

EMPOWERING



SOLAR EFFICIENCY

AN10

Extra clear float glass, coated with Transparent Conductive Oxide (TCO)

采用透明导电性氧化物进行镀膜处理的高透光性的浮法玻璃基板

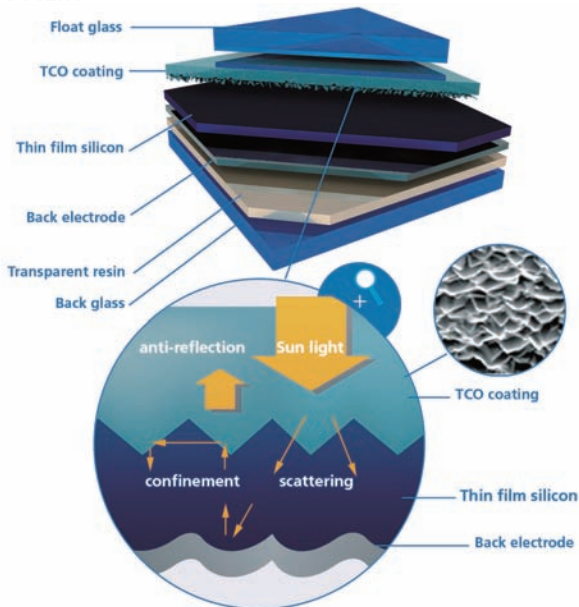
The right balance between transmission, haze and conductivity of the TCO coating enables for improving the thin film cell efficiency. Combined with the excellent durability of glass, AN10 is the product of choice for thin film photovoltaic modules (medium to high efficiency amorphous silicon).

本公司采用镀膜处理工艺实现了太阳光的透光率、吸收性和低电阻之间的最佳平衡，大大提高了薄膜太阳能电池的发电效率。AN10结合了优质玻璃的优异耐久性能，非常适合用于中、高效率的非晶硅薄膜太阳能电池模块。

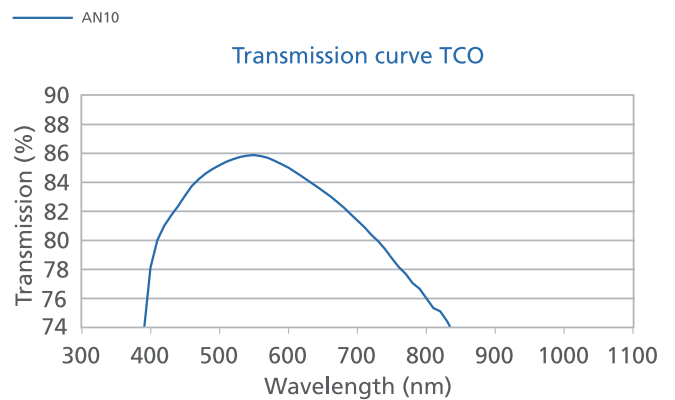
PRODUCT DESCRIPTION

| | |
|--------------|--|
| Applications | Front glass for thin film photovoltaic modules(amorphous silicon) |
| Coating | Barrier layer SiO ₂ based Conductive coating SnO ₂ :F based Deposition CVD |
| 用途 | 非晶硅薄膜太阳能电池用玻璃基板 (α-Si) |
| 镀膜处理 | 保护层 SiO ₂ based 导电膜 SnO ₂ :F based 制膜 CVD |

THIN FILM



Transmittance curve



ASAHI GLASS CO., LTD.

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MAIN CHARACTERISTICS *

| | | |
|---|----------|---|
| Transmission (%) | > 80 | Average between 400 and 1000nm |
| Transmission measured with index matching liquid CH2I2 (haze compensation) on 3.2mm (1/8") glass. | | |
| AGC can help evaluating these values according to other standards and/or to the specificities of the final application. | | |
| Resistivity (Ohms per square) | 10 | 4-points method |
| Haze (%) | > 10 | Hazeguard, illuminant C, 2° (Standard D1003-95) |
| Specific weight (kg/m ²) | 8 | For 3.2mm (1/8") glass |
| Delivery conditions | Annealed | EN12150 |

MECHANICAL CHARACTERISTICS *

| | | |
|---------------------------------|------|--------------------|
| Mechanical strength (MPa) | 40 | |
| Young modulus (GPa) | 70 | EN572 |
| Poisson ratio | 0.2 | EN572 |
| Hardness Moh (scratch hardness) | 6 | EN572 |
| Knoop (indentation hardness) | 470 | Indenter load 500g |
| Density (kg/m ³) | 2500 | EN572, at 18°C |

