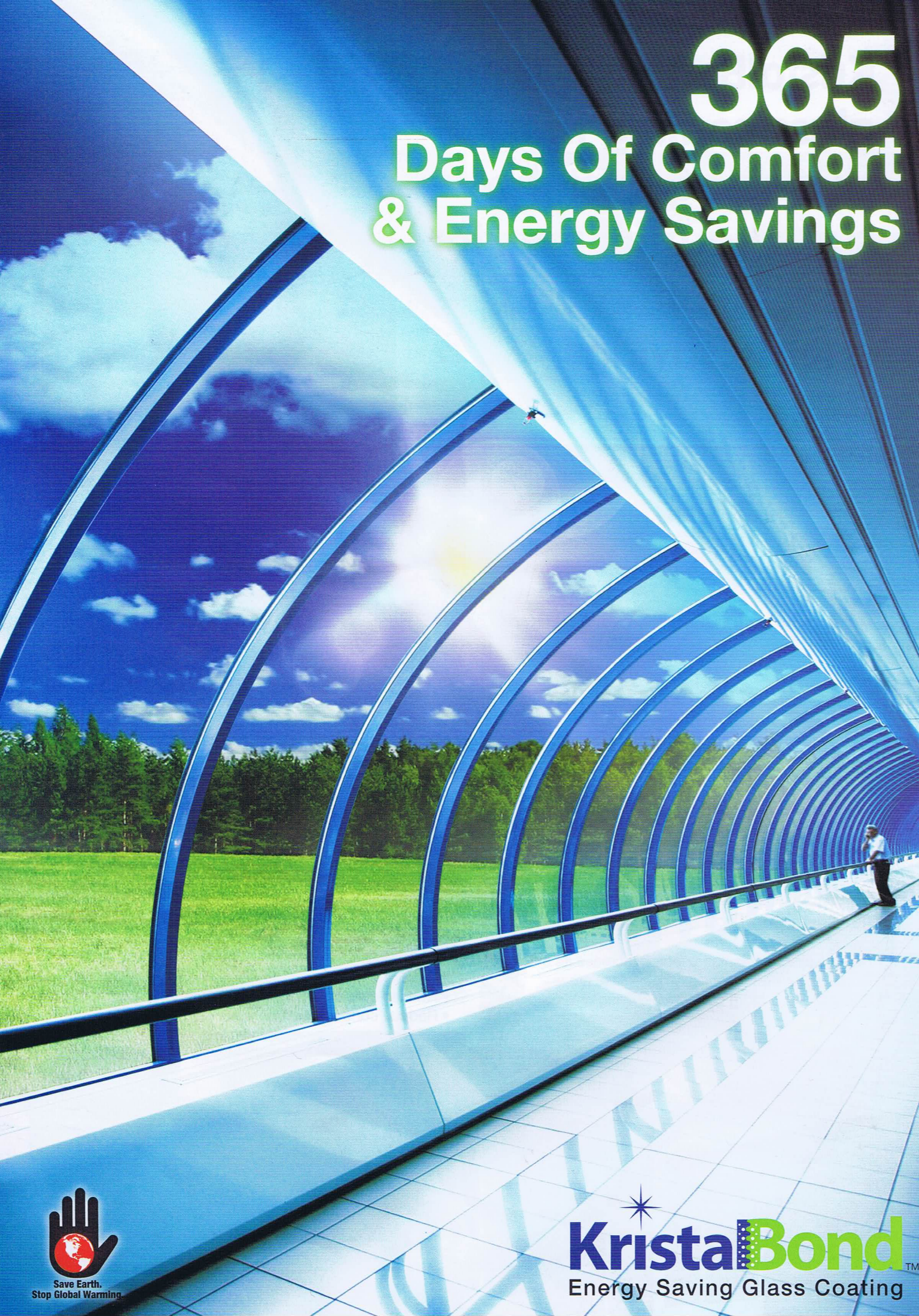
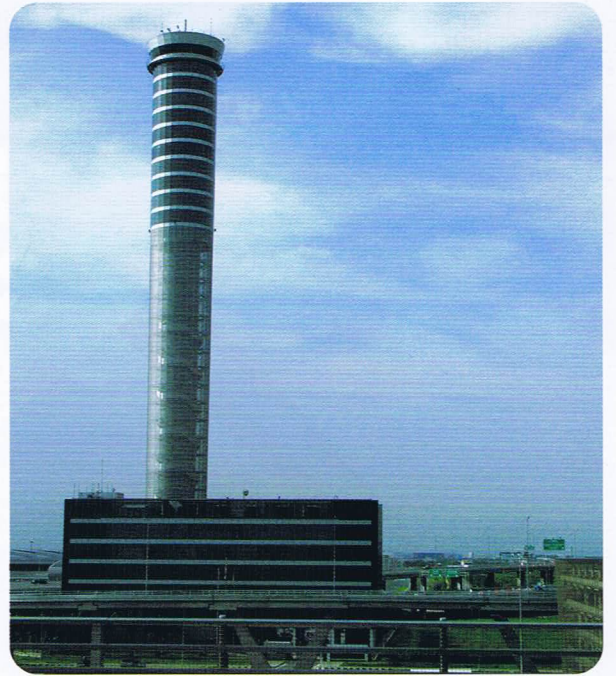


