Points to choose a products of thermal barrier insulation glass coating for energy-saving measures

1) Knowledge of Products (Product description)
2) Thermal insulation effect in summer
3) Thermal insulation effect in winter ⇒ condensation prevention function
4) Comparison to other products: Application
5) Comparison to other products: Performance
6) The difference of thermal barrier materials such as ATO, CTO and ITO.
7) Comparison of Thermal barrier performance and price
8) Compare to other products
9) Compare to other products: Verification after application
10) Compare to other products: SKETCH support program
For all customers who need our support to succeed your thermal barrier coating projects

Currently, it has been attracting attention to thermal barrier glass coat as global warming measurement. By applying a thermal barrier glass coating to glass-walled building, we aim to reduce air conditioning costs 20 percent to 30 percent.

In Japan, it became a power shortage in eastern Japan, Tohoku because there was an Fukushima nuclear power plant accident after the earthquake on March 11, 2011. At that time, Thermal barrier coating applied to save energy on the building windows. From that time, the thermal barrier insulating glass coat of Japan became popular to all over the world because energy-saving effect is high.

In 2016, There are 10 several companies of thermal barrier maker in Japan, and three companies in China. However, the customer does not know what the manufacturer of the product is excellent. So it is important to convey to the consumer to know the superior surface of the product by comparing the cost and performance and construction methods from every angle. SKETCH will support the company which starts a new thermal barrier insulation glass coating business how to promote the coating to the customer.

The most important point is the comparison of the thermal barrier performance. Thermal barrier material, ATO has been the most sold currently. However, the heat shield is not enough at the place where people feel the hot. In the equator, the infrared cut-off rate of around 80% H-SP, is the suitable compare to the infrared cut 50 percent of the ATO.

Thermal barrier material of SKETCH is CTO. Because these cost is higher than ATO material cost and still need time to develop, other companies do not use them. About price, these compared with ATO is about 150 yen higher in the material cost of the square meter, but it does not affect most of the application price and profit margins. The payback period of CTO and CTO-I is two to three years shorter than ATO because thermal barrier performance is superior about energy-saving rate of the air-conditioning costs after application.

Then, the roller application of SKETCH does not have coating unevenness. Modify in application process is also a simple, thermal barrier performance is uniform. In particular, since glass coat of other companies applied to the large window glass of a height of more than 3m is difficult, the product of SKETCH will be advantageous.

Sketch was sold insulation coat 1 million square meters worth to the world 20 countries.

We know any details of thermal insulation coat, and advise on appropriate sales methods. We can introduce the superiority of SKETCH product such as in the finish after the application, the thermal barrier performance and application method.

And when you have the knowledge of SKETCH products, you can compare with other companies products using ATO. Currently, CTO is not well known. So we will show you how to compare the products before you start the business of Thermal Barrier coating, and learn how to compare the performance and application method with other companies. And let's promote SKETCH coating together.

In this way, you can save the investment and your valuable time.

Since June 2016, we will apply the insulation coating with 3,900JPY per 1sqm and propose new business plan, three years payback plan. For those who want to start the insulation coat business of SKETCH, we will introduce the product knowledge, Roller application and verification methods, and continue to support your business. First of all, please consider the distributorship after reading this document.
71% of Heat enters from the window glass in Summer

48% of Heat escapes from the window glass in Winter

Electric power in Summer

**Demand Structure of 2PM at office building**

- **Air-Conditioning**: 42%
- **Window glass**: 71%
- **Outer wall**: 13%
- **Roof**: 9%
- **Air vent**: 17%
- **Outer wall**: 19%
- **Lightning**: 27%
- **Office automation**: 8%
- **Refrigerator**: 8%
- **Elevator**: 3%

1) **Knowledge of Products (Products description)**

1) **Summer enters 72% solar heat from the window, winter escape 42% Heating heat from the window.** It is effective for reduction of air conditioning costs by applying to the window glass. When the area of the window glass is large such as buildings, it enter the solar heat especially in the summer and during the day.

2) The summer and during the daytime when the solar heat is hot, the temperature difference is large between coated and non-coated surface.

3) In winter, the coating cut more than 90% of indoor heating heat (far-infrared ray), and prevent to escape heat from the window. It can keep the solar heat that has entered the room during the day; the room temperature is 2-3 degrees higher after the application. The temperature of air conditioning will be lower from 2 to 3 degrees.