THERMAL CHARACTERISTICS *

| | | |
|--|------|-------------------------------|
| Hemispherical emissivity | 0.84 | Between -18°C and 66°C |
| Expansion coefficient (10 ⁻⁶ 1/K) | 9 | EN572, between 20°C and 300°C |
| Specific heat (J/kg/K) | 720 | EN572 |
| Thermal conductivity (W/m/K) | 1 | EN572 |
| Softening point (°C) | 722 | |
| Annealing point (°C) | 552 | |
| Strain point (°C) | 500 | |

GLASS CHEMICAL COMPOSITION *

| | | |
|--|----------|-------|
| Silicon dioxide (SiO ₂ , %) | 69 to 74 | EN572 |
| Sodium oxide (NaO, %) | 12 to 16 | EN572 |
| Calcium oxide (CaO, %) | 5 to 12 | EN572 |
| Magnesium oxide (MgO, %) | 0 to 6 | EN572 |
| Aluminium oxide (Al ₂ O ₃ , %) | 0 to 3 | EN572 |
| Trace elements (FeO, etc., %) | <1 | |

AGC is committed to environmental stewardship through the use of recyclable materials and sustainable process in the manufacturing and distribution of our state-of-the-art, energy efficient flat glass products.

In North America, the product performs to the appropriate ASTM standards.

*The information contained in this datasheet is intended to assist you in designing with AGC materials. It is not intended to and does not create any warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose. The user is responsible for determining the suitability of AGC materials for each applications.

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EMPOWERING



SOLAR EFFICIENCY

ANS™ 14

Extra clear float glass, coated with Transparent Conductive Oxide (TCO)

采用透明导电性氧化物进行镀膜处理的高透光性的浮法玻璃基板

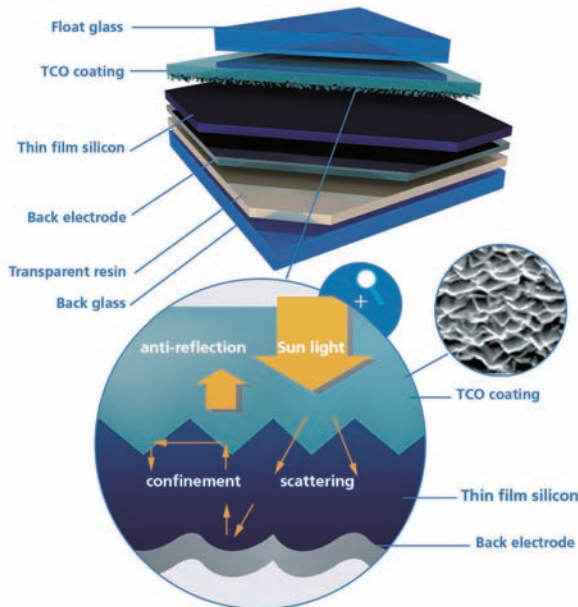
The right balance between transmission, haze and conductivity of the TCO coating enables for improving the thin film cell efficiency. Combined with the excellent durability of glass, ANS™14 is the product of choice for thin film photovoltaic modules (medium to high efficiency amorphous silicon).

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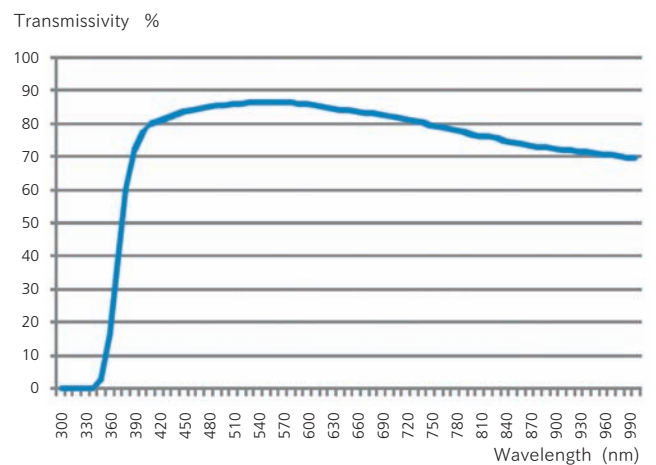
PRODUCT DESCRIPTION

| | |
|--------------|--|
| Applications | Front glass for thin film photovoltaic modules(amorphous silicon) |
| Coating | Barrier layer SiO ₂ based Conductive coating SnO ₂ :F based Deposition CVD |
| 用途 | 非晶硅薄膜太阳能电池用玻璃基板 (α-Si) |
| 镀膜处理 | 保护层 SiO ₂ based 导电膜 SnO ₂ :F based 制膜 CVD |

