**NSG GROUP ARCHITECTURAL GLASS
MEDIA BRIEFING KIT**

**INTRODUCTION**

The NSG Group is one of the world’s largest manufacturers of glass and glazing products for the architectural, automotive industry and technical glass sectors. Founded in 1918, the company was transformed in 2006 with the acquisition of Pilkington plc, itself a global leader in the glass industry and the inventor of the Float Glass process. The Pilkington name was retained as a brand for the Group’s building and automotive products.

Today, the enlarged NSG Group has manufacturing operations in around 30 countries on four continents and sales in some 130 countries. In the fiscal year ending 31 March 2012, the Group reported revenue of JPY 552 billion (approximately euro 5 billion). Of this, 41 per cent was generated in Europe, 29 per cent in Japan, 13 per cent in North America and 17 per cent in the rest of the world.

**HISTORY**

Nippon Sheet Glass Co., Ltd. was founded in Osaka, Japan in November 1918. The company expanded its reach throughout the rest of the century, culminating in the acquisition of Pilkington plc in 2006. The Pilkington story began in 1826, with the establishment of the St Helens Crown Glass Company. After several name changes in the early years, the company became Pilkington Brothers Limited in 1849 and was listed on the London Stock Exchange as Pilkington plc in 1970.

The turning point in the history of Pilkington was the invention of the Float Glass process in the 1950s. It revolutionized the world’s flat glass industry and has become the universal process for the manufacture of high quality flat glass, with the technology licensed to more than 40 manufacturers in 30 countries. Around 380 float lines are in operation, under construction or planned worldwide, with a combined output of about 1,200,000 tonnes of glass a week. The NSG Group owns, or has interests in, 48 float lines worldwide.

The NSG Group operates in three business sectors:

* **Architectural Glass** supplies glass for the building and Solar Energy sectors. In the Solar Energy sector, thin film photovoltaic solar modules, crystalline photovoltaic solar modules, and concentrated solar power applications are the leading technologies in converting power from the sun into clean renewable energy. The Group supplies all three of these technologies.
* **Automotive** serves the original equipment, replacement and specialized transport glazing markets.
* **Technical Glass** products include very thin glass for displays, lenses and light guides for printers and glass fibre, used in engine timing belts.

**COMPANY DATA**

Company name: Nippon Sheet Glass Co., Ltd

Global brand: NSG Group

Head Office: Sumitomo Fudosan Mita Twin Building

West Wing, 5-27, Mita 3-chome,

Minato-ku, Tokyo 108-6321 Japan

Telephone: +81 (0) 3-5443-9500

Executive Officers: President and CEO: Keiji Yoshikawa

Chief Operating Officer: Clemens Miller

Chief Financial Officer: Mark Lyons

Principal websites: [www.nsg.com](http://www.nsg.com) (Corporate and investor relations site)

 [www.pilkington.com](http://www.pilkington.com) (Architectural and Automotive commercial site)

Revenue: JPY 552 billion (approximately EUR 5 billion)\*

Permanent 29,702\*
employees:

Global footprint: 48 float lines, 31 Automotive fabrication plants, 12 Technical Glass plants globally and an extensive network of Architectural downstream and Automotive Aftermarket operations.\*

(\* Figures for financial year ended 31 March 2012)

**PRESS INFORMATION**

If you are compiling any features or case studies on windows, renovations, commercial projects, architectural design, solar energy and the glass industry in general, we can help. The NSG Group can also provide case studies, commentary, expert opinion, images and information on a range of subjects, including regulations, legislation and new product innovations.

**We will also consider any other appropriate opportunities, so please feel free to contact Mervi Paappanen, Architectural Glass, to discuss your requirements; email:** **mervi.paappanen@fi.nsg.com, tel. 03-3499111.**

**NSG GROUP ARCHITECTURAL GLASS PRODUCTS AND SERVICES**

The Architectural Glass side of the business manufactures, processes and sells products for exterior and interior applications in new buildings and refurbishments, as well as the Solar Energy industry.

