞大的产业链当中的无数个体，在产业洪流中有怎样的挣扎和渴望？过去与现在，本土与外来，这片土地上共处的人们，又该如何在流动变化的新时代，找到自我存在的价值？

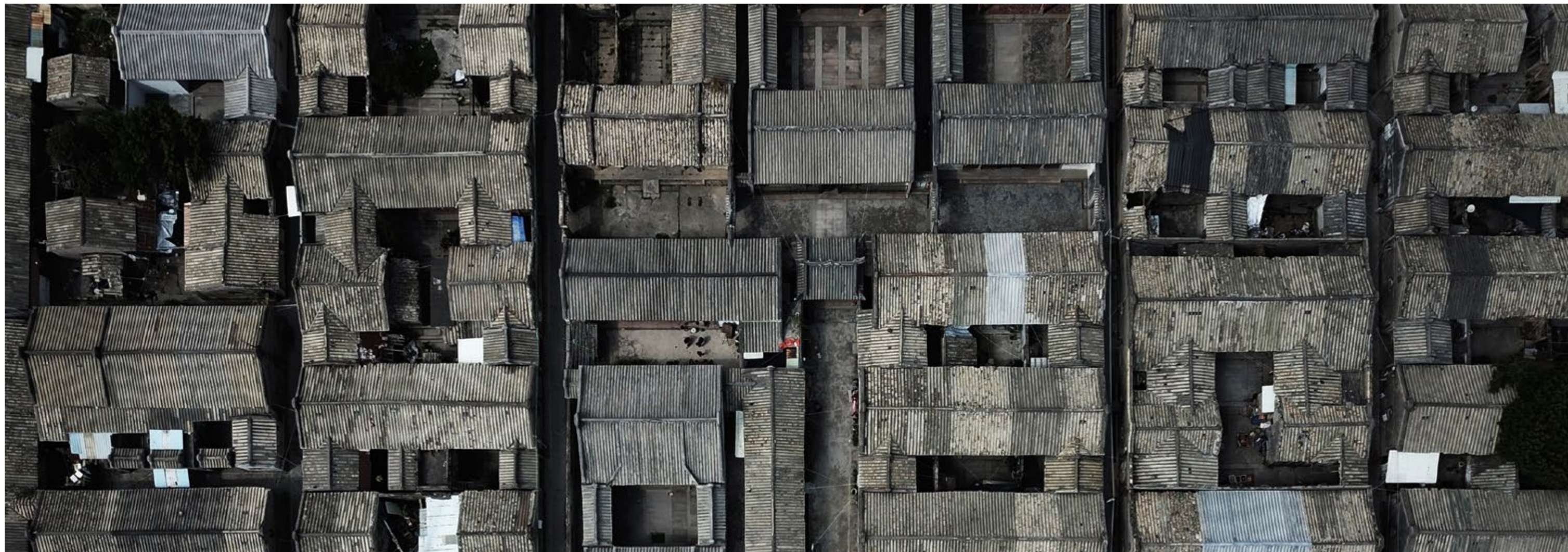
另一方面，地区范围小与家族主义下的保守趋同，使陶瓷企业不断重复废品率高的传统生产模式。而经济全球化下制造业向劳动成本更低的地区迁移，潮州成为大量西方企业的陶瓷代工点，这更加剧了废品量的上升。仅一个潮安废瓷加工厂每年回收废瓷就有 1000 多吨，这只是潮州陶瓷行业的一个截面。讽刺的是，2018 年 1 月，中国政府关于‘不再接收塑料、废 纸、废弃炉渣、废弃纺织品、废弃矿渣等 24 种进口固体废弃物’的禁令正式生效。世界上 一半的“洋垃圾”将要另谋出路。然而，在现实世界的角落里，中国垃圾，洋垃圾，正以各种废品形式，继续倾倒在这片狭小的土地上。

Chaozhou, the capital of China (Guangdong Province), is home to 70% of the world's daily ceramics and is the world's largest daily porcelain production base. Under the wave of globalization, the ceramic industry has brought Chaozhou closer to the world than ever before. On the one hand, demand stimulates a huge production, ceramic enterprises are springing up, occupying a large number of local labor force at the same time also attracted a large influx of foreign rural population to work.

On the other hand, the small regional scope and the conservative convergence under familism make ceramic companies keep repeating the traditional production model with high scrap rate. The economic globalization of the manufacturing industry to lower labor costs in the region, Chaozhou has become a large number of Western enterprises of ceramic OEM point, which further exacerbated the rise in the amount of scrap, only a Chaoan scrap porcelain processing plant recycling scrap porcelain more than 1000 tons per year. Ironically, in January 2018, the Chinese government's ban on 'no longer accepting 24 types of imported solid waste, including plastic, paper, slag, textile and slag' went into effect.

Half of the world's "foreign garbage" will have to find another way out. However, in the corners of the real world, Chinese and foreign garbage continue to be dumped on this small piece of land in the form of various waste. On the other hand, the small regional scope and the conservative convergence under familism make ceramic companies keep repeating the traditional production model with high scrap rate. The economic globalization of the manufacturing industry to lower labor costs in the region, Chaozhou has become a large number of Western enterprises of ceramic OEM point, which further exacerbated the rise in the amount of scrap, only a Chaoan scrap porcelain processing plant recycling scrap porcelain more than 1000 tons per year. Ironically, in January 2018, the Chinese government's ban on 'no longer accepting 24 types of imported solid waste, including plastic, paper, slag, textile and slag' went into effect. Half of the world's "foreign garbage" will have to find another way out. However, in the corners of the real world, Chinese and foreign garbage continue to be dumped on this small piece of land in the form of various waste products.





