

GLACERA

Eco-friendly advanced material

GLACERA



Presenting pleasant spaces
ABEX co. Ltd.

チャレンジ
未来が変わる。
日本が変わる。 25 

Inorganic porous material

GLACERA



As the world began to enter into its phase of highly considerable environmental situation, Global warming, energy problem, deforestation and many other problems have come to the surface not only in Japan but all over the world. It has come to the time we must face this problem fully and think about the limited resources on Earth.

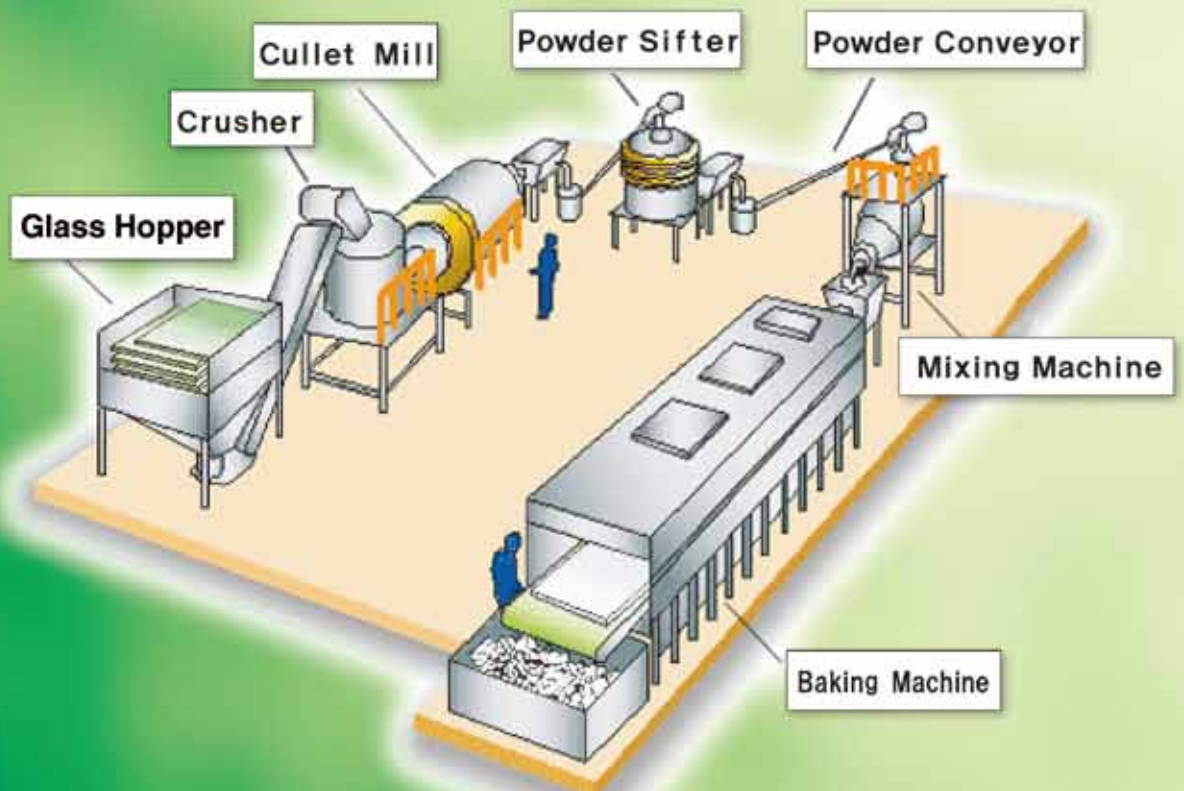
We have paid attention to creating new material using waste glass, which will be highly necessary in building recycling society, to be used in many different fields. We will also like to consider its utility value as the raw material, apart from being only used as our product.

The products name is GLACERA,

which name is originated from having both Glass and Ceramic's characteristics.

This product's specific gravity and water absorption can be determined from its manufacturing process, considering its use. Owing its great characteristics like light weight, water holding, breathability, fire resistance, adiabaticity, deodorization and such, it is used in variety of fields and purposes, farming, tree planting, water quality improvement, deodorization, and much more.