1. **Architectural applications**

The company is continually innovating and developing products that satisfy the full range of architectural requirements. The architectural products are sold under the Pilkington brand; a wide range of products providing a solution for every application.

The product range is separated into nine different benefit-led categories. These define the key value-adding or selling properties of the products:

* Solar Control
* Thermal Insulation
* Fire Protection
* Noise Control
* Safety/Security
* Self-cleaning
* Decoration
* Glass Systems
* Special Applications

**1.a. Solar Control**



With glass being increasingly used in architecture to provide light and airy environments, it is imperative to also consider the comfort of buildings’ occupants. In hot climates, solar control glass can be used to minimise solar heat gain and help control glare; while in temperate regions, it can be used to balance solar gain with heat loss and achieve high levels of natural light. The Pilkington range of solar control glass offers performance options to suit almost every need, with each product available in a toughened or laminated form.

Pilkington **Suncool™** is a range of superior solar control performance off-line coated glasses, with high light transmittance, low, medium or high light reflectance and outstanding thermal insulation (Ug-value down to 1.0 W/m2K in a 90% argon filled double Insulating Glass Unit). The wide range of products is available in clear or neutral appearance and in two distinctive colours, blue and silver. The products have been designed to be used in Insulating Glass Units. All products are available in combination with other products from the Pilkington range to offer additional benefits such as self-cleaning, safety/security or noise control. They can also be manufactured on Pilkington **Optiwhite™** low-iron substrate to reduce the risk of thermal breakage and enhance light transmittance.

Designed to achieve optimum performance in large glazed areas, Pilkington **Suncool™** products are suitable for commercial and residential applications. The high selectivity index (light-to-heat ratio) combined with outstanding low-emissivity makes the range ideally suited for large areas of glazing where there is a need to control solar gain without significantly reducing the internal light level.

Pilkington **Solar-E™** is a range of good solar control performance on-line coated clear or body-tinted glasses, with medium light transmittance, low light reflectance and low-emissivity. The products are available in a range of colours (Clear, Arctic Blue, EverGreen, Blue-Green and Grey). They are well-suited to both commercial façades and residential applications where high reflectance is prohibited or undesirable, and energy-efficiency in both summer and winter is required. Extremely versatile, the products can be used in their monolithic form or in Insulating Glass Units. They can be combined with other low-emissivity glasses in Insulating Glass Units to achieve even higher levels of thermal insulation.

Pilkington **Eclipse Advantage™** is a range of good solar control performance on-line coated clear or body-tinted glasses, with unique colours (Clear, Arctic Blue, Blue-Green, Bronze, EverGreen and Grey) and low-emissivity properties. Specifically designed for use in countries with a warm climate, well-suited to both commercial façades and residential applications, the products offer unique colour options for original and innovative architecture designs. Extremely versatile, they can be used in their monolithic form or in Insulating Glass Units. The products can be combined with other low-emissivity glasses in Insulating Glass Units to achieve even higher levels of thermal insulation.

Pilkington **Eclipse™** is a range of medium solar control performance on-line coated glasses in two rich golden colours. Suitable for single glazing or incorporated in an Insulating Glass Unit, the products can be used in a wide range of residential and commercial applications. To achieve thermal insulation, the products have to be combined with a low-emissivity glass in an Insulating Glass Unit.

Pilkington **SunShade™** Silver is a medium solar control performance off-line coated glass, with low light transmittance and high light reflectance. It is ideal for use in commercial façades as well as residential applications in hot climates with intense solar glare and sunlight. To achieve thermal insulation, the product has to be combined with a low-emissivity glass in an Insulating Glass Unit.

Pilkington **Reflite™** is a range of medium solar control performance on-line coated body-tinted glasses, with low light transmittance and medium light reflectance. The product is available in two colours (Arctic Blue, Emerald Green). Suitable for single glazing or incorporated in Insulating Glass Units, the products can be used in a wide range of residential and commercial applications. To achieve thermal insulation, the products have to be combined with low-emissivity glass in Insulating Glass Units.