## 潮州古城

格序工整的潮州古城连同以血缘为社会秩序的乡土文化，在全球化浪潮席卷下快速地消亡，伴随着格局打破、人口涌入、城市野蛮生长。

## Old town of Chaozhou

Old town of Chaozhou, with its social order based on bloodline, is rapidly dying under the wave of globalization, accompanied by the breakdown of the pattern, the influx of people, and the savage growth of the city.





## 潮州陶瓷产业

潮州日用瓷产业，是由家族为纽带的各类家庭小作坊和管理完善适合大生产的企业构成，而小体量的家庭作坊式工厂往往缺乏完整的生产体系，技术含量低，污染防治水平低，从而导致产能过剩废品率上升等问题，回收系统的不成熟，废弃的陶瓷往往被倾倒在荒野影响自然生态。

陶瓷产业的急剧发展伴随着陶瓷废品量增加，而作为世界 70% 日用陶瓷的母体，全球最大的日用瓷生产基地，其背后所产生废弃陶瓷的数量难以想象！

an increase in the amount of ceramic waste, and supplies 70% of the world's daily ceramics - the world's largest daily porcelain production base the amount of waste ceramics generated behind it is unimaginable.

## Chaozhou Ceramic Industry

Chaozhou daily-use porcelain industry, is composed of various types of family-owned small workshops with family ties and well-managed enterprises suitable for large-scale production. The small volume of family-owned factories lack a complete production system, low technology, low level of pollution prevention, immaturity of the recycling system, and thus waste ceramics often dumped in the wilderness affecting the natural ecology and overcapacity scrap rate increases and other problems. The dramatic growth of the ceramics industry has been accompanied by













# 废瓷粉碎厂

一个潮安废瓷回收加工厂每年回收废瓷就有 1000 多吨，这不仅  
是潮州陶瓷行业的一个截面，更是全球经济发展不平衡的后遗症。  
这是中国的垃圾，更是世界的垃圾。  
在行业巨大的产量与商业价值背后，价格倾轧、产能过剩、粉尘  
污染、废料倾倒等问题严重影响当地产业现状与生活环境。而传  
统概念上的对废弃瓷砖的再生利用，仅仅是将废瓷打碎，重新加  
入陶瓷制作原料中去。受限于陶土原料需要保持的粘性，每次生  
产能利用上的废瓷十分有限。

the clay, the amount of waste porcelain that can be used in  
each production run is very limited.

# Waste porcelain crushing plant

A Chaoan waste porcelain recycling processing plant  
recycles more than 1,000 tons of waste porcelain each  
year, which is not only a cross-section of the ceramic  
industry in Chaozhou, but also the aftermath of the uneven  
development of the global economy. This is China's  
garbage, but also the world's garbage. Behind the huge  
production and commercial value of the industry, price  
dumping, overcapacity, dust pollution, waste dumping  
and other problems seriously affect the status of the local  
industry and living environment. The traditional concept of  
recycling waste ceramic tiles is simply to break up the waste  
porcelain and add it back to the raw material for ceramic  
production. Due to the need to maintain the consistency of



# 实验装置

## INSTALLATION





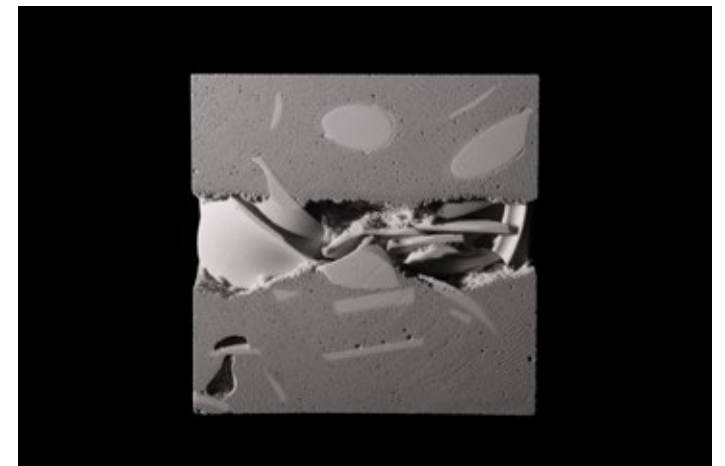
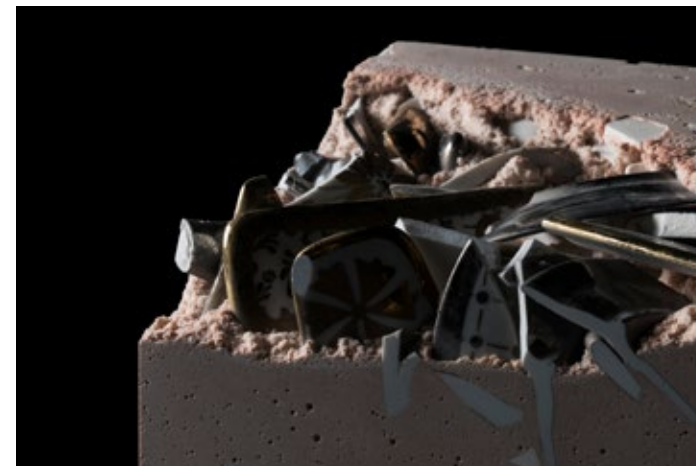
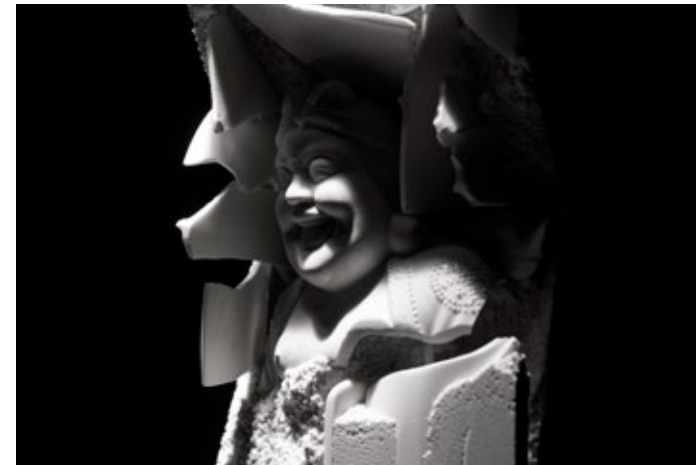


