

Glass that Goes beyond Glass
超越玻璃的玻璃

Tough
超強

Thin
超薄

Light
超輕

Coating
鍍膜



超薄玻璃
Ultra-thin Glass

G-Leaf™

— 藉由**薄度**開拓玻璃的應用前景！ —
Thinner than Conventional Glass!

Thin

GLASS FOR FUTURE

 日本電氣硝子

追求玻璃的薄度，促進技術革新！

Ultra-thin Glass, Key to Further Innovations!

厚度數十微米的高科技玻璃G-Leaf™為何？

G-Leaf™是採用溢流成型法製作的玻璃，是厚度在0.2mm(200μm)以下的超薄玻璃之總稱。該產品曾獲得多次獎項。

What is G-Leaf™?

Ultra-thin glass G-Leaf™, which is under 0.2mm(200μm) thick, is a superior material formed by overflow technology. It won many prizes around the world.

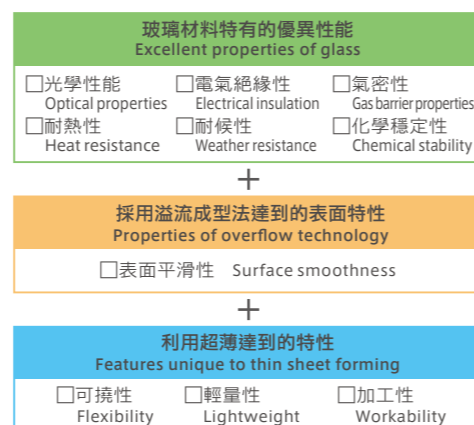


力求應用於更廣泛之領域，促進未來社會的發展。

超薄玻璃G-Leaf™是致力於追求薄度下所誕生的成果。這種玻璃非常輕盈、平滑，柔軟性超群，達到可以捲曲的程度。加上原本玻璃的特性，可望其作為新材料運用於更廣泛的領域，促進技術和產品進步。

Broad Applications Enabled, Contributing to Future Society

G-Leaf™ is extremely light, smooth and excellent in flexibility that makes the glass bendable while keeping the conventional characteristics of glass. G-Leaf™ is a new material expected to contribute to the advancement of technologies and products in a wider range of fields.



開關玻璃新用途的G-Leaf™之特點

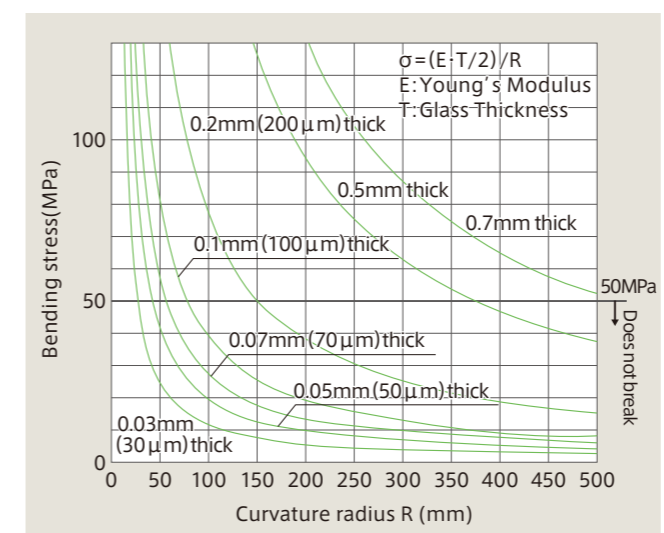
Features of G-Leaf™, Expanding the Possibilities of Glass

可撓性

超薄玻璃G-Leaf™徹底顛覆了“玻璃是不能彎曲的”此概念，其輕薄程度可像樹脂一樣柔韌彎曲，是蘊藏無限可能性的新一代材料。

Flexibility

Because of its extreme thinness, G-Leaf™ can be flexibly bent like a film, demonstrating tremendous potential.



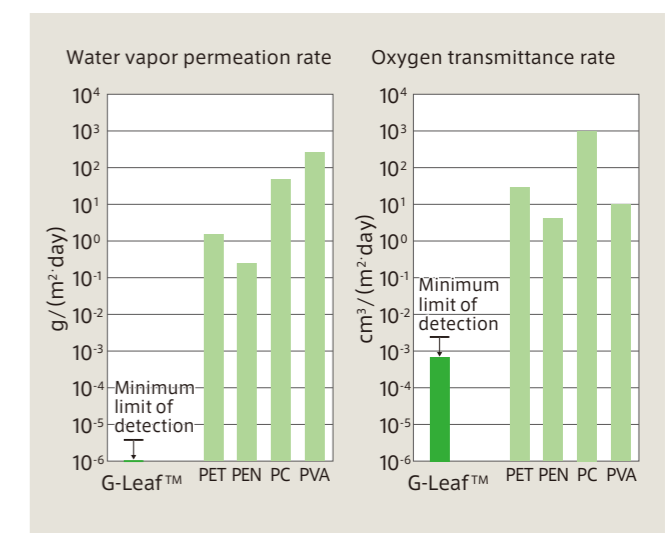
※玻璃的破裂因端面、表面缺陷情況而異，本圖是以考慮彎曲應力50MPa的疲勞長期強度為標準。
※Glass breakage depends on defects located on edges and/or surface of glass substrates. In the above figure, 50MPa is considered to be the boundary between "broken" and "not broken" conditions.