Pilkington **Optifloat™** Tint and Pilkington High Performance Tint (e.g. Pilkington **Arctic Blue™**) is a range of low to medium solar control performance uncoated body-tinted glass, with low light reflection and high energy absorption. The products are particularly suitable for applications that demand solar control without the use of surface coatings, for residential or commercial applications. To achieve thermal insulation, the products have to be combined with low-emissivity glass in Insulating Glass Units.

**1.b. Thermal Insulation**



Today’s builders, regulators and wider communities are demanding more from glass. In particular, the focus on energy-efficiency in building regulations is creating a greater need for low-emissivity (low-e) glass. Essentially, low-e glass reflects energy back into a building, to achieve much lower heat loss than ordinary float glass. In addition, different types of low-e glass allow different amounts of passive solar heat gain, which helps reduce heating requirements and costs, especially in colder months.

With a wide range of low-e glass available, Pilkington has a solution for all energy saving requirements.

Pilkington **Optifloat™** Clear is a high quality float glass. It can be used in a wide variety of applications, often representing a practical and stylish alternative to solid materials. It may be used in the exterior and interior of buildings to permit the transmission of daylight, allowing occupants to view their surroundings.

Pilkington **Energy Advantage™** and Pilkington **K Glass™** are on-line coated low-emissivity glass products that offer substantial improvement on thermal insulation when compared to clear float glass. They are also characterised by high solar heat gain, which means that as well as retaining heating warmth in a room, they allow high levels of solar energy to enter, for warmer and brighter interiors in sunny spells, and reduced heating and lighting costs. Extremely versatile, they can be used in their monolithic form or in Insulating Glass Units. The products are recommended for new buildings and renovations/modernisations where high solar heat gain is beneficial. They can also be offered in versions offering even higher solar heat and light transmittance.

Pilkington **Optitherm™** is a range of high performance low-emissivity off-line coated glass products that offer high to very high thermal insulation performance as well as neutrality. Pilkington **Optitherm™** S3 is one of the market leading super neutral low-emissivity glasses, due to its very high light transmittance and low light reflectance. For applications requiring a Ug-value of 1.0 W/m2K, Pilkington **Optitherm™** S1 can be used. Developed specifically for energy-optimised triple glazing, Pilkington **Optitherm™** GS maximises solar energy gain and reduces heat loss to increase the energy efficiency of houses. Pilkington **Optitherm™** GS exceeds the criteria for Passiv Haus glazing, achieving a total solar energy transmittance (g value) of up to 63% while still attaining a Ug-value of as low as 0.6 W/m2K.

The Pilkington **Optitherm™** range has been specially developed for use in Insulating Glass Units. The products can be enhanced when combined with other products from the Pilkington range to provide additional benefits such as self-cleaning, noise control or safety/security properties. They can be used from the smallest installation to the most prestigious curtain walling applications – anywhere where there is concern for reduced energy consumption and heat loss.

Pilkington **Insulight™** Therm is a range of Insulating Glass Units offering improved thermal insulation. These are technically advanced, dual seal units which comply with national and international standards as required. They can achieve a range of performance levels using our range of low-emissivity coated glasses listed above.

Pilkington **Spacia™** is the world’s first commercially-available vacuum glazing. It offers the thermal performance of conventional double glazing in the same thickness as a single pane of glass. Pilkington **Spacia™** provides a real solution to the problems of balancing historical preservation with modern comfort and environmental requirements. Pilkington **Spacia™** has a low overall thickness as well as good acoustic performance, and is ideal for use in historic buildings, offering replacement windows more in keeping with the original design. It may even allow the use of the original frames if these are in a reasonable or repairable condition.

Pilkington**Suncool™**, Pilkington **Solar-E™** and Pilkington **Eclipse Advantage™** are primarily solar control products, but also have low-e properties.

**1.c. Fire Protection**



Modern architecture favours transparency far beyond the façade: architects prefer natural light and open spaces to determine the design of large buildings right down to their structural core. Wherever these “open” concepts meet local construction and fire safety requirements for the protection of human life and property, fire-resistant glazing comes into play. The Pilkington range of fire-resistant products, Pilkington **Pyrostop®**, Pilkington **Pyrodur®**, Pilkington **Pyroclear®** and Pilkington **Pyroshield™** 2, provides a protected, yet comfortable and versatile state-of-the-art glazed building environment, complying with relevant fire safety regulations.