我们尝试用装置及实验家具的形式，向社会传递巨大产业背后体系的破碎崩离，揭示社会所面临的社会问题与环境问题，不可降解的废弃日用瓷被丢弃被埋藏，并从材料学的角度出发，尝试废弃日用瓷与混凝土的结合可能性。

We try to convey to the society the fragmentation of the system behind the huge industry from the form of installation and experimental furniture, and reveal the social and environmental problems faced by the society. From the perspective of material science, we also discover the problem of discarded and buried non-biodegradable porcelain, and try to explore the possibility of combining discarded porcelain with concrete.









# 深圳设计周

## × 失体

SHENZHEN DESIGN WEEK

× WRECK



作为实验的重要一环，本土创造还与中国政府主办的深圳设计周合作策办“失体”日用废瓷概念展。该展览于2018年4月20日在中国深圳完成，现场展出由潮州日用瓷废渣堆叠成的7米艺术装置及实验家具，辅以音像与简介，向观众直观展现出全球最大的日用瓷生产基地——中国潮州的行业剖面，及其巨大产能与商业价值背后崩裂、破碎的文化体统。

以概念展览的形式面向来自各行各业的社会公众传播、互动，是实验的果，也会是社会秩序重塑的因。在展览过程中，质疑、鼓励、惊奇、建议……我们拾起的碎片，被观众又一次打破，更零碎，更尖锐。无论是精英、学生还是外行的百姓，在触摸碎片、甚至调整展品的微小动作中，触动与反思以更细碎的形态通过观众流动，我们相信这些碎片最终在社会大众当中汇聚成有力的洪流，真切影响到社会现实。

As an important part of the experiment, BENTU teamed up with Shenzhen Design Week, the exhibition activity supported by Shenzhen Municipal People's Government, and curated the "WRECK -- Concept Exhibition of Wasted Daily-use Porcelain from Chaozhou, China", which ended on April 20 in Shenzhen. The exhibition site consisted of the experimental furniture and a 7-meter-long artistic installation stacked with ceramic waste collected from Chaozhou daily-use ceramic factories. With video and intro, he audiences were exposed to direct view of world's largest ceramic industry base as well as the wrecked culture and decorum behind tremendous capacity and commercial value.

Communication and interaction with the public come from various walks of life through the concept exhibition was a pleasing result of our experiment, and hopefully a foreseeable start of restoring social order. Including social elite, school students even common people, the public with their surprise, question, advise and encouragement was the one who broke down the already fragile fact then turned it into sharper point of view. The moment people touched the ceramic pieces or slightly adjusted the exhibits, thoughts and emotions provoked were flowing in a much finer form among them, and we believe that these tiny thoughts and emotions will eventually converge and be powerful enough to affect the social reality.













“失体”实验中，我们有另一个方向的尝试：改变陶瓷骨料的利用方式，提高废瓷的利用率 and 生产速度，探讨兼具艺术性与实用性的拼装式家具发展可能。作为设计者的我们，是否可以在这失衡的现实中，重塑其“体”？

破碎的日用瓷与混凝土混合凝结，经切割打磨而成，以装置家具为载体，在基础形态中探讨恰当的比例，以简单的平板结构拼接，探讨废弃日用瓷以简单的构造形式再次回到大众生活日常回到生活根本。

In the 'Wreck' experiment, we have another direction to try: to change the way of using ceramic aggregate, to improve the utilization rate and production speed of waste porcelain, and to explore the possibility of developing assembled furniture with both artistry and practicality. As designers, can we reshape both the material and decorum in this unbalanced reality? The broken porcelain is mixed with concrete, cut and polished, and the installation furniture is used as a carrier to explore the appropriate proportions in the basic form, and the simple flat structure is put together to explore the discarded porcelain in a simple structure to return to the daily life of the public back to the fundamental life.













2015 年起，政府陆续从财政、税收、人才、土地等多个方面给予展览业鼓励和扶持。展览活动因此趋向平民化、公益化、多元化，传播力度与覆盖人群也越大越广。从精英高知到普通群众，从单一行业到各行各业，从无知好奇到思考传播，我们将其中的每一环都视作一块文化的碎片。本土创造希望实现自上而下的认知普及、从内到外的经验传递、由浅入深的价值渗透。只有放大化每块“碎片”的锐感，其“体”才能真正重塑。

Since 2015, the government has encouraged and supported the exhibition industry in the areas of finance, taxation, talent and land successively. As a result, exhibition activities tend to be popular, public welfare based and pluralistic, with high propagation and more people covered.