About 70% of constituent from the glass are Silicon (SiO_2) which are contained in soil. Other constituents of this product like Sodium (Na_2O) and Calcium (CaO) are also used in our daily supplies, so to speak safe materials and are nontoxic.



Characteristics and standards of GLACERA



High performance in permeability, water holding and breathability.

By blending the product in the soil, the porous bubble will bring in air inside which will stimulate the microbe and allows the soil to recover. (Aggregated structure)

It can also be put inside water tanks or lakes to purify its water, or as a way of using rain water. It also shows high performance in deodorization, so it can be used a substitute for activated charcoal.

Nonflammable

It does not burn because it is inorganic mineral, and will not cause toxic gas.
It is also effective in moisture retention and sound proofing.

Stabilized quality

Carefully screening the main raw material glasses, we can deliver safe and stabilized products.

Eco-friendly

Main raw material glasses are made of sands, and our products are restored to its original sand form, treated as same as surplus soil.

Very light. Determine specific gravity and water absorption depending on its use.

Depending on the products use, fields and requests, we have several options regarding its specific gravity, water absorption and such particle diameters.

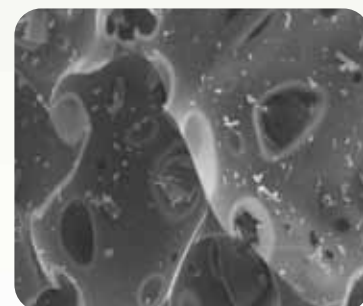
Standard	Absolute specific gravity	Water absorption rate	Characteristics	Use purposes
G1	0.3~0.6	30% or higher	High water holding capacity, open cell type, light weight material	Tree planting: Light soil Farming: Soil modifier Landscape gardening: Soil modifier Gardening: Improving bed rocks of flowerpot
G2	0.4~0.5	30% or lower	Above lightness, closed cell type, light weight material	Civil engineering: Light landfill material, retaining wall backfilling material, lighten soil Farming: Underdrainage material
G3	0.5~1.0	10% or lower	Mostly closed pore, closed cell type material	Gardening: Hydroculture Pets: Cat litters material
G4	1.0~1.6	5% or lower	Slightly heavier than water, closed cell type material	Water quality: Filtering material Water tanks: Filtering material Civil engineering: Light landfill material use around waterfront.
G5	0.7~1.1	30% or higher	Absorpes water and sinks, New open cell type material	Landscape gardening: Soil modifier Pets: Watertank filters Rainwater: Underground storage systems Gardening: Hydroculture

[Ingredients and safety of GLACERA]

About 70% of constituent from the glass are Silica sand which are contained in many parts of soil in Japan. Other 30% constituents of this product like Sodium (Na₂O) and Calcium (CaO) are also used in our daily supplies. All constituents are nontoxic and the products dust does not have fibrous shape like Asbestos.

By strictly identifying raw material glasses, we prevent heavy metals like Lead and Arsenic from the bottles to be mixed together. This is high quality and safe product.

	Constituent	Content %
Silicon dioxide	SiO ₂	69.77%
Sodium oxide	Na ₂ O	14.02%
Calcium oxide	CaO	10.40%
Magnesium oxide	MgO	3.54%
Aluminum oxide	Al ₂ O ₃	1.65%
Potassium oxide	K ₂ O	0.62%



Product macrophotograph

『GRACELA』 products line up



GLACERA

『GRACELA』 series

Civil engineering and construction material

Our product have been qualified as Inorganic solid modifier and light landfill material by the Ministry of Land, Infrastructure, Transport, and Tourism of Japan, in their new technology information system (NETIS) as "Supersol". It has been showing high performance in public constructions and others, owing to its lightness. Improvement of its workability, seismic resistance, reduction of soil pressure to buildings, preventing buildings from subsiding on soft grounds, and other characteristics are admitted.