4) The coating surface has high water repellency and there is a condensation deterrent effect. Moreover, the coated surface is highly endothermic, it can delay to occur the condensation because the glass increase warmth. Dew condensation suppression effect is 50% or more.

**Demand for electric power at hourly intervals**

**Maximum 15℃ Temperature difference at 2PM**

5) Air conditioning fee is 42% of the electricity bill for the entire building. In particular, maximum bill is from 10AM to 4PM in summer. The most effective of the air conditioning cost reduction is to apply the thermal barrier insulation coat of window glass.

The Point is Peak hour cut of the Air-Conditioning during 10AM to 4PM
1) Cut direct sun heat (near-infrared) more than 80% in summer
The room temperature will drop 2-3 degrees, and maximum 10 degrees or more near a window. = Reduction of air conditioning costs is 20 to 30 percent.

2) After IRUV CUT COAT H-SP coated, the visible light transmittance is substantially unchanged, and cut 80% of IR (infrared) or more. To absorb the heat on the coated surface of the glass, two-thirds of the heat re-emission to the outside.

3) 99% of UV-cut
In particular, it is ideal for strong ultraviolet such as Southeast Asian countries and Australia and New Zealand where have an ozone hole.
Prevention to faded, stains, and freckles.
3) Thermal Insulation effect in winter ⇒ condensation prevention function

The principle of heat transfer  > Heat moves from hot to a cold place.
> There are two types of heat, solar direct heat (Near-infrared) and radiant heat, heating heat (Far-infrared).

**Before application**

Escape the heat. Condensation

- Turn on the heating, warmed air will escape from the window because the temperature of the window is very low.
- Moisture in the room adheres to the cold window, then it is wet with condensation.

**After Application**

- Turn on the heating, coating is absorbed the heat and two-thirds of the absorbed heat does not escape, even if lowering the set temperature of the air conditioning warm.
- The window becomes warmer after application and the windowpane absorbs the heat, then the condensation will be reduces.

The window becomes warm, and a condensation suppression effect

- At night, the coated room was warm. = Keep heat.
- During the day, the coated room was cool. = Cut the heat from outside.

Government building in Yamanashi, winter temperature measurement results

<table>
<thead>
<tr>
<th>Before Application</th>
<th>2007/10/19</th>
<th>High condensation until 3pm. The window becomes frozen when it is a cold day in winter. Even the window can not open.</th>
</tr>
</thead>
<tbody>
<tr>
<td>After Application</td>
<td>2007/10/21</td>
<td>It is obviously improved to reduce the condensation during the day time.</td>
</tr>
</tbody>
</table>

Outside 0°C  
Inside 23°C  
Outside 0°C  
Inside 25°C
Compare with 3M Thermal insulating transparency film.

A material cost of a Cheap film is comparatively ¥1500/㎡. Construction cost is more than ¥4000. And Durability is 5 years to 10 years that is guideline to exchange new one. Cost of IRUV Cut Coat is cheaper than film in every way, and Durability is better than film. in spite of very high quality of UV cut, IR cut. After applying to normal glass, it gets same effect as well as a Low-E Pair Glass.

It can apply 40㎡/kg, High transparency and difficult to make Coating spots, it’s easy to perform reapplying.

It has many merit to apply. A quality of Heat insulation is World No.1 that is to cut off 80% of IR rays and 99% of Ultra Violet rays.

It can apply Low-E pair Glass to get higher quality of heat insulation besides normal single glass and pair glass.

The merit of IRUV CUT COAT
① Durability is in 15 years
② It is difficult to heat cracking than film
③ There is almost no distortion of the landscape.
④ Night, glare is not noticeable.
⑤ There is not Joint line by roller coating.
⑥ Surface hardness is 4H harder than film
⑦ It can apply uneven glass
⑧ Application cost is about 3,000 JPY ~ 5,000 JPY per 1sqm.

The deomerit of the high quality film
① Durability is short in 5～7 years
② Easy to heat cracking
③ Distortion of the landscape stand out
④ It is hard to see the night view because of reflection
⑤ It can see Joint line at big glass.
⑥ Surface hardness H～2H, Easily scratched
⑦ It can’t apply uneven glass.
⑧ Application cost is more than 15,000 JPY per 1sqm.

The merit of the high quality film
⑨ There is shatterproof effect.

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The merit of the high quality film
⑨ There is shatterproof effect.

