



since 2023

Next-Generation Material Contributes to CO2 reduction
下一代材料有助於減少二氧化碳排放

GEO Earth Series

GEO 地球系列

GEO Earth 100

GEO 地球100

(Geopolymer Orange Peel Coating Material
地質聚合物橘皮紋塗層材料)

GEO Earth 200

GEO 地球 200

(Geopolymer Ripple Coating Material
地質聚合物波紋塗層材料)

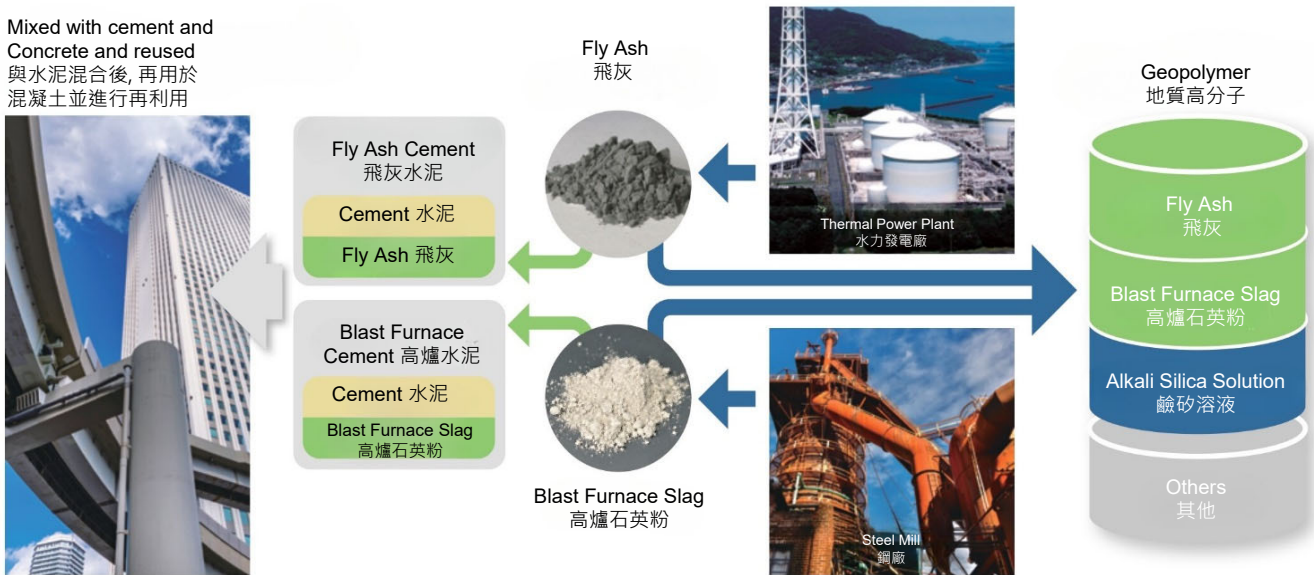
GEO Earth 300

GEO 地球 300

(Geopolymer Flat Coating Material
地質聚合物平面塗層材料)

Effective use of industrial by products 有效利用工業副產品

Mixed with cement and
Concrete and reused
與水泥混合後，再用於
混凝土並進行再利用



Geopolymer uses industrial byproducts such as fly ash and blast furnace slag as raw materials. These products are still being reused in cement and concrete by mixing them, but geopolymer also contributes to a circular society by recycling them.
地質高分子使用工業副產品如飛灰和高爐煉渣作為原材料。這些產品現在仍然被用於混合水泥和混凝土中進行再利用，但是地質高分子也通過回收利用來貢獻於循環型社會。

Features of Geopolymers 無機高分子材料的特點

Low VOC/Low odor
低VOC/低氣味

Due to the absence of organic solvents, volatile organic compounds (VOCs) have been reduced. Additionally, there is hardly any distinctive odor typically associated with emulsions.
由於不使用有機溶劑，揮發性有機化合物 (VOC) 得到了降低。此外，幾乎沒有乳化劑特有的氣味。

