

Glass Operations

Glass Operations covers businesses with focus on flat glass and its use in architectural, automotive, and solar (photovoltaic) fields and maintains a leading share in these fields on a global basis. The architectural flat glass business is operated on a regional basis, with regions devising their respective product line-ups matching the particular characteristics of their respective geographic regions. The automotive glass business is characterized by global scale and operation, in line with the requirements of an automotive industry that operates on a global basis.

• Global market share (AGC estimates)

Flat glass **No.1**

Automotive glass
(new vehicle market) **No.1**



Marunouchi Park Building



Low-E double-glazed glass featuring high insulation and heat-shielding properties



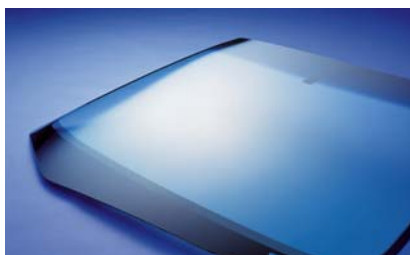
Low-E double-glazed glass is used in Margaret Hall, Sagami Women's University



Photovoltaic cover glass "Solite™"



Color glass for interior surface wall



Safety glass for automobile windshields that will hold together when shattered



Tempered glass for automobile side windows, shock-resistant and specially treated to shatter into granules if broken

As part of our business foundation, we constantly strive to meet customer needs for superior performance by providing an extensive line-up of products, with a leading global share.

The AGC Group currently operates approximately 40 float glass furnaces around the world, supplying a wide variety of glass products to markets in Europe, North America, Japan and Asia. In 2009, the AGC Group integrated its flat glass business and automotive glass business to enhance its global manufacturing and supply structure through seamless production and operation ranging from raw glass production, processing and making into final glass products.

In the Glass Operations, the AGC Group undertakes manufacturing of glass in an environment-friendly manner through efficient processes that have minimal impact on the environment. The Group has a well-focused marketing network to promote the use of glass products matching the local trends and characteristics

of geographic regions. "Benchmarking" and "Sharing of Best Practices" are the regular features that are being promoted in the pursuit of "Continuous Improvement" across the Group.

The AGC Group also actively promotes the production and wide adoption of glass for photovoltaic and concentrating solar power generation use and energy-saving glass (Low-E double-glazed glass), thus targeting to expand business by responding to growing demands from emerging markets.

For automotive glass, the Group provides high-quality products and services through its global network in a timely manner to the global production bases of automakers. The business includes development and provision of high added-value products to be used for compact cars and ecologically friendly cars.

PairPlus™: Ecoglass for remodeling



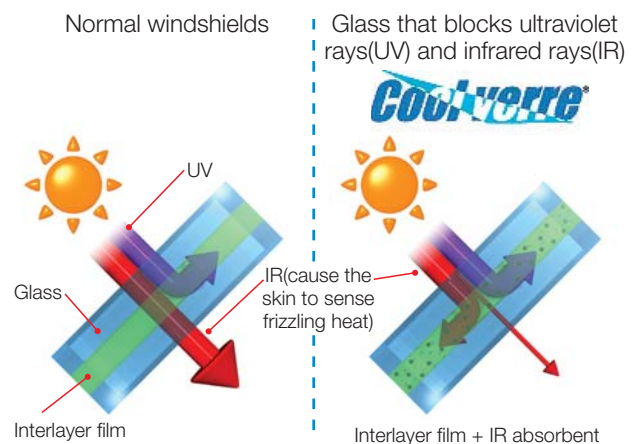
"PairPlus™" is glass that incorporates an attachment frame into double glazing so that the unit can be installed in a single glazing sash used in an existing house.

Photovoltaic TCO*1 glass substrates



Glass substrates with TCO films which function as electrodes for thin-film silicon photovoltaic module.
*1 TCO: Transparent Conductive Oxide

Coolverre™ : contributing to improved energy-saving performance of automobiles



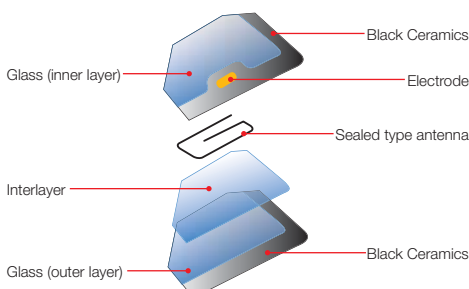
Coolverre™ is a thermal insulating laminated glass for automobiles that blocks infrared rays (IR) and ultraviolet rays (UV).

