



Marketing and Sales Research

Import and Export of Electrochromic Products

Marketing and Sales of these Products

- Smart Glass Products include:

SPD - smart glass™ (Suspended Particle Technology) to control the transmission of light when laminated between sheets of glass.

Pioneering Technology of Suspended Particle Devices (SPD - smart glass™)

This technology is the result of a decade of development of suspended particle film formulation as well as the film manufacturing technology. This film can be laminated into a wide variety of glass or plastic sheets, creating smart products' with adjustable levels of transparency.

Revolution in Glass

The main product is a revolutionary film, which uses suspended particle technology to control the transmission of light when laminated between sheets of glass. An applied electrical voltage, resulting in a wide range of controllable transparencies, aligns the particles. These smart characteristics can be incorporated into glass, plastic or other transparent materials.

Smart Glass Product Line:

SPD - smart glass is available in three basic forms: laminated glass, double glazing unit and laminated plastic.

Laminated Glass

Laminated glass is most commonly used with an additional layer of low emissive (Low e) glass for I R protection. This laminated glass already has all the protective qualities of laminated safety glass in addition to its smart qualities.

Laminated Plastic

Laminated plastic is useful for special applications, such as aircraft windows and large roof spans. The plastic already provides UV protection, so it can be used without any protective layers



CARGLASS

Laminated glass for cars, trains and other vehicles include sunroofs, side and rear windows, sunvisors and rear-view mirrors. Lightweight and highly reliable, these products greatly improve driver and passenger comfort and safety, while also protecting vehicle interiors from ultraviolet (UV) and other heat-related damage

Sunroofs



Sunvisors

Windows



Rear-view mirrors

MARINE

Very few environments have as much exposure to light, glare and heat as marine craft. Smart windows, doors, hatches and interior partitions offer a distinctive option for passenger comfort, security, and space-savings benefits. These products can be an ideal replacement to cumbersome blinds and shades and are a much better choice than standard dark window tints that inhibit nighttime operation and views. Able to block over 99% of ultraviolet (UV) light that degrades instruments and poses a health threat, SPD-Smart marine products also are the perfect solution for marine pilot houses.



Advantages of SPD smart glass

- SPD is dark blue when the power is off.

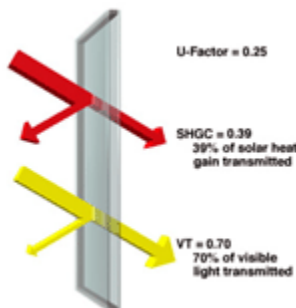
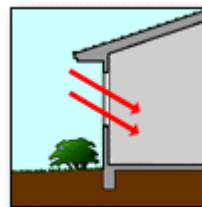
However this tint is basically colour neutral so you will be able to see different colours through SPD windows and other products.

When the power is turned on, it instantly becomes transparent, intelligently varying the amount of light transmitted through the window, creating an atmosphere customized to one's needs without the need for curtains or window blinds.

- Require very little power (less than 0.06 watts per square foot).
- Change tint almost instantly (1-2 seconds for complete change)
- Change tint uniformly over the entire surface area, regardless of size.
- Are adjustable over a wide range of light transmission levels.
- Operate over a very wide temperature range.
- Are highly durable (successfully tested at millions of on/off cycles).

Distinctive Features of SPD

- SPD switches from transparent to colored mode almost instantly (less than one second).
Depending on the power, it can freely adjust the permeability of visible rays between 1 to 30% with power off, and 40 to 70 % with the power on.
- It can cut off 99% of ultraviolet (rays) It prevents discoloration of furniture in the interior and also protects against skin cancer.
- Reduction of building's air-conditioning load from absorptive and reflective function against infrared rays.
Considerable reduction of building construction costs. Installation cost (HVAC) up to 20-30%.



Maximum range of 1,200(W) x 2,500(H).
Multi-paned systems can easily be created to cover larger areas.

Range of Transparency

- SPD smart glass has a wide range of useful transparency. Solar light transmittance goes from a minimum of 1.5 percent to a maximum of 30 percent. Even the clearest standard glass has a solar transmittance in the 70 percent range. The SPD smart glass transparency scale fits the most noticeable and useful range of light screening.

Among competitors, other smart glass types either have a very narrow transparency range (70 to 80 percent) or much slower response times (1 to 5 minutes). A narrow range means that only an "on and off state" is possible, rather than a variable range.

New Generation of SPD Light-Control Film Wider Range and Lower Haze

This next generation new emulsion-based SPD film has extremely high quality features such as:

- Vision nearly as clear as ordinary window glazing; to approx. 7 times darker than the dark window, commonly used for glass façades of office buildings.
- Low Haze levels 1/3 to 1/5 of haze levels in similar buildings.

Flexibility



Curves and Bends:

SPD smart glass can be curved and bent as long as it is done in an arc without sharp creases. Curved bay windows and skylights are now possible.

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