Pilkington **Pyrostop®** is a clear, multi-laminated fully insulating fire-resistant safety glass that offers the highest level of fire protection, effectively blocking the transmission of conductive and radiant heat, while maximising the transmission of natural light and transparency. Pilkington **Pyrostop®** is designed for interior and exterior use where thermal insulation is required up to class EI 180. It is suitable for use with steel, aluminium and timber frames in monolithic form or Insulating Glass Units. It is ideal for use in transparent partitions, windows (special application), doors, screens and façades, or for horizontal applications (roof and inclined glazing).

Pilkington **Pyrodur®** is a clear multi-laminated fire-resistant glass designed to provide basic integrity performance and to reduce radiant heat transfer. It is suitable for internal and external applications up to class EW 60. Pilkington **Pyrodur®** is available for use with steel, aluminium, softwood and hardwood timber frames. It is particularly suited for use in doors, screens and partitions where lightweight, narrow profiles are important and ease of glazing is a priority. Further applications include Insulating Glass Units in façades and roof glazing (special compositions for inclined applications).

Pilkington **Pyroclear®** is a clear high performance monolithic basic integrity fire-resistant and safety glass. It is suitable for internal and external applications where integrity only performance is sufficient. Pilkington **Pyroclear®** has been approved in single and double glazed units for use with steel and aluminium systems. It is suited for use in doors, screens and partitions as an effective barrier against fire, smoke and fumes.

Pilkington **Pyroshield™** 2 is a range of fire-resistant wired glasses which, in the event of fire, provides an effective barrier to flame, smoke and hot gases. Available as clear or in a textured version, offering obscuration, Pilkington **Pyroshield™** 2 products can be used where there is a specific requirement for integrity-only fire protection. Pilkington **Pyroshield™** 2 Safety Clear is a monolithic safety wired glass for use where there is a specific requirement for both integrity-only fire protection and impact safety (classification to class 3(B)3 according to EN 12600). Pilkington **Pyroshield™** Texture does not have an impact safety classification. Suitable for use with steel and timber frames, internally or externally, Pilkington **Pyroshield™** 2 products are ideal for use in screens, partitions, doors, windows, fanlights and overhead glazing.

**1.d. Noise Control**



With increasing traffic on the road, rails and in the air, noise insulation has become a very important topic. It is not a question of being a luxury anymore; it is essential that noise reduction is considered in the specification of glazing. With regard to employment law, comfort and medical necessity, noise insulation in building construction is an undisputed requirement to decrease stress and noise related illnesses.

Pilkington **Optiphon™** is a high quality acoustic laminated glass that offers excellent noise reduction without compromising on light transmittance or impact performance. The desired acoustic performance can be achieved through combining various thicknesses of glass with a special PolyVinylButyral (PVB) interlayer. With a large variety of product combinations, it offers the opportunity to achieve specific noise reduction requirements.

Pilkington **Optiphon™** can be combined with other Pilkington products for a multi-functional noise reduction monolithic glass or a multi-functional noise reduction Insulating Glass Unit, providing additional benefits such as thermal insulation, solar control or self-cleaning. It is the ideal choice of glass in any buildings where there is excess noise from road, rail or air traffic, or other sources such as factories or nightclubs.

**1.e. Safety/Security**

Innovations in the development of safety and security glasses have opened up new design opportunities, allowing both people to be protected from personal injury, and in the most extreme cases, buildings to be protected from various forms of attack without compromising levels of natural light and visibility.

The term ‘safety’ is applied to glazing used to reduce the risk of accident by impact, fracture, shattering, or in a fire. The term ‘security’ is applied to glazing which is able to withstand deliberate attacks of various kinds (physical or armed).

The Pilkington brand offers a wide range of sophisticated glasses to meet these increasing demands for protection of both people and property.