Farming, tree planting, and gardening material

For farming use, by blending the product into the soil, it brings healthy growth to the plants, prevents pests, improves quality of crops, and diversified edaphones. These features improve breathability, drainage, and water-holding capacity of the field, making the soil soft and aggregated structured, and leads to rise of crop yields.

For gardening use, by blending the product into the soil and laying them on the bottom of the pot, it improves the breathability and drainage efficiency, preventing root decay and improves the growth of plants. This product can also be used as a material for roof gardenings.



Improving and purifying water quality material

By preparing the environment for microbes to propagate, microfilms breeds fast, and it will improve purifying effect highly inside water tanks or water area. It is also effective for improving water quality purposes.

Using this effect, it can also be effectively used with rain water utilization, and drain purification.



Deodorization and filtration material

Our product has similar effects with activated charcoal like deodorization and filtration. By bedding our product on under floor, it will get rid of moisture and mould odors. It is used on top of the soil deodorization floors.



Crime preventing gravel and weed preventing effect

Stepping on crime preventing gravel causes about 70dB of sound. 70dB is about the same sound level as phone ring-tones. Generally, humans can live comfortably being surrounded with about 40 to 50dB of sound level. By graveling our products near your windows, gardens, and blind spots from the neighbors for example, will work sufficiently as preventing crime tool.

Apart from preventing crime, it has been demonstrated to work in preventing weeds, temperature rise in summer times, and pets waste and others.



Industrial material

By mixing our product with plastics and paints for example, it will create product with high heat resistance property. Plastics will also be improved in its strength. When mixed with detergents, it can be washed and cleaned easily without using any toxic chemicals, and it will not damage the environment by any means when washed with water.

It is also used to prevent harden slag on the pan to enter in the product when used to make moisturizer from chaff ashes. It can be used in many different industrial fields and purposes as well.



Heat island resistant effect

By having both permeability and water-holding characteristics, it has same effects as holding rain water of Guerrilla rainstorm temporally, and sprinkling water on pavements(Uchimizu) to keep away from the temperature rise. It will not be damaged by freezing as well.

Temperature rise resistant effect

With EARTH GUARDs water holding capacity, maximum of 25°C of temperature resistance can be seen from dense grade asphalt concrete. Uchimizu also have similar effect to this. Moreover, this product itself is porous and has high insulation effect.

High water-holding capacity

EARTH GUARD can hold about 13 to 14 liters of water in a centare. In addition, using EARTH GUARD BASE together with it, it can hold more than 30 liters of water in a centare. (Total thickness about 10cm)

By building underwater storage tank, you can secure living water in case of an emergency.



Nature panel

NATURE PANEL is a new material using GLACERAs powder as its main raw material. It has absolute nonflammable, light weight, fireproof, and soundproof as its characteristics and accommodated for buildings and cars wall plate for its high safety. Even at the worst case of an emergency, it does not cause any smoke or toxic gas, so it can prevent additional accidents.

This material can be reused, and is nice for both human and the environment.



Nature Stone

NATURE STONE is light weighted ceramic cast stone designed to reproduce the texture of genuine stone. It has high design quality and has both weatherproof and smooth operability.

It has fireproof, soundproof and fire resistance effects as its characteristics.



Nature Tile

NATURE TILE is double layered structure with its surface of clear flat glass and the back side of Pumice form Foam glass.

It is a new type of multi-layered glass tile fusing glass powder with special additive and flat glass together.





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収穫量UP！

株式会社 アベックス

団粒構造の土

植物が元気に育つには、根が丈夫で養分を吸う細根がたくさんあることが重要です。しっかりとした良い根を張らせれば、十分に養分を吸い上げられ、元気に育って、病害虫予防にもなります、良い根を作るには、根が空気を取り込みやすく通気性の良い、水もちと水はけの良い土が必要です。

水はけもよく(通気性＝透水性があり)、水持ちもよい(保水性がある)という、相反する二つの条件を持つということは、土の構造として、団粒構造の土です。

土が団粒化すると植物の根張りが良くなり、植物が元気になります。又、団粒化すると、通気性の向上、保水力の向上で日照りに強くなる、水はけが良くなり根腐れの防止になるといわれています。