From the elite and senior intellectuals to the general public, from the single industry to all walks of life, and from ignorance and curiosity to the spread of thought, we regard every link as a piece of cultural fragment. We hope to achieve top-down cognitive popularization, inside-out experience transmission, and shallow to deep value penetration. Only by amplifying the sharpness of each "fragment" can its "body" be truly reshaped.



# 废瓷再生 × 装饰砖 “穗”

RECYCLED PORCELAIN WASTE

× ‘SUI’



将不能降解与难以二次利用的日用废瓷粉碎重新利用，经过不断配比的材料实验，我们以约 40% 的回收日用废瓷与调配的高性能混凝土混合，进行批量化生产。表面经打磨抛光而成，极富表现力。墙地面装饰是建筑材料使用量最大的材料之一，我们通过庞大需求的角度将再生材料介入其中，才能真真正正将不可降解的陶瓷消耗掉，真切地影响到社会现实。

我们提供两种骨料搭配样式，一种由八个颜色构成，废瓷随意散落充满张力，适合墙面使用；另一种由五个颜色构成，将废弃的日用瓷更细致粉碎分类，再进行大小颗粒配比，表面瓷粒错落有致分布、细致紧密，防污性能更优异，更适合地面使用；颜色与颗粒之间的搭配可以满足各类空间需求，而再生材料以产品为载体重新进入我们的日常，是我们实验的终极目标。

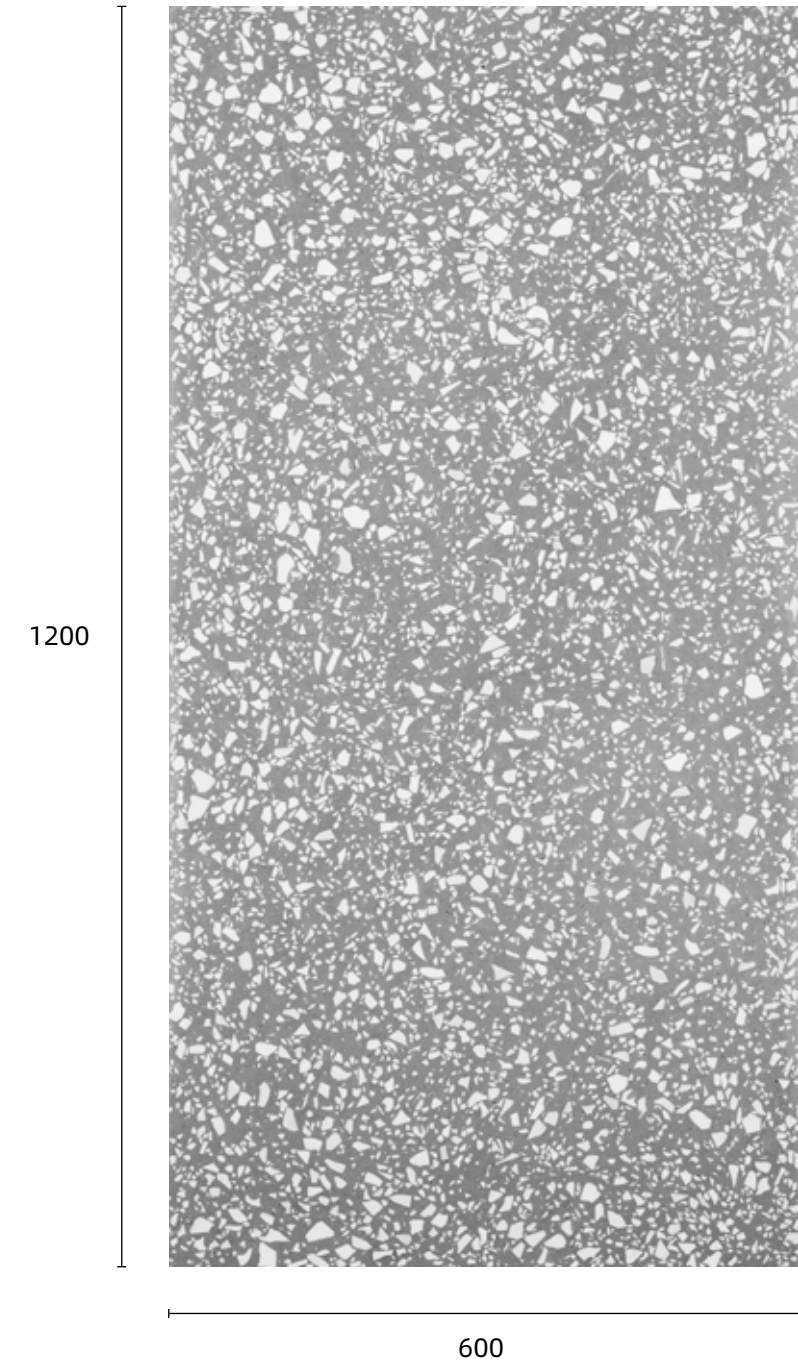
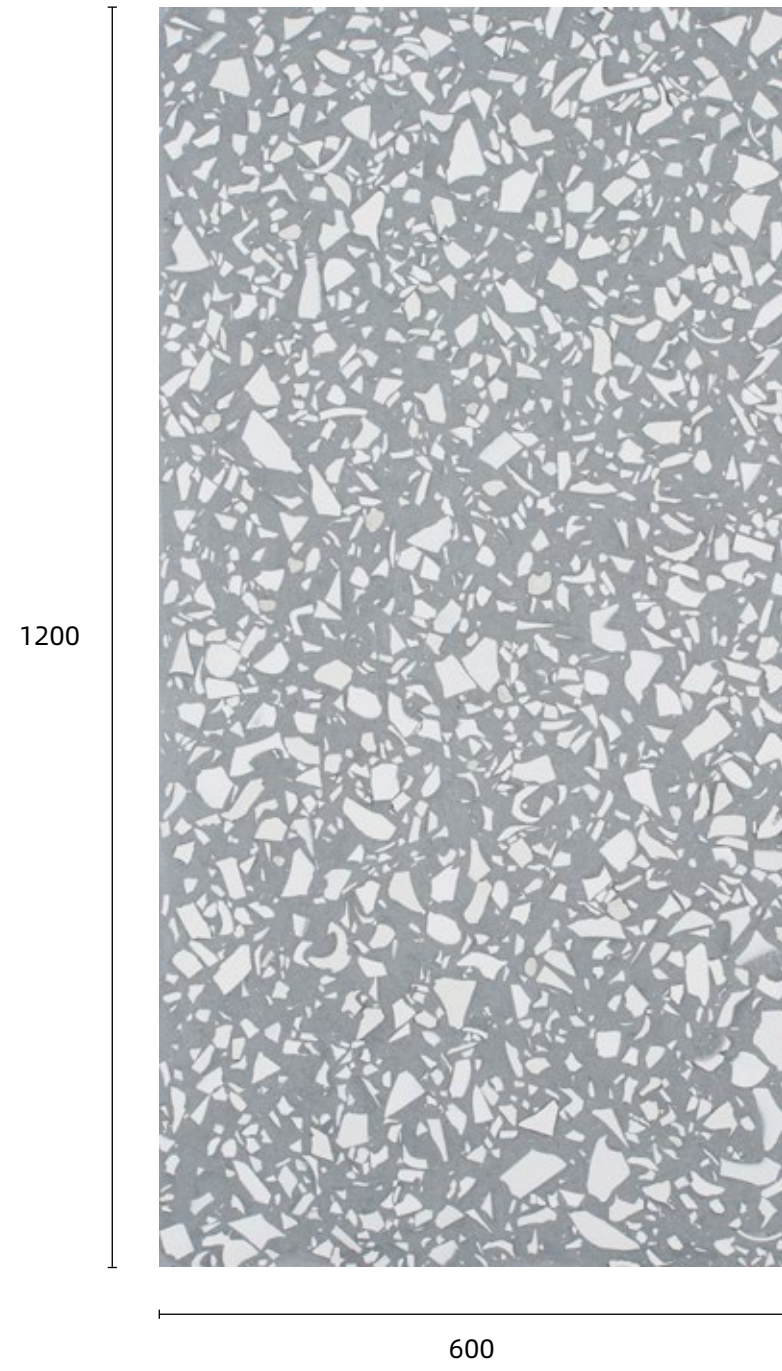
After continuous material experiments, we mixed the recycled waste porcelain with high performance concrete with about 40% of the recovered waste porcelain for batch production. With the surface ground and is polished to be extremely expressive. Wall and floor decoration is one of the most used building materials, and we intervene recycled materials through the perspective of huge demand in order to really consume the non-degradable ceramics and truly affect the social reality.