Pilkington Toughened Safety Glass is manufactured by subjecting final size, edge worked panes of glass to a heating and cooling treatment, whereby high compressive stresses are set up at the surfaces, with balancing tensile stresses in the centre. The high compressive surface stresses give Pilkington Toughened Safety Glass its increased strength, which is up to five times stronger than ordinary annealed glass of the same thickness.

Pilkington **Optilam™** is a laminated glass produced by combining two or more sheets of float glass with one or more interlayers, the most popular being the PVB interlayer. The interlayers ensure the integrity of the glass by holding the broken pieces in place should any damage occur. In fact, glass fragments adhere strongly to the interlayer, while the resistant cushioning effect dissipates the energy. Pilkington **Optilam™** can be enhanced when combined with other Pilkington products to provide additional benefits such as self-cleaning, solar control or thermal insulation.

The various performance levels of Pilkington **Optilam™** are achieved by simply changing the number and thickness of each layer of glass and PVB interlayer. By doing this, Pilkington **Optilam™** can be used for a wide range of applications, whether it is for safety (glazed building entrances, internal doors, overhead and roof glazing, swimming pools and windows in critical risk locations), security (applications which display valuable goods, such as museums or in banks or building societies, as well as safety glazing in hospitals and prisons) or bullet resistance (high risk buildings such as banks, post offices, building societies, embassies, cash offices, military establishments and VIP residences).

**1.f. Self-cleaning**

Thanks to its revolutionary coating, the Pilkington **Activ™** on-line coated self-cleaning range of glasses stays cleaner, all year round. Their unique dual-action coating uses the forces of nature to help keep the glass free from dirt, giving not only the practical benefit of less cleaning, but also clearer, better-looking windows.

Pilkington **Activ™** is available in combination with other products from the Pilkington range to provide additional benefits such as solar control (Pilkington **Activ™** Blue, Pilkington **Activ™** Neutral, and Pilkington **Activ Suncool™**), thermal insulation (Pilkington **Activ Optitherm™**), impact resistance or increased security (Pilkington **Activ Optilam™**) and noise control (Pilkington **Activ Optiphon™**).

**1.g. Decoration**

As well as offering functional benefits, glass is also used to enhance the appearance of the environment. The Pilkington range of decorative glass turns it from a basic construction material into a means of adding style and elegance. Incorporating decorative glass can add privacy and meet any requirements, whether they are aesthetical or practical.

Pilkington **Optifloat™** Opal is an acid-etched product suitable for internal and external use. It is a translucent glass that creates an attractive finish for windows, partition walls, glass doors, furniture, shelving, wall cladding and many more applications, offering all the diffused natural light of a translucent glass, but with none of the drawbacks.

Pilkington Spandrel glasses are toughened safety glasses that are mostly used in non-vision areas of façades. The most popular range is Pilkington Spandrel Glass Coated, a toughened range of glasses coated with a metallic coating specially developed for the Pilkington **Suncool™** product range. The Pilkington Spandrel Glass range offers a number of options for use with curtain wall applications that allow the building exterior to be fully glazed. The products can also be used for interior design and furniture.

Pilkington Texture Glass is a range of rolled patterned glasses, one surface of which has a specific pattern or design impressed into the surface, which creates a decoration. The patterned glasses allow the passage of light but depending on the depth and configuration of their pattern, varying degrees of obscuration are obtained. The range offers a wide selection of alternatives, meeting both functional and aesthetic requirements, and may be used for privacy in commercial, industrial and residential buildings. They may also be used for decorative purposes in applications such as doors, partitions and balustrades.

**1.h. Glass Systems**



Glass can be used to create building interiors which connect occupants with the external environment, combining unbroken views and high levels of natural light with the comfort and safety of the internal environment.

The Pilkington range of glass systems allows designers and specifiers to transform yards into cosy interiors, enclose private and public outdoor areas under glass roofs and build stunning glass façades.