TOPICS

Going ahead of the times —the embedded DTV compatible glass antenna

In Japan, all analogue broadcasting will be replaced by digital broadcasting in July, 2011. The AGC Group launched volume manufacturing of in-car antennas in July, 2007, going ahead of the times. The antenna is the world's first glass antenna designed under a new concept of the embedded highly receptive sealed type antenna, with distinctive appearance, inside the laminated glass. Its greatest feature is the adoption of the technology that allows the signals received at the embedded antenna to be transmitted to the electrodes on the in-car glass surface with minimum loss. Therefore, the installation can be done without complicated electrical connection setup.

It has been used widely as an automotive antenna because it will not sacrifice the car-body design and is easier to maintain, more durable and can be lightweight.



Structure of the embedded DTV compatible glass antenna

Non-wired, fire-resistant glass "Myboka™" contributes to improving the interior environment of buildings

The "Myboka™" glass released in December 2009 is a highly fire-resistant, non-wired glass with enforced thermal resistance. Currently, more than 90% of Japan's fire-resistant glass uses wire-reinforced glass. But the shortcoming was that it cannot secure a clear view because the wire blocks visibility. In recent years, as window sizes become larger, there has been an increasing demand for a fire-resistant glass that offers clear visibility. This is why AGC launched a plant exclusively for "Myboka™," and started sales of the product. In addition, by using "Myboka™" for double-glazing glass and Ecoglass (low-E double-glazed glass), the thermal resistance features on such products can be improved. AGC aims to contribute to preventing global warming and improving the interior environment of buildings by offering highly functional glass.



Wired glass

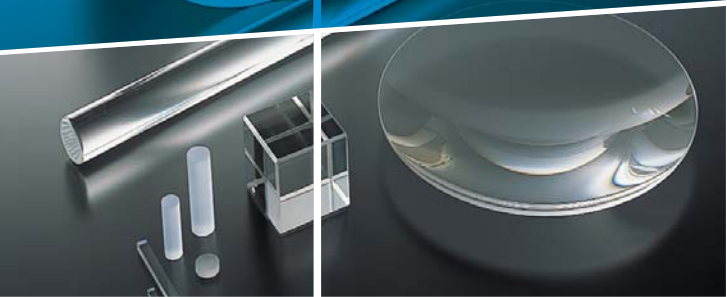
Myboka™

Electronics and Display Operations

Electronics and Display Operations covers businesses with focus on “display” and “electronic materials.” The display business offers glass for all major types of displays, including thin film transistor liquid crystal displays (TFT LCDs) and plasma display panels (PDPs), and enjoys a leading share of the global market in this area. The electronic materials business deals with fields, such as optoelectronics, storage, and new energy, which are expected to grow remarkably in the years ahead.

• Global market share (AGC estimates)

Glass substrates for TFT LCDs **No.2**
Glass substrates for PDPs **No.1**



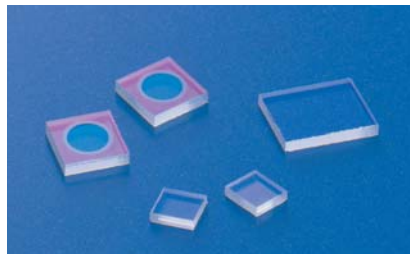
Glass substrates for TFT LCDs



Glass substrates for PDPs



Synthetic quartz glass



Optical planar devices



LCD backlight glass tubes

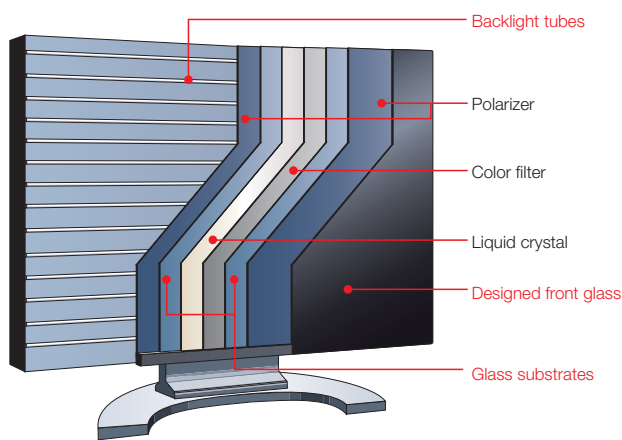


Micro glass lenses

We supply materials that are indispensable in numerous industries, and support the advancement of displays and other devices.