We offer two types of aggregates collection, which one is consisting of eight colors, scrap porcelain scattered randomly and full of tension, suitable for wall applications. The other consists of five colors, the discarded daily-use porcelain is more carefully crushed and classified before the size of the particles are well-proportioned, and the broken porcelain particles are distributed in a staggered manner, meticulously and closely, better excellent in the anti-pollution performance, more suitable for ground use.





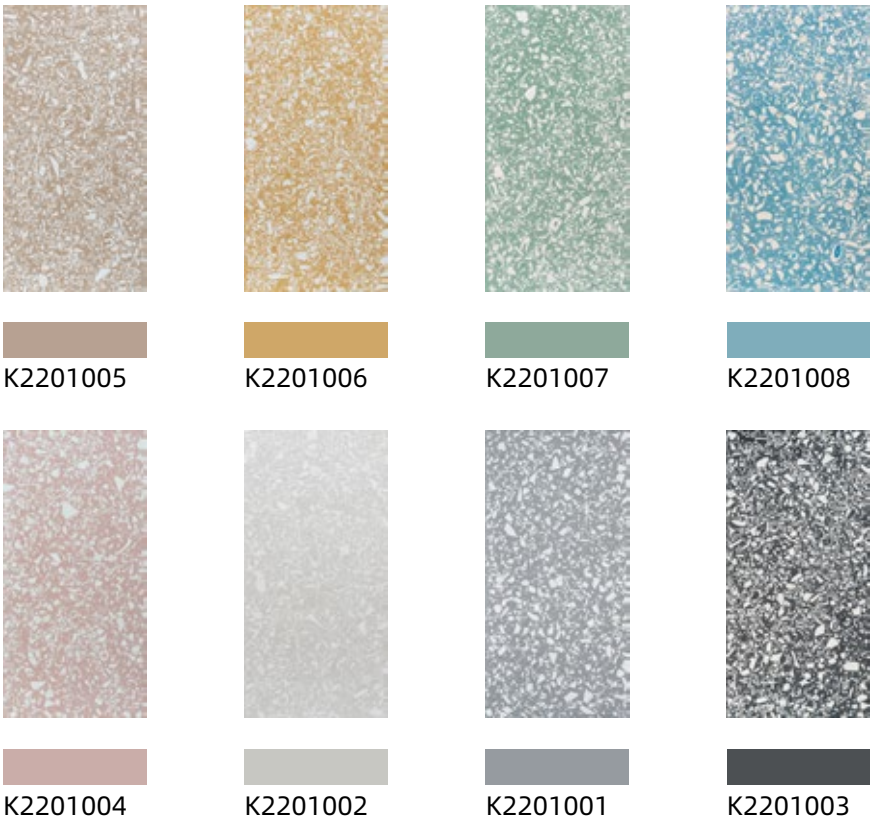








产品信息  
Product Information



主体材料：混凝土 \ 日用瓷废料

常规尺寸：1200×600×H20mm\2400×1200×H20mm

定制尺寸：3000×1200×H20mm\2700×1800×H20mm

产品重量：36kg\144kg | 180kg\ 243kg

注：支持花色定制，50m<sup>2</sup> 起订，定制周期约 25-35 天。

Main material: concrete \ Daily porcelain waste

Regular size: 1200×600×H20mm\2400×1200×H20mm

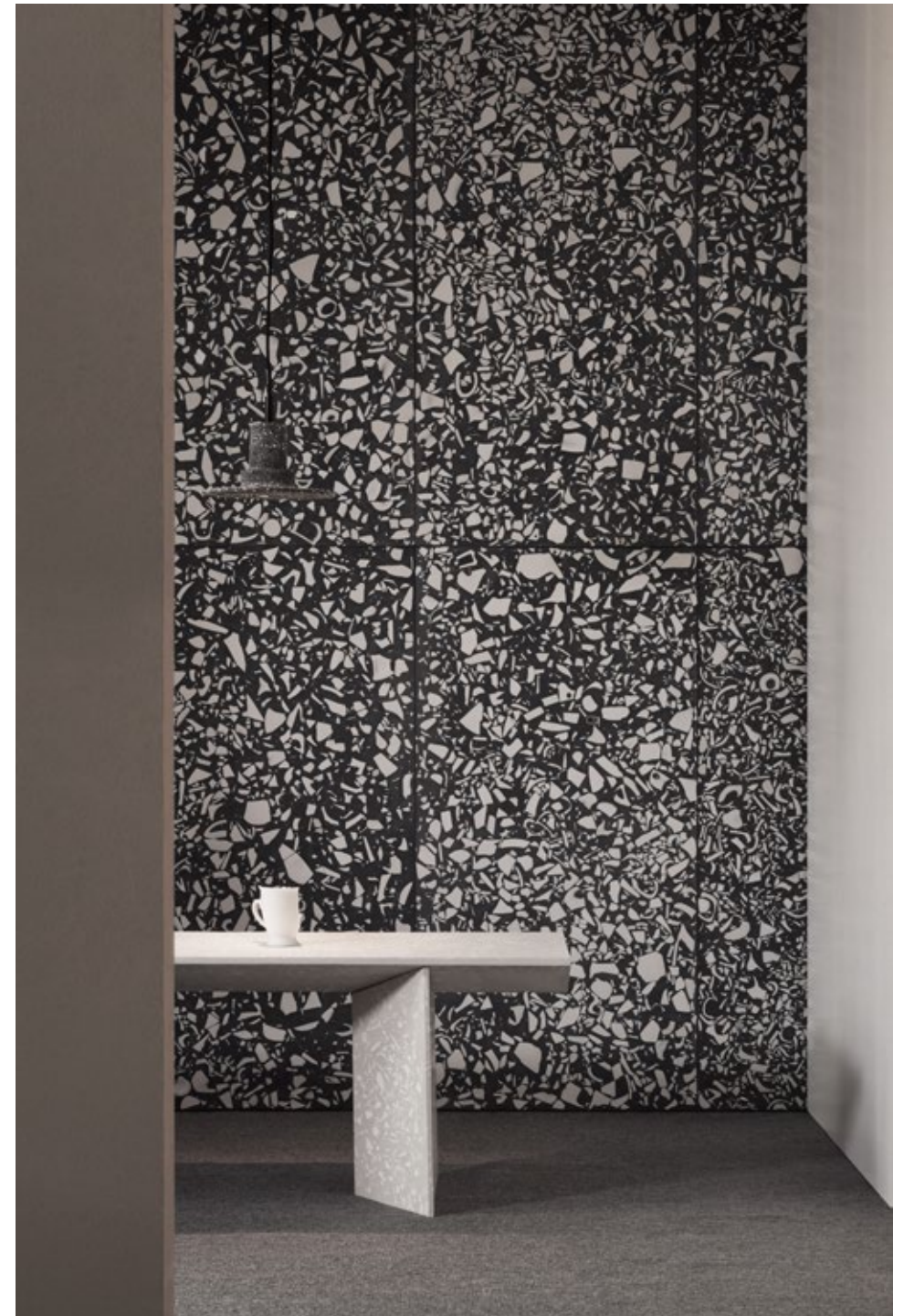
Customized Size: 3000×1200×H20mm\2700×1800×H20mm