Acid resistance 耐酸性/
Low efflorescence 低風化

Compared to cement, it has a lower calcium content, making it less susceptible to corrosion in acidic environments and resulting in less efflorescence.
相較於水泥，由於其鈣含量較低，因此不易在酸性環境下腐蝕，且白堊質生成較少。

Antibacterial 抗菌/
Antiviral Properties
抗病毒特性

It exhibits antibacterial and antiviral properties due to its alkaline nature.
由於其鹼性，具有抗菌和抗病毒的作用。

Humidity Control 調濕/
Deodorizing Property
除臭性能

Due to its porous coating structure, it exhibits moisture regulation properties through the absorption and release of water vapor internally, effectively adsorbing and decomposing odors. Externally, it possesses breathability, allowing moisture from the substrate to be released.
由於其多孔質的塗膜結構，在內部具有吸放濕作用，能夠吸附和分解氣味。在外部，具有透氣性，可以將基層中的潮濕排出。

Geopolymer is a new next-generation material that contributes to CO2 reduction

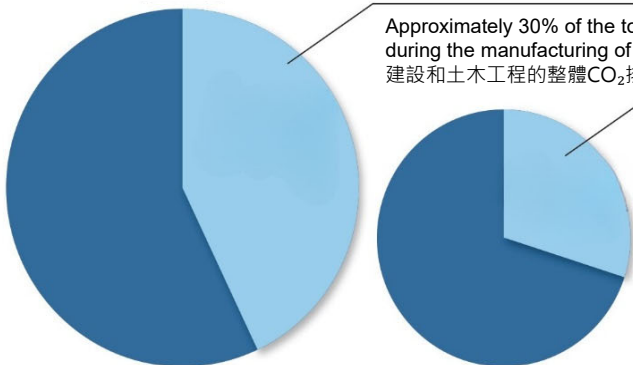
地質聚合物是一種對於CO₂減排有貢獻的下一代新材料。

Environment surrounding the construction industry 建築行業所面臨的環境

Emissions Approximately
1.011Billion tons [2020]
排放量約1.011億噸 [2020年]

It is said that the construction industry accounts for approximately 43% of Japan's total CO₂ emissions.
據說建築業占日本總CO₂排放量的約43%。

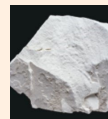
Approximately 30% of the total CO₂ emissions from construction and civil engineering works are emitted during the manufacturing of cement and concrete
建設和土木工程的全體CO₂排放量中，大約有30%是在水泥和混凝土的製造過程中排放的。



The percentage of CO₂ emissions in Japan
日本的二氧化碳排放比例。

The percentage of CO₂ emissions from construction.
建設（建築/土木）的二氧化碳排放比例。

There are two types of CO₂ emissions during cement manufacturing
水泥製造過程中有兩種二氧化碳排放速率約為60%



① Emitted during thermal decomposition of main raw material (limestone)
在主要原料(石灰石)的熱分解過程中排放。
The rate of CO₂ generation is Approximately 60%
二氧化碳生成



② Fossil fuel during firing emitted when consumed
在燃燒過程中消耗的化石燃料會排放二氧化碳
CO₂ generation rate is approximately 40% of the entire manufacturing
二氧化碳生成速率約占整個製造過程的40%

CO₂ There is a demand for alternative materials to cement (limestone), which is a major contributor to CO₂ emissions.
尋找替代水泥（石灰石），這是二氧化碳大量排放的原因。

Geopolymers are expected to be a new material that can replace cement. For example, by replacing cement with geopolymers, there is a potential to reduce CO₂ emissions by approximately 80% compared to conventional cement products.