Pilkington **Planar™** is the world’s leading structural glazing system. It allows architects immense flexibility in the appearance of façades, while incorporating all of the functionality required from windows in today’s buildings. Utilising stainless steel fittings housed in countersunk holes to fix the glass façade back to the structure, Pilkington **Planar™** results in a fully engineered system with the minimum of structure and the maximum visual clarity. A silicone seal between adjacent panels also provides weatherproofing. Pilkington **Planar™** can incorporate most Pilkington glass types, including the range of solar control, low-emissivity and Pilkington **Activ™** self-cleaning glasses.

Pilkington **Profilit™** is a range of alkali cast glasses in a U-shape, which is produced according to EN 572, Part 7, using the machine rolling process. The products are translucent, but not transparent, with or without a patterned surface on the outside, and have the quality features of cast glass.

The end result is a wall that obscures vision but allows light to pass through. Pilkington **Profilit™** products can be used in interior or exterior applications, and the "U-shaped" channels can be installed either vertically or horizontally.

The glasses are available in a variety of colours and textures with varying translucency, allowing for the passage of natural light without the loss of privacy. Pilkington **Profilit™** products can offer thermal insulation and solar control, as well as sound reduction; they provide the most cost-efficient glass wall systems available. The products come in various patterns. The range of products can be single glazed for interior use or double glazed for exterior applications.

**1.i. Special Applications**

Glass for Special Applications provides unique characteristics. Pilkington **Mirropane™** is an on-line coated glass developed for use as a one-way mirror where total clear vision is required and specific lighting conditions can be achieved. Under specified lighting conditions it offers an effective means of providing undetected surveillance and high quality one-way vision to achieve complete privacy. Pilkington **Mirropane™** is used in applications such as supermarkets, computer rooms, banks or cash offices, where areas need to be kept under observation or hidden from public scrutiny. It is also appropriate for patient monitoring in hospitals or residential care establishments.

**Pilkington Optiwhite™ is an extra-clear, low-iron float glass with very high light transmission. It is practically colourless, and the green cast inherent to other glasses is not present. It is therefore ideal for use where glass edges are visible or where a neutral colour is desired. As it has got high light transmission it achieves greater brilliance and transparency, allowing a clear and true representation of colours when viewed through the glass. These same qualities also allow for maximum interior daylight. It is the product of choice for architects for buildings where transparency and brightness are of paramount importance. Pilkington Optiwhite™ can be combined with other products from the Pilkington range. For example, when combined with Pilkington Suncool™ it decreases the risk of thermal breakage and reduces the need for toughening, while providing high performance solar control and low-emissivity. When used in exterior glazing, it enhances true colours and allows for maximum light transmission, even in thicker laminated combinations. In domestic windows, Pilkington Optiwhite™ maximises passive solar gain to reduce the need for heating during cold sunny days.**

**Pilkington OptiView™ is an on-line coated anti-reflective glass that reduces interior and exterior light reflectance. Pilkington OptiView™ Protect combines two proprietary anti-reflective surfaces in a single laminated glass, reducing interior and exterior light reflectance to around 2%, and allowing more visible light to pass through compared to clear float glass. As a consequence, views from both inside and out are clear, un-obscured and virtually reflection-free. Pilkington OptiView™ Protect offers all the traditional benefits of laminated glass, such as improved safety, enhanced security, durability and acoustic properties. Furthermore, it provides protection from UV radiation (UVA and UVB) by blocking over 99% of UV transmittance, helping to reduce fading of the contents and interiors of a building. Pilkington OptiView™** products are ideal for a wide range of traditional and new anti-reflective applications in which clarity of view is of paramount importance. Examples include museums and display cases, retail shop fronts, showrooms and a host of other applications such as panoramic restaurants, glass atria and sports stadia where, previously, an anti-reflective product was never an option.

1. **Solar Energy**

Solar Energy panels offer alternative solutions to a range of energy requirements, from small scale domestic applications to large scale solar power stations, from cloudy northern rooftops to hot sunny deserts. Glass is an integral and important element of these solar panels. The NSG Group’s range of high quality products are used in the three leading solar technologies aimed at converting solar energy into electricity: thin film photovoltaics, crystalline silicon photovoltaics and concentrated solar power applications. In addition to the generation of electricity, the Group’s products are also used in solar applications that generate hot water.