365 Days Of Comfort & Energy Savings



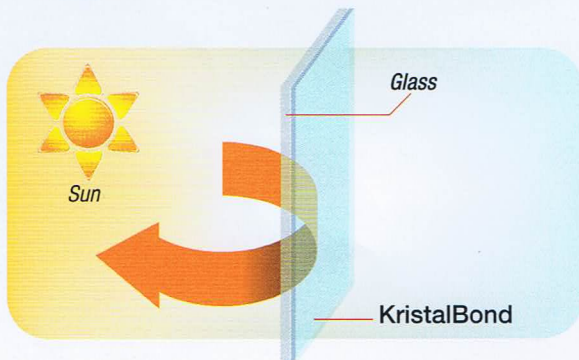

KristaBondTM
Energy Saving Glass Coating

KristalBond is a liquid glass coating that shields against the sun's harmful rays for living comfort and energy savings.



Suvarnabhumi Airport Control Tower, Thailand

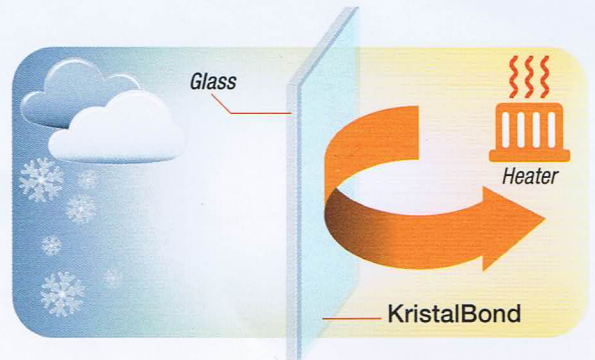
1 **3~10°C**
Cooler in Summer



KristalBond cuts **90%** of infrared ray.
With KristalBond you are able to:

- Reduce air-conditioning usage & increase its efficiency
- Increase comfort, especially near glass areas
- Enjoy cooler & more comfortable living environment

2 **~3°C**
Warmer in Winter



KristalBond reduces heat loss from windows by retaining far infrared generated indoor. It enables you to:

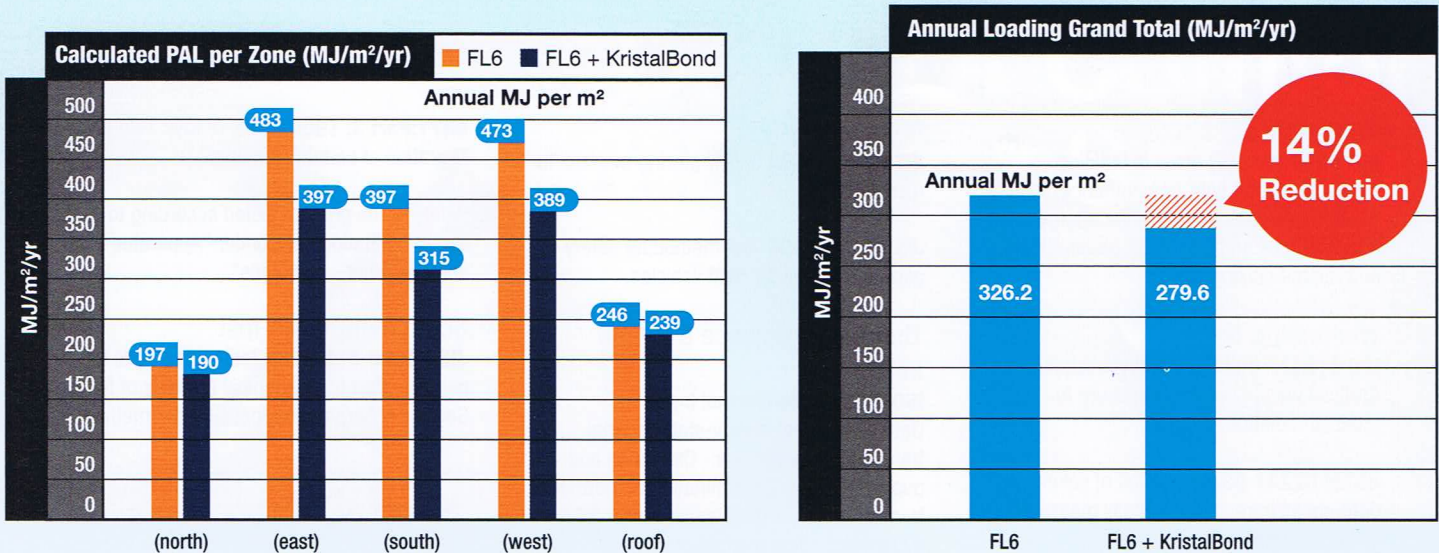
- Retain heat indoor
- Reduce cold draft and increase comfort
- Reduce condensation on windows **



Energy savings computed by Perimeter Annual Loading (PAL) calculation - Okinawa

What is PAL?

Perimeter Annual Load; Japanese government's requirement for optimal usage of building materials for energy savings.



3

Up to

20%

Energy Savings & CO₂ Reduction

With a 2 – 3°C reduction in temperature, you are able to save up to 20% on your electrical consumption on a yearly basis.²

Based on the scenario above, you would reduce an estimate of 5.6kg/m²/annum of CO₂ emission.³



4

99%

Ultraviolet cut

KristalBond is formulated to block off 99% of the sun's UVA and UVB to:⁵

- Protect from skin pigmentation and skin cancer
- Keep your furniture, displays and valuables from accelerated fading and ageing.
- Keep out insects that are attracted to UV emitting from indoor lights



KristalBond Spectral Performance Data

Product Name	Thickness (mm)	Visible Light (%)			Solar Radiation (%)		
		Trans	Ref	Abs	Trans	Ref	Abs
KristalBond	6	75.3	7.4	17.3	42.8	5.7	51.5
Clear Float	6	88.6	7.9	3.5	77.9	6.9	15.2

UV Trans (%)	SHGC	Shading Coefficient	U-Value (W/m²K)
0.0	0.56	0.64	3.46
59.2	0.82	0.93	5.83

Tested based on ISO 9050 standard, except U-Value which is based on ISO 8990.

5

75% Visible Light Transmission

Harvest natural light and save on artificial lighting during the day with KristalBond. A colourless and ultra clear coating, KristalBond reduces reflection on glass due to its crystal like nature.

Only 7 microns thin with a low haze level of 0.8, KristalBond owes its super transparency to nanotechnology. Colourless, KristalBond preserves your window's originality, keeping it clear without any distortion.

6

Above 10 years Durability

With a 6H hardness, KristalBond has a high scratch resistance, it does not peel, de-metalize or require special maintenance. It does not incinerate nor pose any toxic danger.

7

Accommodate Extraordinary Glass Shape & Size

KristalBond, glass in liquid form, can be coated on curved glass and large glass areas seamlessly for a perfect smooth finishing. Its superior self leveling properties give KristalBond the finishing edge over solar control films.