VS
4) Comparison to other products: Application

**Other glass coating application method**

- **Sponge bar**
  - ★ Thickness adjustment is not possible during the application (No mistake)
  - ★ The thickness of coating is uneven.
  - ★ No remover ⇒ Very difficult to re-apply

- **Spray Gun**
  - ★ Thickness adjustment is not possible during the application (No mistake)
  - ★ The thickness of coating is uneven.
  - ★ No remover

- **Dripping**

**SKETCH Roller Application**

- ★ Thickness adjustment is possible during the application
- ★ The thickness of coating is even ⇒ 25g per 1sqm
- ★ Original remover. Possible to re-apply

**Films**

- IRUV CUT COAT Series
  - ★ Lowest Temperature of SKETCH
  - Temperature measurement graph
  - The blue is sketch goods
  - Three coating was applied to 4sqm of window glass, to measure the temperature in four days. IRUV had a temperature difference from 4 to 6 degrees compared to others.
  - After the verification, 3800sqm was coated.

**IRUV CUT COAT Series**

- Easy to learn the application for 2 to 3 hours.
- Only 50g of IRUV is loss during the application.

- This is for the roller absorption. The quantity depends on the roller.

**Smart coat**

- It takes time to learn the techniques of application.
- 20% of material cost is loss during the application.
## 5) Comparison to other products: Performance

Learn the differences of other coating application methods. It confirm the thermal barrier performance and easy uniformly application. Note: Sometimes other products introduces the patent of the application method as material patent. Please check the patent content.

<table>
<thead>
<tr>
<th>Application Methods</th>
<th>Sponge bar, Spray gun, Roller, Dripping</th>
<th>SKETCH Roller Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Products</strong></td>
<td>Kansai Paint = Alschool plus window</td>
<td>SKETCH</td>
</tr>
<tr>
<td></td>
<td>Ishihara Sangyo Kaisha, Ltd. = STIR</td>
<td>ECO SHOP</td>
</tr>
<tr>
<td></td>
<td>Nihon Tokushu Toryo Co., Ltd. = Thermo balance</td>
<td>IRUV CUT COAT H-SP</td>
</tr>
<tr>
<td></td>
<td>Die flex = UI shield</td>
<td>IRUV CUT COAT HC</td>
</tr>
<tr>
<td></td>
<td>For you = at shield clear</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fumin = Fumin Coat China manufacturer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECOP = Krystal bond</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asukurin = cool save</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Daiko technical = Eco-glass coat</td>
<td></td>
</tr>
<tr>
<td><strong>Application per 1person a day</strong></td>
<td>15sqm to 20sqm</td>
<td>15 to 20sqm</td>
</tr>
<tr>
<td><strong>Degreaser</strong></td>
<td>Nessesary</td>
<td>Nessesary</td>
</tr>
<tr>
<td><strong>More than 3sqm of glass</strong></td>
<td>Difficult, uneveness</td>
<td>Easy, even thickness</td>
</tr>
<tr>
<td><strong>Amount of 1sqm</strong></td>
<td>20～25g</td>
<td>25g</td>
</tr>
<tr>
<td><strong>Thermal barrier materials</strong></td>
<td>Mostly ATO (90%) or ITO</td>
<td>CTO</td>
</tr>
<tr>
<td><strong>IR CUT</strong></td>
<td>About 50%</td>
<td>H-SP 80% ～ HC 70%～</td>
</tr>
<tr>
<td><strong>Application Training</strong></td>
<td>It takes time to learn the application</td>
<td>One day training</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>Long preparation, uneven surface and thickness</td>
<td>Easy application, even application, possible to Re-apply</td>
</tr>
</tbody>
</table>
6) The difference of thermal barrier materials such as ATO, CTO and ITO

In solar energy (solar radiation), the wavelength ranges which the person feels hot is up to about 1500nm. Wavelength close to visible light (VL) (800nm ~ 1000nm) is the heat of summer. High performance of IR cut is possible to cut the heat around 900nm. IRUV can cut significantly around 900nm, so SKETCH uses CTO. But, Kansai Paint and other two companies, which are using the high cost and lower performance of ATO. The thermal barrier performance of ATO is not good enough in summer.