Geopolymers被期望作為取代水泥的新材料。例如，將水泥替換為地質聚合物可能將CO₂排放量減少約80%，相較於傳統的水泥製品。

Construction industry initiatives 建築業舉措

In the civil engineering market, it is adopted as a secondary product for concrete.
在土木市場上，它被用作混凝土二次產品。



Concrete Sleepers
混凝土軌枕



Exterior Block
外部區塊



U-shaped groove
U型插槽

As part of efforts in the construction market, research is being conducted to develop next-generation materials.

作為建設市場的努力，研究正在進行中，以開發下一代的建材。

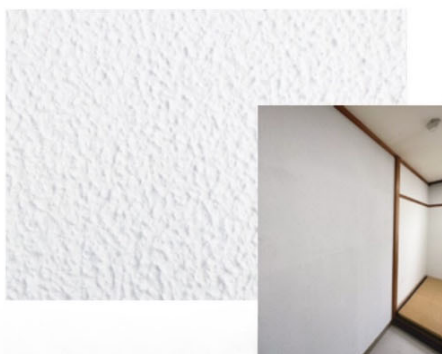
Kikusui Chemical Industries' "Geoeath Series" is an industry-first (according to our research) product as a building coating material. By using various products of the "Geoeath Series" from the base to the finish, it is possible to contribute to the reduction of greenhouse gas emissions.

菊水化學工業的「Geoeath系列」是作為建築塗料材料的行業首創產品（據我們的調查）。通過使用「Geoeath系列」的各種產品，從底層到最終塗裝，可以為減少溫室氣體排放做出貢獻。

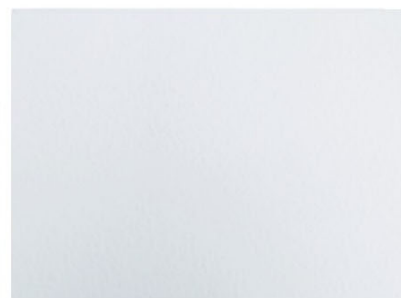




(Orange Peel)
地質聚合物橘皮塗層材料



(Ripple)
土工聚合物波紋塗層材料



(Flat)
土工聚合物平面塗層材料

	Geo Earth 100	Geo Earth 200	Geo Earth 300
CO ₂ reduction per 1,000 m ² *1*2 每 1,000 平方米二氧化碳減排量*1*2	Approx. 154 kg 大約154公斤	Approx. 83 kg 大約83公斤	Approx. 168 kg 大約168公斤
Amount of by-products used 副產品消耗	Approx. 40% 大約40%	Approx. 23% 大約23%	Approx. 18% 大約18%
Reduction of fossil raw materials (resin) *1 減少化石原料 (樹脂) *1	±0	±0	100% reduction (no use) 減少 100% (不使用)
Performance 表現	Odor-eliminating, humidity-regulating, antibacterial, antiviral, moisture-permeable, low VOC, low odour, fewer white flakes, inorganic binding material 消除異味、調節濕度、抗菌、抗病毒、透濕、低揮發性有機化合物、低異味、減少白色薄片、無機結合材料		
Features 特徵	Acid resistance 耐酸性	Acid resistance 耐酸性	---
Tone 色調	Gray 灰色	White 白色	White 白色
Glossiness 光澤度	Matte 啞面	Matte 啞面	Matte 啞面
Application Method 施工方法	Spray Gun 噴鎗	Porous roller 多孔輥	Wool roller, brush 羊毛滾塗, 毛刷
Finish 飾面	Skin 皮膚	Ripple 波紋	Flat 平面
Packing 包裝	Main Agent: 10kg/bag 主劑: 10公斤/包 Mixing Agent: 4kg/can 混合劑: 4公斤/罐	Main Agent: 10kg/bag 主劑: 10公斤/包 Mixing Agent: 4kg/can 混合劑: 4公斤/罐	Slurry: 6kg/can 漿料: 6公斤/罐 Mixing Agent: 10kg/can 混合劑: 10公斤/包