Product weight: 36kg\144kg | 180kg\ 243kg















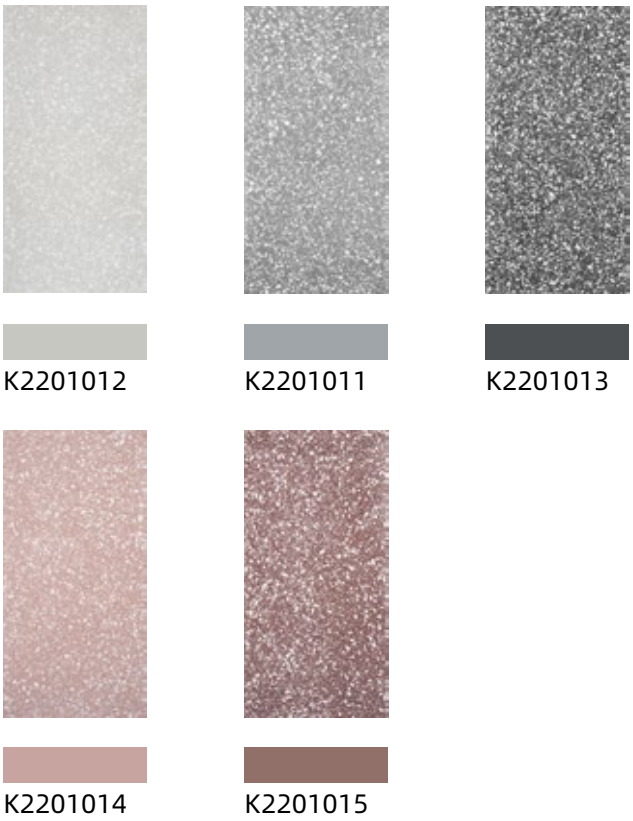






# 产品信息

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# 废瓷再生 × 公共家具 “梁”

RECYCLED PORCELAIN

WASTE × ‘LIANG’