In case of 3mm normal glass
- Non coated glass
- SKETCH 「IRUV Cut Coat H-SP」
- Ishihara Sangyo Kaisha, Ltd. "ST-IR21"
- Nihon Tokushu Toryo Co., Ltd. "NT Thermo balance"
- Kansai Paint 「Alshcool plus window」

The difference of thermal barrier performance

ATO General Standard type, competitors use
ATO is to cut the entire infrared evenly, balanced material. 1kg of Thermal barrier material cost is from 12000 yen to 15000 yen. It cuts significantly more than the wavelength of 1500nm such as radiant heat coming from people and heating heat., to prevent the escaping the indoor heat from the window glass. But it is not suitable for the thermal barrier in summer.

CTO = H-SP Transparent thermal barrier type

CTO = H-SP is, about 80% of visible light transmittance and cut 80% or more near-infrared. It is easy application and high performance. 1kg of Thermal barrier material cost is 36,000 yen. In particular, it is ideal for hot summer and the countries of the equator. In the case of 1㎡3900 yen and 30% of the energy-saving rate, the payback period is about three years.
### 7) Comparison of Thermal barrier performance and price

Thermal barrier performance and visible light transmittance are different by the infrared cut material such as ATO, ITO, CTO, CTO+ITO. Therefore, you need to know which thermal barrier Nano material uses. Also compare the material cost of square meter and application area per 1kg.

<table>
<thead>
<tr>
<th>Market</th>
<th>Other makers (includes SKETCH)</th>
<th>3 or 5 year Payback plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maker</td>
<td></td>
<td>H-SP</td>
</tr>
<tr>
<td>Thermal barrier material</td>
<td>ATO</td>
<td>ITO</td>
</tr>
<tr>
<td>Thermal barrier price</td>
<td>14,000JPY/kg</td>
<td>80,000JPY/kg</td>
</tr>
<tr>
<td>Thermal barrier material: 25% of finished product</td>
<td>3,500JPY/kg</td>
<td>20,000JPY/kg</td>
</tr>
<tr>
<td>Plus UV base: 75% of Finished product</td>
<td>15,000JPY/kg</td>
<td>15,000JPY/kg</td>
</tr>
<tr>
<td>Manufacture Price</td>
<td>18,500JPY/kg</td>
<td>35,000JPY/kg</td>
</tr>
<tr>
<td>Sales Price</td>
<td>30,000JPY/kg</td>
<td>80,000JPY/kg</td>
</tr>
<tr>
<td>Material cost per 1sqm (1kg=40sqm)</td>
<td>750JPY~1,000JPY</td>
<td>2,000JPY~2,500JPY</td>
</tr>
<tr>
<td>Application Price per 1sqm</td>
<td>10,000JPY/sqm</td>
<td>15,000JPY/sqm</td>
</tr>
<tr>
<td>Visible light transmittance</td>
<td>About 72%</td>
<td>Over 80%</td>
</tr>
<tr>
<td>IR cut</td>
<td>About 50%</td>
<td>About 50%</td>
</tr>
<tr>
<td>Saving Energy (Example)</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>
## 8) Compare to other Products

<table>
<thead>
<tr>
<th>Comparison</th>
<th>SKETCH</th>
<th>Kansai Paint</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR Cut/UV Cut/ VLT</td>
<td>IRUV CUT COAT H-SP</td>
<td>Alschool plus window</td>
</tr>
<tr>
<td>Thermal Barrier Products</td>
<td>CTO</td>
<td>ATO</td>
</tr>
<tr>
<td>Manufacture Price/ Sales Price</td>
<td>24,000JPY/25,000JPY~37,500JPY</td>
<td>18,500JPY~40,000JPY (Estimation)</td>
</tr>
<tr>
<td>Application price per 1sqm</td>
<td>3,000/3,900/5,000JPY</td>
<td>10,000JPY~12,000JPY (Estimation)</td>
</tr>
<tr>
<td>Energy saving rate by air conditioning</td>
<td>20~30% energy saving</td>
<td>10% energy saving</td>
</tr>
<tr>
<td>Application Method</td>
<td>Apply without glass cleaner</td>
<td>Necessary to Glass Cleaning</td>
</tr>
</tbody>
</table>

### References

① Ministry of the Environment, environmental technology demonstration project ETV

Table registration companies graph List

9) Compare to other products: Verification after application

Application to the glass and to see if the same performance as the company's catalog.
- It cannot be determined at sample glass. Most important point is to apply more than 1 sqm and verify the performance.
- Measure the value such as IR cut, UV cut, VLT rate with the split type of optical characteristic device to coated window glass.
- Check the unevenness surface, distortion, dripping with your eyes.
- Temperature measuring coated and uncoated surface. Comparing the temperature of the day. (Using Thermocron or HLT-100BT.)
- Temperature difference comparison by an infrared sensor and infrared lamps.