NSG **TEC™** is a group of products, including a comprehensive range of TCO (Transparent Conductive Oxide) coated glass, optimised to suit a variety of thin film photovoltaic technologies with different haze and conductivity levels. All NSG **TEC™** products are manufactured using a patented chemical vapour deposition process to produce a durable, on-line coating that may be heat strengthened or fully tempered, providing complete flexibility for module production. Each of the products within the range is targeted at a particular thin film photovoltaic technology. The NSG **TEC™** products are available in either standard or low-iron glass composition depending on the substrate/coating combination.

Pilkington **Optiwhite™** is an ultra-clear float glass with a very low iron content, which maximises the solar energy transmittance and, therefore, the efficiency of the module. The Group’s range of products includes the standard and well established low-iron Pilkington **Optiwhite™** and Pilkington **Optiwhite™** S, which has been developed especially for the solar industry, and therefore offers even greater solar transmission.

Pilkington **Microwhite™** is Pilkington **Optiwhite™** in its extremely thin version (glass thicknesses down to 1.0 mm). Because of their very high light transmittance and low absorbance Pilkington **Optiwhite™** and Pilkington **Microwhite™** are particularly suited to concentrator solar power technology too (i.e. solar mirrors).

Pilkington **Sunplus™** is a glass specifically developed for use in crystalline silicon modules. This high performance low-iron glass has very high solar energy transmittance. When toughened, its strength and durability make it the ideal choice for this application.

The Pilkington **Sunplus™** range of products includes:

* Pilkington **Sunplus™** SM: ultra high solar energy transmittance and low light reflectance due to a combination of a prismatic pyramidal pattern on one surface - S -, and a matt pattern on the other – M;
* Pilkington **Sunplus™** MM: ultra high solar energy transmittance and low light reflectance due to the matt pattern surfaces on both sides;
* Pilkington **Sunplus™** SM AR: ultra high solar energy transmittance with Anti-Reflective properties due to the application of an AR coating designed and optimised for crystalline silicon technologies.

The Pilkington **Sunplus™** and Pilkington **Optiwhite™** ranges are also ideal products for the cover plates of solar thermal collectors, as toughened, high transmittance glass is required for this application.

**3. Other applications**

The Group also manufactures a range of products aimed at special applications such as heated glass for commercial refrigeration, lighting, switchable glazing (electrochromics), appliance glass, computer screens, touch screens, static control, electronic signal shielding or other electro-optical and insulating applications.

The most popular product for these applications is NSG **TEC™**. There are a variety of NSG **TEC™** products to meet specific needs, including

* NSG **TEC™** 15: the best choice for applications requiring passive condensation control and thermal performance with low-emissivity and clear colour-neutral appearance;
* NSG **TEC™** 7: offers the lowest resistivity value of the whole range - combined with relatively low haze, it can be used for a wide range of applications;
* NSG **TEC™** 35, NSG **TEC™** 50, NSG **TEC™** 70 and NSG **TEC™** 250: used in heated glass applications - compatible with different power sources, these products combine thermal control with superior electro-optical properties;
* NSG **TEC™** SB: used as a substrate for off-line coated glasses, and provides a barrier layer to prevent sodium migration into the deposited film, particularly at elevated temperatures, leaving the performance of the off-line coating unaffected.

Pilkington **Plateau™** is a high quality float glass made to extremely tight tolerances, giving the glass a special flatness demanded by the acrylic casting industry as well as other uses. It is offered in a range of different finishes (clear, satin and textured) to provide a variety of cast acrylic sheet surface finishes. Pilkington **Plateau™** is ideal for acrylic casting and industrial applications.

Pilkington **Microfloat™** is an extremely thin, high-grade float glass, which is manufactured to precise standards. It is made according to the highest specifications with very low thickness tolerances, to ensure flat and uniform products suitable for a variety of applications.

Pilkington **Microfloat™** is traditionally used for the production of microscope slides, cosmetic mirrors, chromatographic plates, LCD photo masks, automotive and technical glass, PC display screens and tablet devices.