

EMPOWERING

AGC
SOLAR

SOLAR EFFICIENCY

参考出品 Concept product

MODULE MATERIAL

HU (TCO Double Texture)

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

透明導電性酸化物をコートした高透過のフロートガラス基板

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.

太陽光の透過率、吸収性と低抵抗の適切なバランスを実現するコーティングにより薄膜太陽電池の発電効率を向上させています。

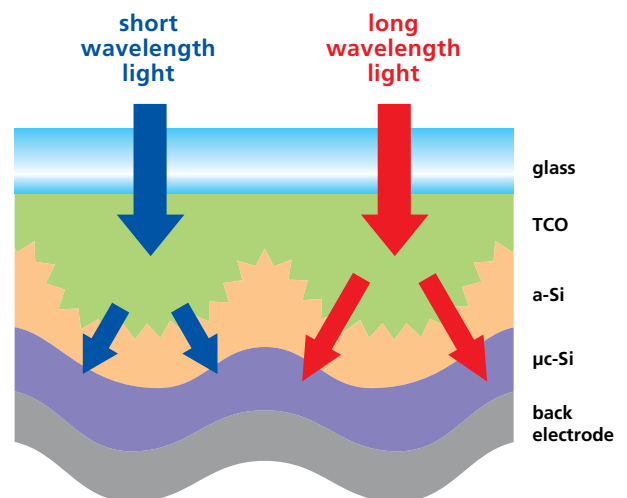
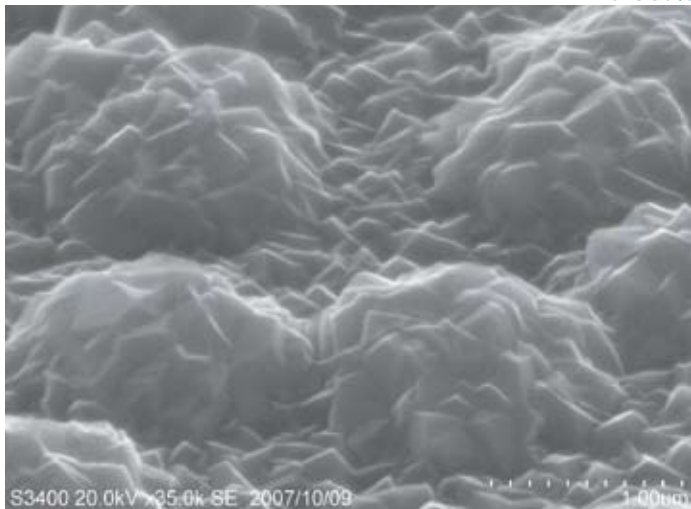
HUは、大小の膜構造の組み合わせにより、短波長のみならず長波長の光をセル内に散乱させられます。これにより、タンデム型ソーラーセル内ですべての波長が効果的に活用されます。

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	薄膜シリコン太陽電池用ガラス基板 タンデム用(a-Si/ μ c-Si)
コーティング	保護層 SiO ₂ based 導電膜 SnO ₂ :F based 製膜 CVD

W-texture Type-HU

Haze 90%



ASAHI GLASS CO., LTD.

3-5-12 Taramicho, Suita-shi, Osaka 564-0062 JAPAN Contact Phone: +81 6 6338 8099 Fax: +81 6 6338 8319

E-mail: sales.asia@jp.agc-solar.com URL: <http://www.agc-solar.com>

旭硝子株式会社 〒564-0062 大阪府吹田市垂水町 3-5-12 TEL: 06-6338-8099 FAX: 06-6338-8319

WORLDWIDE

Chaussée de La Hulpe, 166 1170 Brussels Belgium Phone: +32 2 674 34 01 Fax: +32 2 674 31 22 E-mail: sales@agc-solar.com

EMPOWERING



SOLAR EFFICIENCY

MODULE MATERIAL

VU (TCO Single Texture)

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

透明導電性酸化物をコートしたガラス基板(超薄板タイプ)

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.

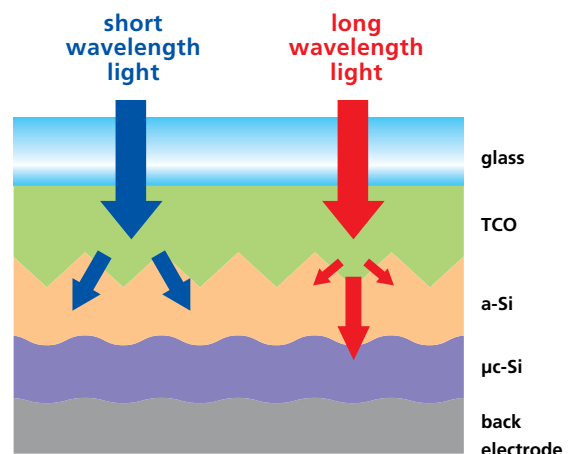
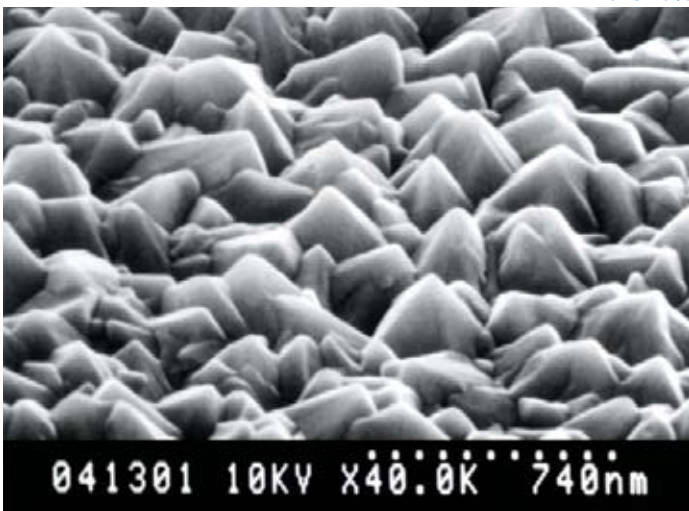
太陽光の透過率、吸収性と低抵抗の適切なバランスを実現するコーティングにより薄膜太陽電池の発電効率を向上させています。また、薄板化(0.7mm:参考出品)により、透過性の高いガラスと類似の効果をもたらします。