そして、土壌形成にもう一つ重要なのが、土着菌です、その土地に昔からあり、その地域環境に強く、しかも特定なものではなく多様な土着菌こそが大切であると言われております。

そこで『グラセーラ』を適量、土に混ぜることで団粒構造が可能になり、多孔質をうまく活用して土着菌を増やす効果も期待できます

日本の農地では20～30%UP、中国の農地においてはなんと40～48%UPの収穫量になったというデータもあります。ベトナムの農地では通常の生育より1週間早く収穫出来たと報告を受けております。

グラセーラを混ぜた土壌は連作障害が起こらない農地もあります。

キュウリの比較栽培

土8L、細粒グラセーラ2L、
肥料100gを混合テスト区
対照として土と肥料100g
合計10Lとして対照区とする



混合後のポット
(テストポット)

対照ポット



対照区 1株あたり 7本
テスト区(グラセーラ入り) 1株あたり 9本
テスト区(グラセーラ入り)の方が対照区より
28.5%の収穫率向上が見られた。



テストポット根の部分
(グラセーラ入り)

対照ポット 根の部分

根の発育状況を見た写真である。
向かって右側が対照区 左側がテスト区
主根と細根両方で発育に差が認められる。

結果として、グラセーラを加えたテスト区において、
収穫量、根の発育などグラセーラを混合していない
対照区に比べてハッキリと違いは認められた。

ミニトマトテスト栽培

ミニトマト栽培にてグラセーラを使用して栽培育成試験を行った。
上質な苗を同じ条件で育てた。味は普段以上に甘くサクランボのような色
艶が見られた、収穫結果はグラセーラなしが60個、グラセーラ粗い粒(5～
10mm)を混ぜたものが100個、グラセーラ細かい粒(2～4mm)を混ぜたも
のが70個でありグラセーラ入りは収穫に差異が認められる結果であった。



ミニトマトの根の発育状況を観察した結果、根の細根の数や、中心の太い根の発育の違いが明確に表れていることが判明した。

この差が茎の太さや実の数にも大きな影響を与えたものと考えられる。

グラセーラの混入率は約33%（野菜の土が67%）で完全混合しています。

土は全て同じで苗も同じ会社の同じ苗を用いました。

味は甘くてみずみずしく、そのまま食べるのが最も美味しかったです。

グラセーラの保水機能や透水性が根を肥やすのに効果的であると感じた。



キャベツ畑

グラセーラ混入と無しでは生育スピードが全く違います



キャベツ畑 2週間後



上がグラセーラ無し、下がグラセーラ混入
葉の大きさが全く違います。



中国の農地栽培 ①

いんげん豆



左がグラセーラ混入栽培
右が通常栽培
大きさ、太さも違います

ピーマン



左がグラセーラ混入栽培
右が通常栽培
大きさ、身の厚さも違います

中国の農地栽培 ②



グラセーラ混入栽培



通常栽培



中国農場使用方法紹介



中国農場果樹栽培にも



ベトナム チャビン省 農場

発芽は予定より遅れて1週間後に発芽「通常は3日ぐらい」
グラセーラ混入、混入無し共に水やり、日当たりの条件は全く同じ
1ヶ月後発育に変化が発生
グラセーラ混入部分は根付きが良いので、成長に差が現れた
間引きしないため乱雑に育成しているが順調に育っている。
農家の方曰く、次回からも土そのものが柔らかいので
土壌改良には最適であると話していた。



ベトナム チャビン省 農場 生育状況

グラセーラなしの表土ph は 5、0グラセーラ混入の表土は 6、0

地中20cm ph は なし4、5 と混入5、0

地中40cm ph は なし3、5 と混入3、5でした。

また、伝導率EC は グラセーラなしは802 に対して混入は 120で土壤溶液中の塩類濃度の著しい低下が見られた、このことから塩害が浸透している土壤でも、塩害を防ぐことがわかり、今まで作物が育たなかった畑でも育てることができた。

グラセーラ 無し

根の違いが明らかです

グラセーラ 混入