The AGC Group manufactures glass substrates for various types of displays, mainly thin film transistor liquid crystal displays (TFT LCDs) and glass substrates for plasma display panels (PDPs). The AGC Group will develop and offer products with high added value by responding to various market trends that include increasingly larger-sized LCD panels. The Group will also continue to improve its production system and enhance the productivity of existing facilities, as well as develop new production facilities.

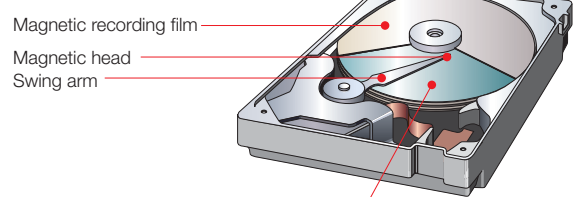
The structure of LCD



The AGC Group is targeting electronics and energy fields, focusing on the sectors of “semiconductor process materials,” “display materials,” “photonics components,” “storage materials,” and “energy materials” to cultivate this business as next-generation growth pillars.

The Group will endeavor to expand existing businesses and create new businesses by reinforcing its production technologies to provide high added-value products utilizing our strength of integrated production starting from raw materials and through the promotion of R&D in growth areas such as optical planar devices, micro glass lenses for digital cameras and glass substrates for hard disk drives.

The structure of hard disk drive

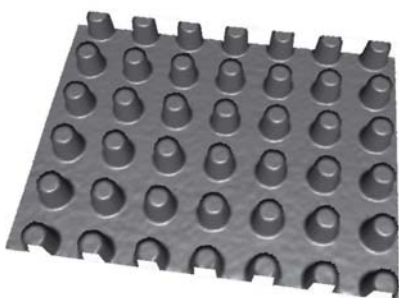


Glass substrates for hard disk drive
Magnetic disks used to record information on personal computers are made by forming a film of magnetic material on a glass substrate. A high degree of precision is required for this glass substrate, as even a microscopic irregularity will affect the forming of the film.

TOPICS

Contributing to the realization of the next-generation micro-fabrication technique, “Nanoimprint” lithography —Developing an environmentally friendly mold release production process—

“Nanoimprint” is ready to be mass-produced on a full scale as a next-generation micro-fabrication technique to be employed in electronics production. While it can raise processing precision at low cost, challenges in the past included the problem of how to remove the high-precision substrate from the molded product. Using the AGC Group’s long-accumulated fluorinated chemical technology as the core, the Group developed various mold-release processes using fluoropolymer-coating quartz substrates and fluorinated UV cured resin to replace conventional releasing agents. Because there is no need to use environmentally harmful solvents as releasing agents, this process can reduce environmental impact. We plan to promote this process in the manufacturing processes for light-emitting diodes (LEDs), photovoltaic devices, and semiconductors in the future.



An example of micro-fabrication using “Nanoimprint” technology

Launching sales of FONTEX™ —a commercial plastic optical fiber enabling the world’s highest transmission speed

The AGC Group plans to start sales of FONTEX™ (the name is derived from a word meaning “fountain of light”), a new fluoropolymer-based plastic optical fiber (POF), starting July 2010. FONTEX™ is the world’s first optical fiber product that combines high-capacity data communication at speeds of 10 Gbps (Gigabit per second) and secure data transmission even when bent, which is something we could never have dreamed of achieving with the existing silica optical fibers.

FONTEX™ is the optimal choice for products that are subject to be handled roughly and require high-capacity data transmission such as wiring displays for high-definition televisions and 3D televisions, which have been drawing public attention recently, and connecting peripheral devices to computers. Also, FONTEX™ is being studied for adoption in the medical field and by data centers because of its feature of generating no electromagnetic noise and consuming little power.

In addition, the AGC Group participates as a core member in a research project titled “Plastic optical fiber for the world’s highest data transmission speed,” which was decided to secure a grant from the “Funding Program for World-Leading Innovative R&D on Science and Technology” provided by the Cabinet Office of the Japanese Government. We will aim at achieving a further ultra-high transmission speed (40 Gbps or above) on a volume production level.

AGC will venture into the markets for home information appliances and other wide-ranging fields in the rapidly growing markets for optical cables. We will accelerate the release of new products by leveraging our marketing and development capabilities.