## I 型

材料：混凝土，日用瓷废料

尺寸：2000×400×H445 mm

重量：140 kg

Material: concrete , daily porcelain waste

Dimension: 2000×400×H445 mm

Weight: 140 kg



## Y 型

材料：混凝土，日用瓷废料

尺寸：2045×1700×H445 mm

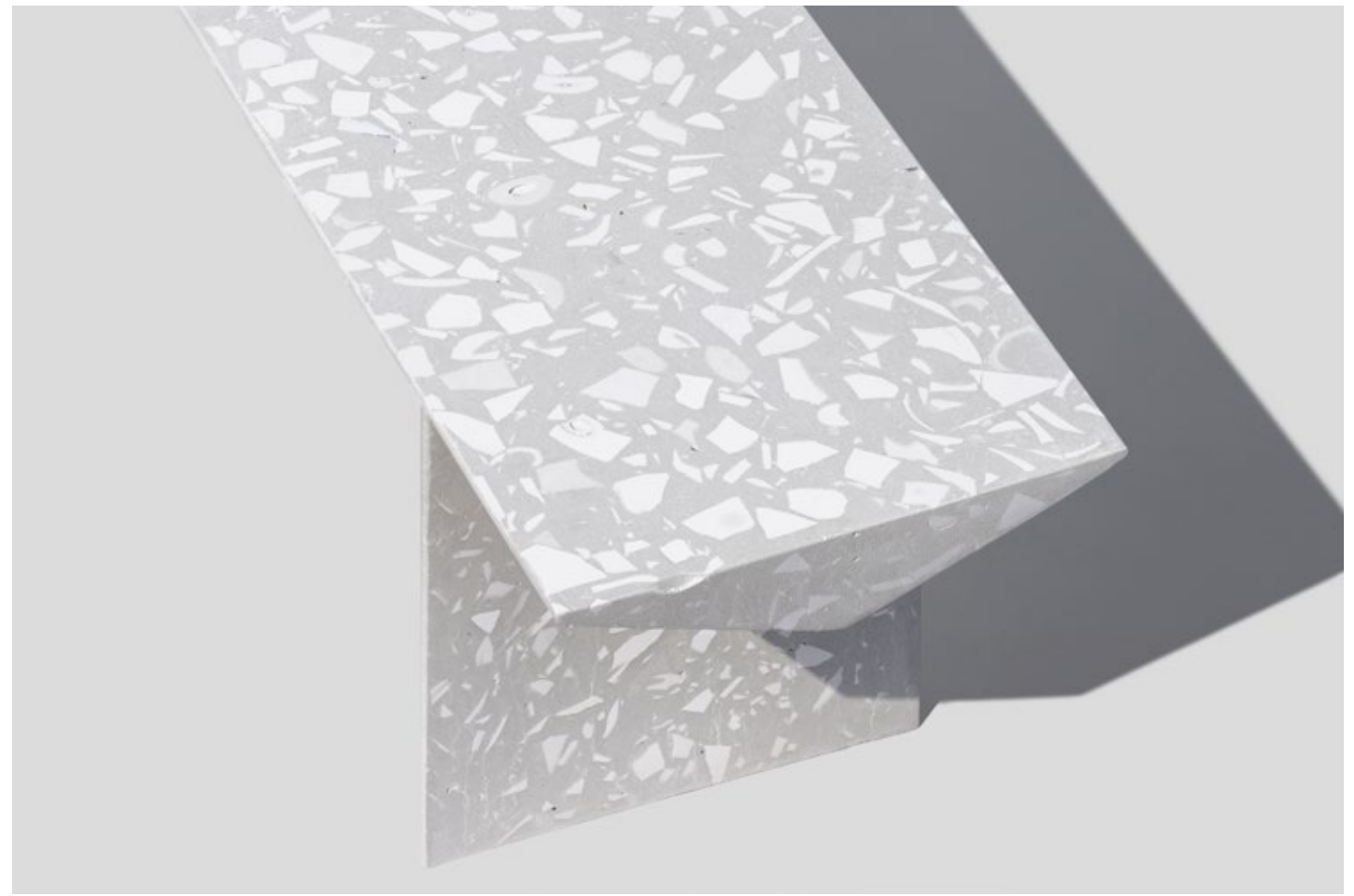
重量：206 kg

Material: concrete , daily porcelain waste

Dimension: 2045×1700×H445 mm

Weight: 206 kg









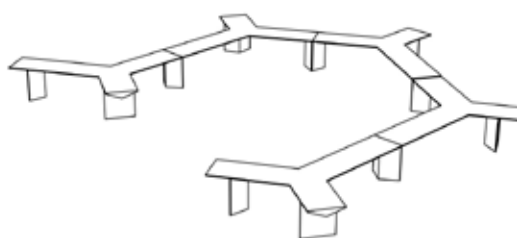
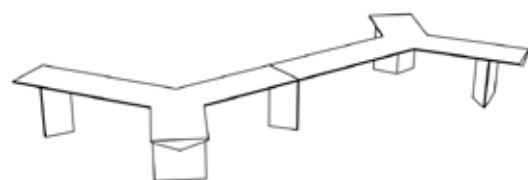
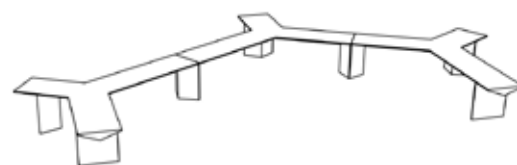
“梁”混凝土公共家具将本土陶瓷文化与可持续化的日常图景相结合，通过更具社会性的新常态应用，耳濡目染地围合出美的日常与正确的价值传递。

在设计上，“梁”采用模块化结构构成，Y形模块长度不同的分支更提供了丰富的自由组合形态延伸；部件采用装配式结构拼接，底座和座面相互镶嵌，三角形的简洁形态使视觉更轻盈，结构更牢固，同时减轻重量。

面对过度开发带来的社会，污染环境的现状，我们试图寻找一种解决方法，利用废料循环再生，日常设计，工业制造，美学呈现，切切实实为环境着想。

The components are assembled with an assembled structure, the base and seat surface are inlaid with each other, the simple form of the triangle makes the visual lighter structure is also more solid, while reducing weight.

The "Liang" concrete public furniture combines local porcelain culture with sustainable everyday scenes, and through a new and more social application of normality, the daily routine of beauty and correct value transmission is imbibed. In the design, the "Liang" is composed of a modular structure, and the Y-shaped modules with different lengths of branches provide a wealth of free combination of form extensions.





# 废瓷再生 × 家具 “工”

RECYCLED PORCELAIN

WASTE × ‘GONG’







#### 桌子·工

材料：混凝土，日用瓷废料

尺寸：Ø1000xH750 mm

重量：100 kg

颜色：白色

#### Gong

Material: concrete , daily porcelain waste

Dimension: Ø1000xH750 mm

Weight: 100 kg

Color: white



混凝土美

混凝土是一种极具独特个性与自然特性的材料。每一件个体都因其与众不同的表皮结构与肌理而显得独特。由此，每件混凝土产品的颜色并不会相同，它会随着制作的天气、温度、环境湿度，以及使用时长而发生变化。另外，混凝土表面自然散布着细腻微小的气孔。气孔的存在并不会限制产品的功能作用。确切来说，这种特质愈加彰显了混凝土的自然气质与强烈个性，也是我们保留其存在的缘起。

使用与保养

混凝土本身是一种易脆的材料，在日常使用过程中，应避免硬物撞击与刮划。材料表面涂刷了一层防水防污保护剂，如在使用过程中产生污迹，及时用湿毛巾清洗干净即可，应避免使用砂纸或百洁布等会破坏保护涂层的清洁工具，以免影响保护涂层的时效性和防水防污性。正常情况下使用，涂层效果可保持 3-5 年。