Project References

From around the world

Large Glass



Telford Cinema,
Hong Kong



Bin Hendi Avenue,
Dubai



Starhill Gallery Glass
Facade,
Malaysia

Curved Glass



Samsung Digital
Media Plaza,
Malaysia

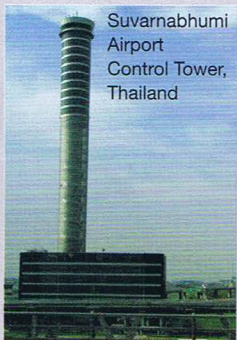


Private Residence,
Malaysia



Snow Dome,
Abu Dhabi

Airports



Suvarnabhumi
Airport
Control Tower,
Thailand



Chengrai Airport,
Thailand



Chiang Mai Airport,
Thailand

Shopping Malls



MHCC Mall,
Fiji Islands



Marina Mall Skylights,
Abu Dhabi



Dubai Festival City
Atrium,
Dubai

Hotels & Resorts



Nishitetsu Grand Hotel,
Japan



Sepang Gold Coast,
Golden Palm Villas,
Malaysia



Shangri-la Hotel
Putrajaya,
Malaysia

Retail & Public Places



Tokyo Big Site,
Japan



Hanshin Race Course,
Japan



Yamaguchi Prefecture
Industrial Tech Institute,
Japan



Saga-Ken Women Centre
& Lifelong Study Centre,
Japan



Harley Davidson,
Malaysia



AM Finance,
Malaysia

Chain Stores



KFC Outlet,
Japan



Starbucks,
Malaysia



7-Eleven,
Malaysia



Mahsuri Intl.
Exhibition Centre,
Malaysia



Al Masaoood
Central Parts,
Abu Dhabi



QNB Bank,
Qatar

Test Report List

KristalBond performance is tested by leading certification, inspection and testing agencies in Japan, Singapore and Malaysia.

Solar Optical Performance

ISO 9050:1990(E) Glass in building - Determination of light transmittance, solar direct transmittance, total solar energy transmittance and ultraviolet transmittance and related glazing factors.

Weathering Test

ISO 11341:1994 Paint and varnishes - Artificial weathering and exposure to artificial radiation.

ASTM D2244-93 Calculation of colour differences from instrumentally measured colour coordinates.

ASTM E313-96 Calculating yellowness and whiteness indices from instrumentally measured colour coordinated.

Road Safety Test

JIS R3211:1998 Safety glazing material for road vehicles.

JIS R3212:1998 Test method for safety glazing material for road vehicles.

Thermal Resistance & Health Safety Test


ISO 8990:1994 Thermal Insulation - Determination of steady-state thermal transmission properties - Calibrated and guarded hotbox. Determination of thermal transmittance (*U*) (test equivalent to JIS A 4710:1989 - Test method of thermal resistance for windows and doors.)

EN71:Part 3: 1994 Safety of toys: Part 3: Migration of certain elements.

Safety of the product tested according to Japan Sanitation Law, under "Apparatus and Container - packages".

Scratch Hardness Test

JIS K5600-5-4: 1999 Testing methods for paints -- Part 5: Mechanical property of film -- Section 4: Scratch hardness (Pencil method)


is patented in 16
countries; it is also a
registered trademark.

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 - Saudi Arabia
 - Thailand
 - Tonga Islands
 - Qatar
 - UAE
 - Vanuatu


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*Disclaimer:

The information contained in this brochure is given in good faith, to the best of its knowledge and based on current procedures in effect. However, the Manufacturer makes no warranty or guarantee that the results or effectiveness or safety of the product or any design described herein, will be obtained under end-use conditions. Since actual use of the product is beyond their control, the manufacturer should not be held for any mishandling of the product. Each user should conduct their own test to determine the suitability of the material for their own use.

*1 The product reduces condensation, however results may vary in accordance to the environment it is exposed to.

*2 Source: "Start valuable energy saving and CO₂ emission reduction with Denko", Tokyo Electric Power Company webpage.

*3 CO₂ emission coefficient/kWh: 0.43; based on actual data in year 2007 by Tokyo Electric Power Company.

*4 Source: "Revised energy conservation law and indication of thermal insulation performance", Japan's Ministry of Economy, Trade and Industry dated 14-04-2007.

*5 If used in harsh environments, KristalBond's UV performance may reduce slightly over the years.