Example of Catalogs

**Kansai Paint**

**Nihontokushutoryo**

**Ishihara Sangyo Kaisha, Ltd.**

**Fumin Coat**

**Dust on the glass**

**Smart Coat**

**Dripping lines**

**Roppongi National Art**

**Tokyo, Gyazaria**

**Verification the performance after the application**

1. Measurement across the machine to coated glass
2. By applying a lamp from the inside, measured at a temperature.
3. Temperature measurement for a certain period of time by Thermocron

**Applied IR UV CUT COAT H-SC**

UV Cut 99.6%, IR Cut 90%, VLT 72%
10) Compare to other products: SKETCH support program

How to achieve the application project!
• References: Application examples, Technical data, Sales tools, manuals, Catalog and WEB support and training.
• SKETCH supports “3 to 5 years payback plan”.
• Training for sales of flow, demonstration, temperature measurement, training, and income simulation
• Videos, YouTube, introduces products, application etc. (Japanese, English, Chinese)
• SKETCH can support seminars, exhibitions, application for a big project.

SETSUDE ECO SHOP Web site

Download all documents from web-site

YouTube

Japanese

English

Sales training

Application

Seminar

Training for the actual site

Temperature measurement

Saving Energy Simulation

Setsuden ECO SHOP Web site

http://www.ecoshop-onlineshop.com/

https://www.youtube.com/channel/UC5WOqhrpZHhEI-pt6sgONZg

https://www.youtube.com/?hl=ja&gl=JP

http://v.youku.com/v_show/id_XMTQ3MzMyMDYwNA==.html

Youku in China

Recording date and time

Weather

Clear

2013/10/01 11:00:01

30.5

32.0

1.5

26.6

2013/10/01 12:00:01

38.0

43.5

4.5

27.5

2013/10/01 13:00:01

37.5

46.0

8.5

27.9

2013/10/01 14:00:01

35.0

51.5

16.5

29

2013/10/01 15:00:01

43.5

53.0

9.5

29.9

2013/10/01 16:00:01

32.5

38.0

5.5

28.5

2013/10/01 17:00:01

34.5

35.0

0.5

27.3

2013/10/01 18:00:01

28.5

29.5

1.0

25.7
IRUV CUT COAT series ENGLISH references

YouTube Sketch Youtube Channelnel [https://www.youtube.com/channel/UCUK-OQThxuvklyrsm5C6zg](https://www.youtube.com/channel/UCUK-OQThxuvklyrsm5C6zg)

①IRUV Cut Coat Product CM [https://youtu.be/dh9Tv-4y1Bc?list=PLiM3tAWz_R5gUEmXSMDSlkH4DDw0sWZs0](https://youtu.be/dh9Tv-4y1Bc?list=PLiM3tAWz_R5gUEmXSMDSlkH4DDw0sWZs0)
②Application Movie [https://youtu.be/BsVnhRln40w?list=PLiM3tAWz_R5gUEmXSMDSlkH4DDw0sWZs0](https://youtu.be/BsVnhRln40w?list=PLiM3tAWz_R5gUEmXSMDSlkH4DDw0sWZs0)
③Coating for Big window glass [https://youtu.be/uoVZx3FLRY0](https://youtu.be/uoVZx3FLRY0)
④failure cases [https://youtu.be/tovyylwTd28](https://youtu.be/tovyylwTd28)
⑤How to remove coating film [https://youtu.be/Dilf9CreP2c](https://youtu.be/Dilf9CreP2c)

YouTube IRUV Cut Coat Web Training Channel [https://www.youtube.com/channel/UC5GY2Htaxtt3-epEmFxVU4Q?view_as=subscriber](https://www.youtube.com/channel/UC5GY2Htaxtt3-epEmFxVU4Q?view_as=subscriber)


①IRUV CUT COAT Product Description and Comparison
②Distributor Price and Condition
③Download of MSDS,Catalog,Application record and so on


①IRUV CUT COAT 1.3million JPY application package
③Download of all references as to IRUV Cut Coat