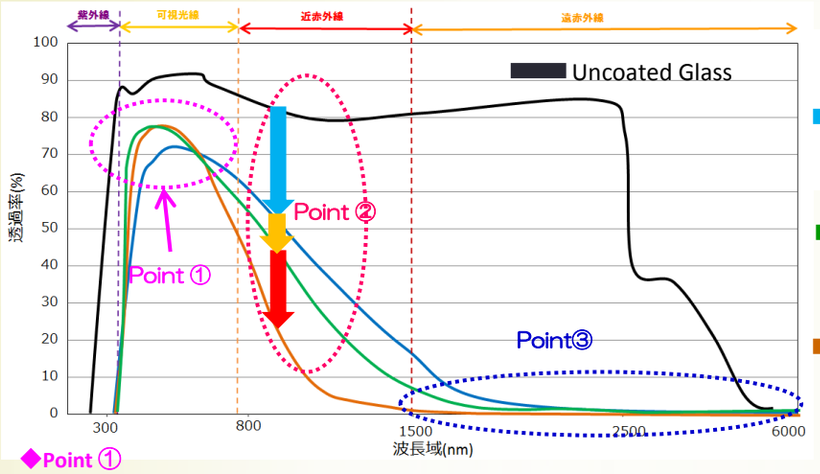
Optical measurement comparison data for the difference of the thermal barrier Nano materials



Thermal barrier Nano material	Products
ATO	IRUV CUT COAT Standard and winter type
ITO	IRUV CUT COAT SP High transparence Winter Type
MTO	IRUV CUT COAT H-SP Transparency and high heat shield Summer and winter type

◆Point ①

Visible light transmittance is the value to evaluate the transparency after the glass coating. MTO = Hyper-SP and ITO =IRUV SP have high transparency. It's ideal for the large window glass such as showrooms, observation deck and restaurants without unevenness and coating spots.

◆Point ②

The wavelength range of near infrared, represents the transmittance of solar direct heat, this is the reference value to evaluate the thermal barrier performance. The lower the infrared transmittance that will be a thermal barrier performance is high, MTO = Hyper-SP has higher thermal barrier performance than ATO and ITO. Window glass surface of the building that does not work air conditioning at summer because of sun heat, MTO is the best product to save the air condition load.近

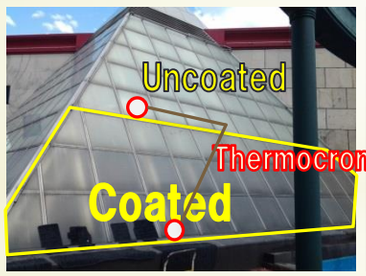
◆Point ③

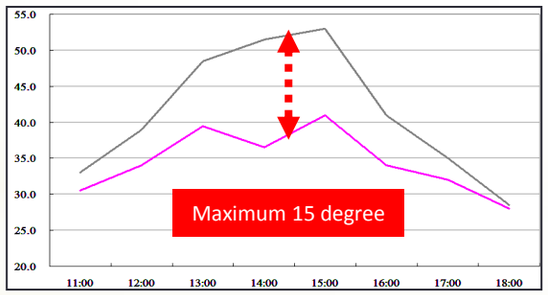
The wavelength range of far infrared rays indicates indoor heating heat. If the room is cold when the heat escapes from the window in the winter, the high far-infrared cut rate prevent to escape the heat from the window. If only cold area, each ATO, ITO, and MTO is ideal for the cold of winter measures.

Temperature measurement data

Result of the temperature measurement, maximum15 degrees cut the direct heat of the window

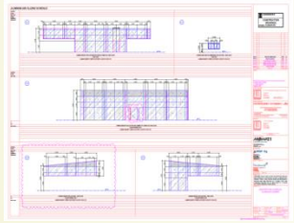
In particular, the hottest time of day is significantly cut, down the air-conditioning load