氣密性

G-Leaf™保持了玻璃原有的特點—氣密性。因此可望應用於更加廣泛的領域上，促進技術和產品的進步。

Gas Barrier Properties

Since G-Leaf™ is maintaining gas barrier properties, it is expected to contribute to the advancement of technologies and products in a broad range of fields.



※超薄玻璃G-Leaf™的穿透率均在檢測下限以下。
※Both the water vapor permeation rate and oxygen transmittance rate are lower than minimum limit of detection.

從資訊產品到環境，用途廣泛 Broad uses from information terminals to environmental appliances



OLED照明
既薄又輕，氣密性出色，充分保護不耐濕氣的OLED元件。
OLED lighting
Thin, light, and with excellent gas barrier performance, G-Leaf™ protects OLED devices, which are sensitive to humidity.



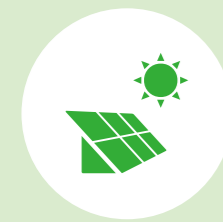
OLED顯示器
充分發揮氣密性、耐候性、表面平坦性等優勢，有助於促進新一代顯示器的技術革新。
OLED displays
Excellent gas barrier properties, weatherability and surface flatness contribute to development of next-generation displays.



觸控面板
替代觸控傳感用樹脂基板。
Touch panels
As an alternative to touch-sensor films.



穿戴裝置
充分發揮輕盈、可撓性特點，適用於新一代穿戴裝置。
Wearable devices
Lightness and flexibility support next-generation wearable devices.



太陽能電池
既薄又輕，隔絕氣體和水分，有助於促進能源領域的技術進步。
Solar cells
Being thin and light, airtight and watertight, G-Leaf™ enables further advancement in the energy field.



可撓性顯示器
可替代樹脂，適用於可撓性設備。
Flexible displays
As an alternative to resin, it can be used for flexible devices.

表面品質

採用溢流成型法，使產品擁有極為平滑之表面。

Surface Quality

Formed by overflow technology, G-Leaf™ has an extremely smooth and flat surface.



溢流法(表面未拋光)
Ra=0.2nm
Non-polished surface formed by overflow technology
Ra=0.2nm



表面拋光
Ra=0.5nm
Polished surface
Ra=0.5nm

出貨型態

亦可提供捲筒型產品，請洽詢本公司。

Shipping Form

Rolled-up forms are available.





超薄玻璃

G-leaf™ 蘊含了“既如葉子 (leaf) 般輕薄, 又環保的玻璃 (綠色玻璃)”的意義。

G-Leaf™ is derived from a desire to create a green, environmentally friendly glass that is as thin and light as a leaf.

Glass/Green

Lightweight

ecological

advanced

flexible

“玻璃+鍍膜”—拓展玻璃的用途和可能性

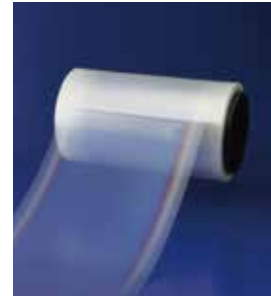
可於玻璃上塗布各類功能膜 (ITO、抗反射、防眩、防污等)。

亦有遮斷紫外線或遮斷紅外線等加工, 具多樣化的應用領域。

多樣的玻璃材料及形狀再加上鍍膜技術, 可發揮玻璃的最大可能性, 提供具有高附加價值的玻璃材料, 藉以滿足各種新型態的需求。

Glass Coating Technology — Pursuing Possibilities in Glass Uses

Coating with various functions (ITO, Anti-Reflection, Anti-Glare and Anti-Fingerprint) can be added to the glass. Application for various purposes, such as cutting only ultraviolet rays or infrared rays, is also available. By adding the coating technologies to an abundant range of glass materials and shapes, we will provide high value-added glass materials that can satisfy various new purposes.



Ultra-thin glass roll with ITO coating

Properties

Glass Code		OA-10G	
Density		$\times 10^3 \text{kg/m}^3$	2.46
Thermal Expansion Coefficient	30~380°C	$\times 10^{-7}/\text{K}$	38
Strain Point		°C	650
Young's Modulus		GPa	73
Poisson's Ratio			0.2
Volume Resistivity Logp	350°C	$\Omega \cdot \text{cm}$	12.0
Dielectric Constant	1MHz, RT		5.3
tan δ	1MHz, RT		0.001
Light Transmittance	$\lambda=550\text{nm}$	%	92
Refractive Index (nd)	587.6nm		1.52
Chemical Durability	10% HCl (80°C-60min)		No Visual Change
	63 BHF (20°C-3min)		No Visual Change
Alkali Oxide Content		wt%	0.1 max.
As, Sb Content		wt%	Less than 0.1

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