THIN FILM



Transmittance curve



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MAIN CHARACTERISTICS *

| | | |
|---|----------|---|
| Transmission (%) | 85 | Average between 400 and 1000nm |
| Transmission measured with index matching liquid CH2I2 (haze compensation) on 3.2mm (1/8") glass. | | |
| AGC can help evaluating these values according to other standards and/or to the specificities of the final application. | | |
| Resistivity (Ohms per square) | 14 | 4-points method |
| Haze (%) | > 10 | Hazeguard, illuminant C, 2° (Standard D1003-95) |
| Specific weight (kg/m ²) | 8 | For 3.2mm (1/8") glass |
| Delivery conditions | Annealed | EN12150 |

MECHANICAL CHARACTERISTICS *

| | | |
|---------------------------------|------|--------------------|
| Mechanical strength (MPa) | 40 | |
| Young modulus (GPa) | 70 | EN572 |
| Poisson ratio | 0.2 | EN572 |
| Hardness Moh (scratch hardness) | 6 | EN572 |
| Knoop (indentation hardness) | 470 | Indenter load 500g |
| Density (kg/m ³) | 2500 | EN572, at 18°C |

THERMAL CHARACTERISTICS *

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| Hemispherical emissivity | 0.84 | Between -18°C and 66°C |
| Expansion coefficient (10 ⁻⁶ 1/K) | 9 | EN572, between 20°C and 300°C |
| Specific heat (J/kg/K) | 720 | EN572 |
| Thermal conductivity (W/m/K) | 1 | EN572 |
| Softening point (°C) | 722 | |
| Annealing point (°C) | 552 | |
| Strain point (°C) | 500 | |

GLASS CHEMICAL COMPOSITION *

| | | |
|--|----------|-------|
| Silicon dioxide (SiO ₂ , %) | 69 to 74 | EN572 |
| Sodium oxide (NaO, %) | 12 to 16 | EN572 |
| Calcium oxide (CaO, %) | 5 to 12 | EN572 |
| Magnesium oxide (MgO, %) | 0 to 6 | EN572 |
| Aluminium oxide (Al ₂ O ₃ , %) | 0 to 3 | EN572 |
| Trace elements (FeO, etc., %) | <1 | |

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In North America, the product performs to the appropriate ASTM standards.

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EMPOWERING



SOLAR EFFICIENCY

VU (TCO Single Texture)

Ultra thin TCO glass substrate, coated with Transparent Conductive Oxide(TCO)

采用透明导电性氧化物 (TCO) 进行了镀膜处理的玻璃基板 (超薄板型)

The right balance between higher transmission, haze and conductivity of the TCO coating, enables for improving the thin film cell efficiency. And the thinner glass (0.7mm:Concept product) has similar effect as extra clear glass.

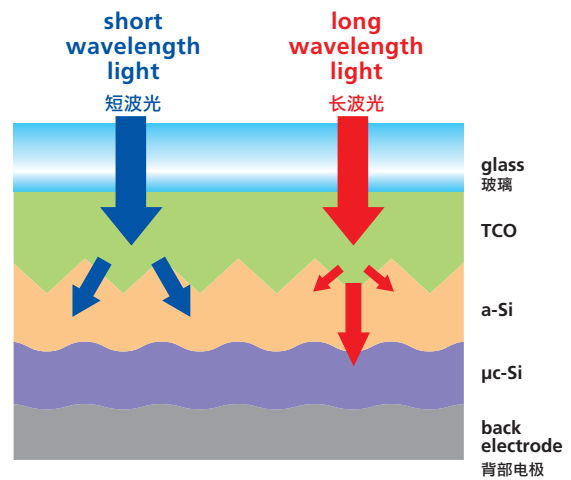
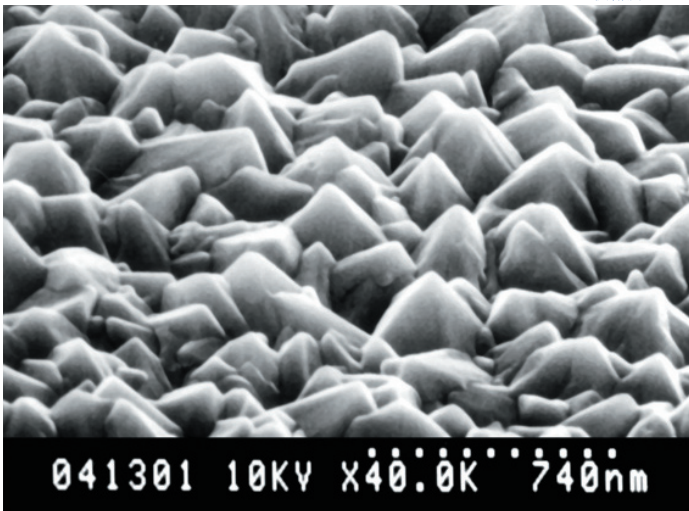
本公司采用镀膜处理工艺实现了太阳光的透光率、吸收性和低电阻之间的最佳平衡，大大提高了薄膜太阳能电池的发电效率。而且，通过薄板化 (0.7mm:参考产品) 可以带来与高透光性玻璃类似的效果。