Cross-sectional photo of FONTEX™ capable of high-capacity data transmissions

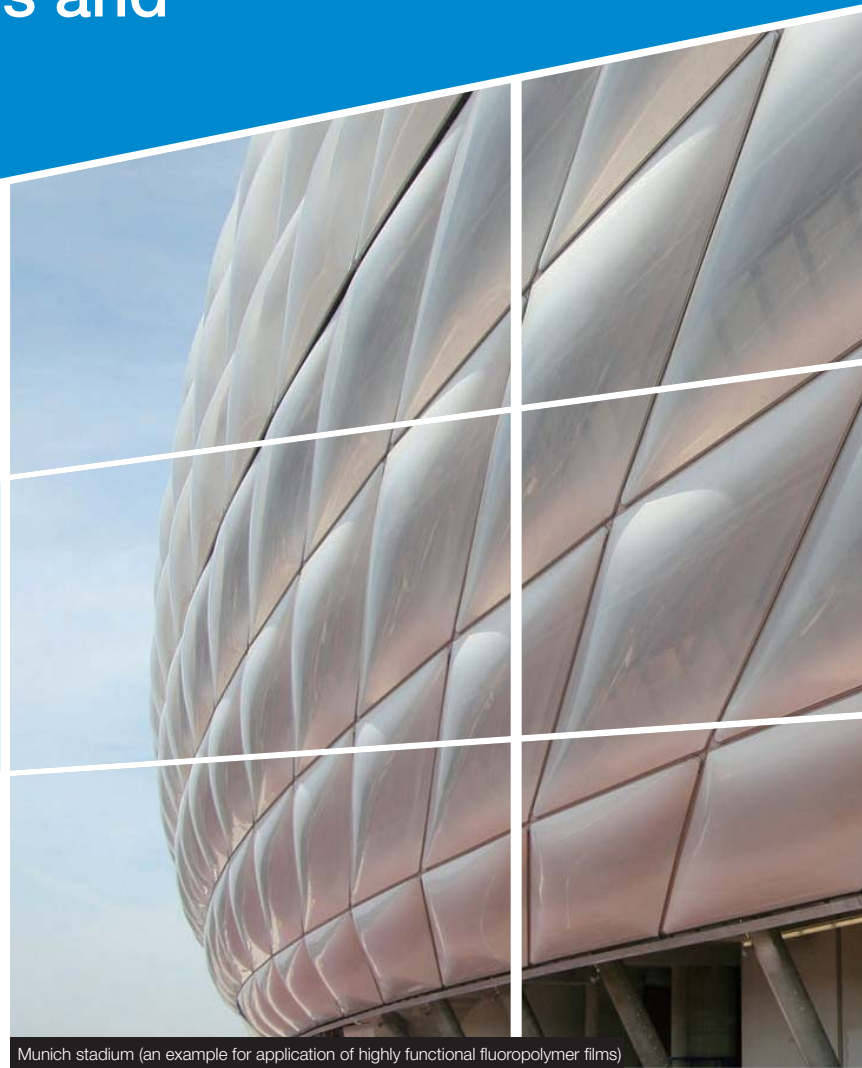
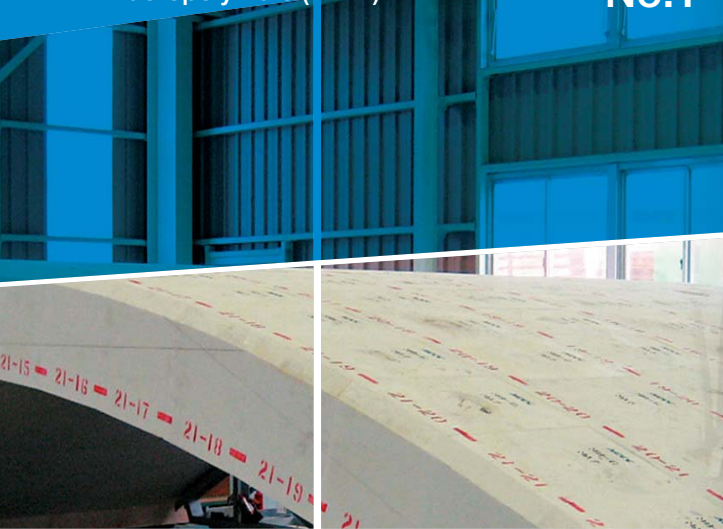
Chemicals Operations and Other Operations

Chemicals Operations conducts businesses with focus on “chlor-alkali & urethane” and “fluorochemicals & specialty chemicals,” and it enjoys a leading global share in fluoropolymers (ETFE) for highly functional fluoropolymer films and other essential applications.