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	薄膜シリコン太陽電池用ガラス基板 タンデム用(a-Si/ μ c-Si)
コーティング	保護層 SiO ₂ based 導電膜 SnO ₂ :F based 製膜 CVD

Type-VU

Haze 20%



ASAHI GLASS CO., LTD.

3-5-12 Taramicho, Suita-shi, Osaka 564-0062 JAPAN Contact Phone: +81 6 6338 8099 Fax: +81 6 6338 8319

E-mail: sales.asia@jp.agc-solar.com URL: <http://www.agc-solar.com>

旭硝子株式会社 〒564-0062 大阪府吹田市垂水町 3-5-12 TEL: 06-6338-8099 FAX: 06-6338-8319

WORLDWIDE

Chaussée de La Hulpe, 166 1170 Brussels Belgium Phone: +32 2 674 34 01 Fax: +32 2 674 31 22 E-mail: sales@agc-solar.com

EMPOWERING



SOLAR EFFICIENCY

MODULE MATERIAL

ANS 14

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

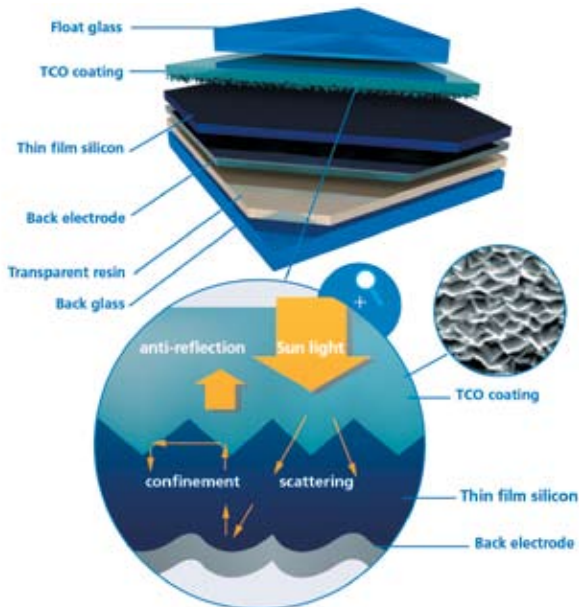
透明導電性酸化物をコートした高透過のフロートガラス基板

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, **ANS14** is the product of choice for thin film photovoltaic modules (medium to high efficiency amorphous silicon).

太陽光の透過率、吸収性と低抵抗の適切なバランスを実現するコーティングにより薄膜太陽電池の発電効率を向上させます。

ANS14は優れたガラスの耐久性とあいまって、中・高効率のアモルファスシリコン薄膜太陽電池モジュール向けの製品となります。

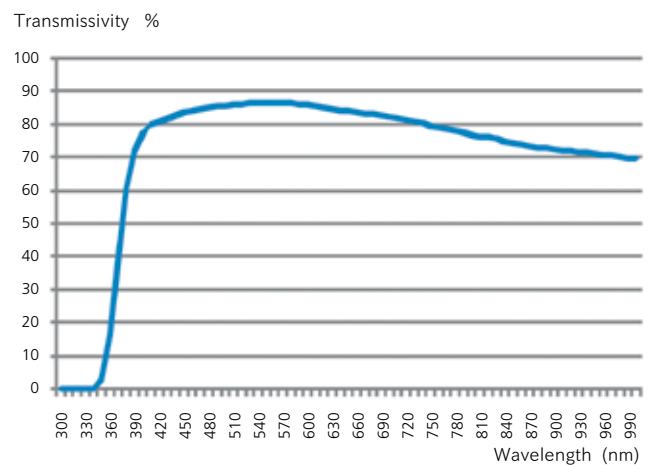
THIN FILM



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	薄膜シリコン太陽電池用ガラス基板 (a-Si)
コーティング	保護層 SiO ₂ based 導電膜 SnO ₂ :F based 製膜 CVD

Transmittance curve



ASAHI GLASS CO., LTD.

3-5-12 Taramicho, Suita-shi, Osaka 564-0062 JAPAN Contact Phone: +81 6 6338 8099 Fax: +81 6 6338 8319

E-mail: sales.asia@jp.agc-solar.com URL: <http://www.agc-solar.com>

旭硝子株式会社 〒564-0062 大阪府吹田市垂水町 3-5-12 TEL: 06-6338-8099 FAX: 06-6338-8319

WORLDWIDE

Chaussée de La Hulpe, 166 1170 Brussels Belgium Phone: +32 2 674 34 01 Fax: +32 2 674 31 22 E-mail: sales@agc-solar.com

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)	10	4-points method
Haze (%)	> 10	Hazeguard, illuminant C, 2° (Standard D1003-95)
Specific weight (kg/m2)	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/m3)	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.

FOR MORE INFORMATION

Worldwide: sales@agc-solar.com

Europe: sales.europe@eu.agc-solar.com

North America: sales.northamerica@na.agc-solar.com

Japan: sales.japan@jp.agc-solar.com

China: sales.china@jp.agc-solar.com

Asia: sales.asia@jp.agc-solar.com

India: ssheikh@aisglass.com