PRODUCT DESCRIPTION

| | |
|--------------|--|
| Applications | Front glass for thin film photovoltaic modules(a-Si/ μ c-Si) |
| Coating | Barrier layer SiO ₂ based Conductive coating SnO ₂ :F based Deposition CVD |
| 用途 | 非晶硅薄膜太阳能电池用玻璃基板 叠层用 (a-Si/ μ c-Si) |
| 镀膜处理 | 保护层 SiO ₂ based 导电膜 SnO ₂ :F based 制膜 CVD |

VU型

模糊度 20%



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EMPOWERING



SOLAR EFFICIENCY

HU (TCO Double Texture)

Extra clear float glass, coated with Transparent Conductive Oxide (TCO)

用透明导电氧化物 (TCO) 进行了镀膜处理的高透光性浮法玻璃基板

The right balance between transmission, haze and conductivity of the TCO coating, enables for improving the thin film cell efficiency. AGC's concept of HU is to scatter all wavelength light by combination of big and small textures as shown here. Through this mechanism, all wave length light should be utilized in tandem solar cell very effectively.

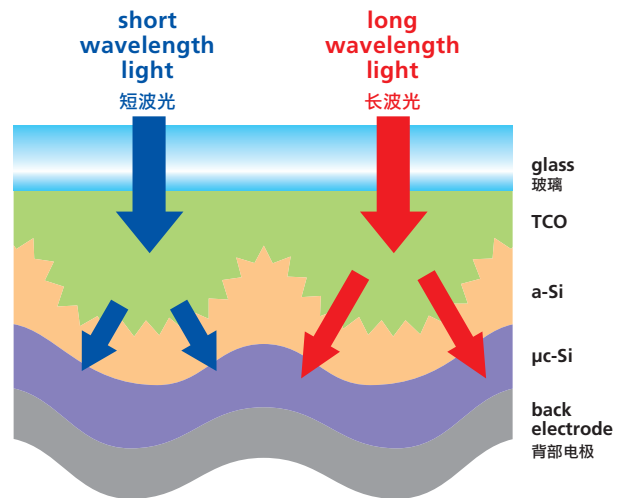
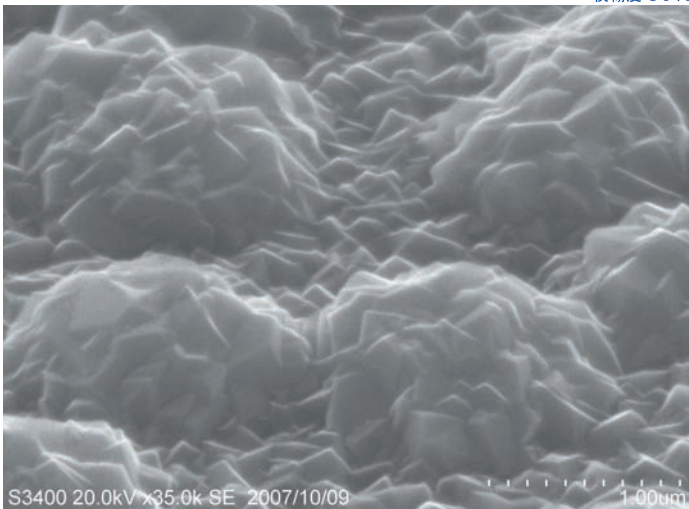
本公司采用镀膜处理工艺实现了太阳光的透光率、吸收性和低电阻之间的最佳平衡，大大提高了薄膜太阳能电池的发电效率。HU采用大小各异的突状结构使长短波长的光线均在电池内部产生散射。这样，在叠层型太阳能电池内部，所有波长的光均可得到有效利用。

PRODUCT DESCRIPTION

| | |
|--------------|--|
| Applications | Front glass for thin film photovoltaic modules(a-Si/ μ c-Si) |
| Coating | Barrier layer SiO ₂ based Conductive coating SnO ₂ :F based Deposition CVD |
| 用途 | 非晶硅薄膜太阳能电池用玻璃基板 叠层用 (a-Si/ μ c-Si) |
| 镀膜处理 | 保护层 SiO ₂ based 导电膜 SnO ₂ :F based 制膜 CVD |

W-构造 HU型

模糊度 90%



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