Other operations include ceramics, logistics and engineering businesses.

• Global market share (AGC estimates)

Fluoropolymers (ETFE) **No.1**



Munich stadium (an example for application of highly functional fluoropolymer films)



CYTOP™ transparent fluoropolymers for pellicle coating in semiconductor applications



The Akashi Kaikyo Bridge, treated with highly weather-resistant Lumiflon™ fluoropolymer coating



Asahi Guard™ fluorinated water and oil repellents for coating



Flemion™ ion-exchange membranes



AFLAS™ fluoroelastomers



Roiceram™-C fine ceramics (silicon carbide)

We fulfill the latest needs through chemical technologies,
and develop extensive operations in ceramics, logistics and engineering.

● Chemicals Operations

The AGC Group's Chemicals Operations was originally established in 1917 to internally supply soda ash, a source material for flat glass. We are expanding our business domain to include basic chemicals essential to the industry such as caustic soda and hydrochloric acid as well as numerous value-added fluorinated products applying fluorochemicals, AGC's core technology, and urethane-related products by utilizing chlorine, a byproduct of the caustic soda production process. Using the electrolysis of salt water as a base point, the AGC Group carries out integrated manufacturing of products, ranging from basic chemicals to high-performance chemicals. From raw materials to end products, throughout the entire manufacturing process, the Group makes efforts to produce products in an environmentally-friendly manner.

The Group's "chlor-alkali & urethane business" offers such chlor-alkali products as caustic soda, sodium bicarbonate, and vinyl

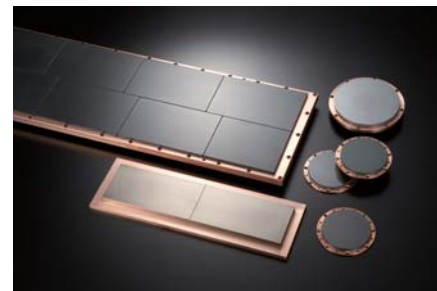
Crude salt is the raw material of basic chemicals, which in turn leads to the development of performance chemicals



F-Clean™, a high-performance fluoropolymer film with additional functions for greenhouse coverings



Ceramics sputtering target



chloride monomer; urethane-related products centering on polyols; as well as gas and solvents. Meanwhile, the "fluorochemicals & specialty chemicals business" offers fluorochemicals, mainly fluoropolymers, fluoropolymer films, fluoropolymer for coatings, fluorinated water and oil repellents, as well as such specialty products as battery materials, liquid crystal materials and fine silica.

● Other Operations

The Other operations are composed of the ceramics business and a host of service-related businesses that include logistics and engineering. The ceramics business is strengthening its efforts in the environment and energy fields such as developing refractory materials for glass production facilities, solar-related parts and high-performance thermal insulating refractory.

TOPICS

Fluon® ETFE Film is used in the Japan pavilion at Expo 2010 Shanghai China

AGC Group's high-performance fluoropolymer film Fluon® ETFE Film is used in the Japan pavilion Zi Can Dao (purple silkworm island) at Expo 2010 Shanghai China.

Fluon® ETFE Film, which is used as a membrane material in this pavilion, is a film produced from high-performance fluorores, which AGC manufactures through an integrated production process from raw material to final product. Fluon® ETFE Film is widely used because of its excellent heat resistance, chemical resistance, and transparency. It is also used increasingly as a construction material, mainly overseas.



The Japan pavilion Zi Can Dao in the Expo 2010 Shanghai China (CG image)

FRP grating*1 decorates Yokohama Port's 150th Year

Japan's Yokohama Port celebrated its 150th anniversary in 2009. The Zou-no-hana (elephant trunk) area played a central role in the port's opening and has been redeveloped as Zou-no-hana Park, where a monument was built under the concept of the port's origins. A fiber-reinforced plastic (FRP) grating made by AGC Matex has been selected to be a part of the monument, which consists of a vast circle of illuminating screen panels. The combination of the light panels symbolizing the modern age and cast iron louvers giving out a touch of history has won praise from various fields. The AGC Group's FRP grating is strong, light and stainless, and it has won high praise for its design as well. It is used in many buildings and structures, and an increasing interest is being shown in the use for photovoltaic module mounts. In addition, our highly weather-resistant Lumiflon™ fluoropolymer coating is used on the monument's body.

*1 A lattice-shaped panel using fiber-reinforced plastic (FRP)



"Zou-no-hana Park" decorated with FRP gratings