购前须知

混凝土产品不建议长期置于处于潮湿状态下，如卫浴空间，对于防污要求高的空间，也应谨慎选择。

Concrete Aesthetics











Concrete is a material with a unique personality and natural characteristics, and each individual piece is unique because of its distinctive skin structure and texture. The color of each concrete product will not be the same; it will change depending on the weather, temperature, and ambient humidity in which it is made, as well as the length of time it is used. In addition, the concrete surface is naturally scattered with fine and tiny pores but its does not limit the functional role of the product. This quality is the reason why we preserve the naturalness and strong character of concrete.

Use & Maintenance

Concrete itself is a brittle material, in the process of daily use, should avoid hard objects impact and scratching. The surface of the material is coated with a layer of waterproof and anti-fouling protective agent, such as stains in the process of use can be cleaned with a wet towel in time. The use of cleaning tools such as sandpaper or Pasteur cloth that will destroy the protective coating should be avoided to avoid affecting the timeliness of the protective coating and the water and dirt repellency. The coating effect can be maintained for 3-5 years when used under normal conditions.

材料性能

MATERIAL PERFORMANCE

	抗压强度 Compressive strength	68Mpa
	抗折强度 Flexural strength	13.3Mpa
	抗冲击强度 Impact strength	12.2kj/m³
	密度 Density	2.27g/cm³
	吸水率 Bibulous rate	1.79%
	防火等级 Fire rating	A
	抗渗性 Permeability resistance	6
	抗冻性 Frost resistance	F50
	莫氏强度 Mohs strength	6
	尺寸精度 Dimensional accuracy	±0.5mm

注：以上部分参数经 SGS 测试获得。  
Note: Some of the above parameters were obtained through testing by The Societe Generale de Surveillance S.A.





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