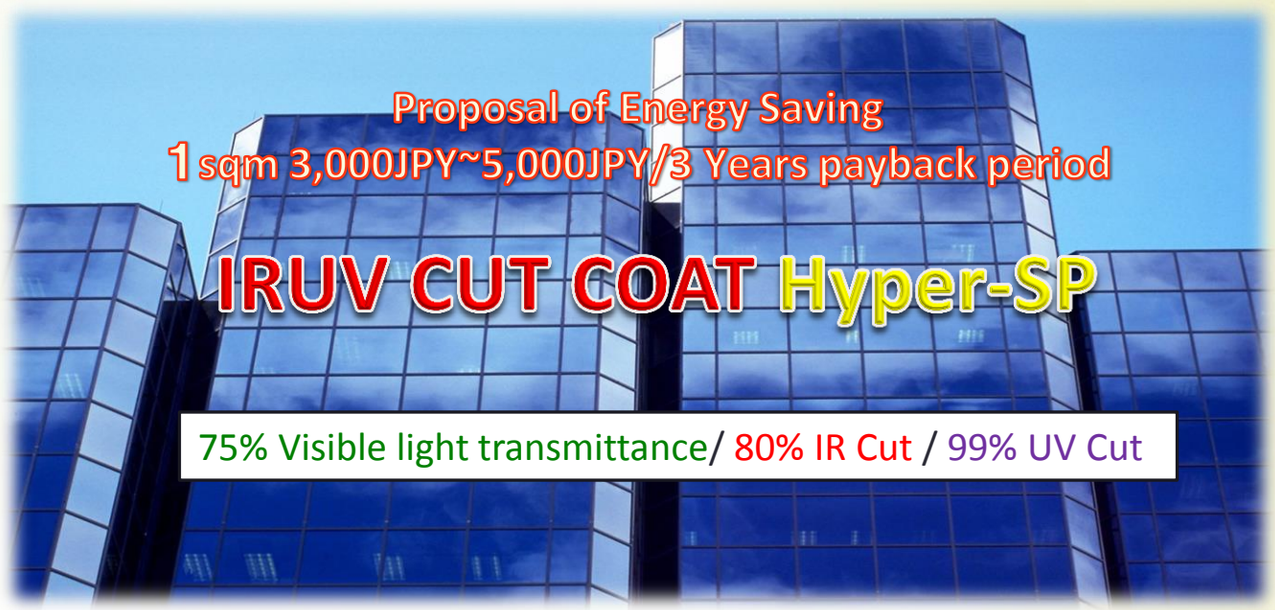




Example of energy saving calculation

Result of the temperature measurement, the temperature difference of the direct heat at the window was 8 ℃ (maximum) in comparison with the uncoated glass (Low-E glass) Reduction rate of the air conditioning costs was 20 percent, so recovery of the initial investment simulated in 2.03 years. Because there was high electricity prices and low applicator cost. For 10 years coating guarantees, we can expect significant cost savings of 20% to 30% more than eight years is.

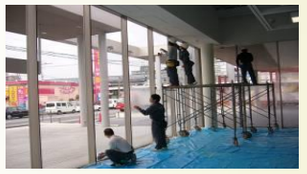




Case Studies / IRUV CUT COAT

Hotel Okura Chiba Akademia Park

TOYOTA Showroom



Ito-Yokado

Kansai Airport

Niigata University

Sumida city office

Bus

Train: Romance car

Oblong window glass

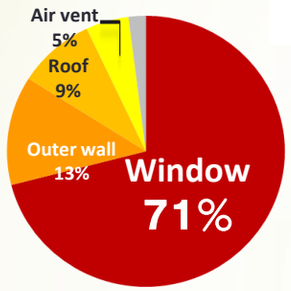
Vertical window glass

outside window and skylight

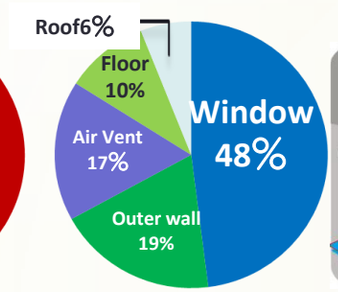
To Nature, Earth & Humans ECO Sketch

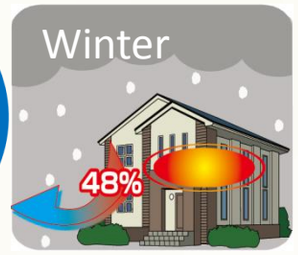
Issues 1) In Summer, 71% of the heat enters through the window. In Winter, 48% of Radiant Heat exits through the window

● Summer-Solar Heat Gain

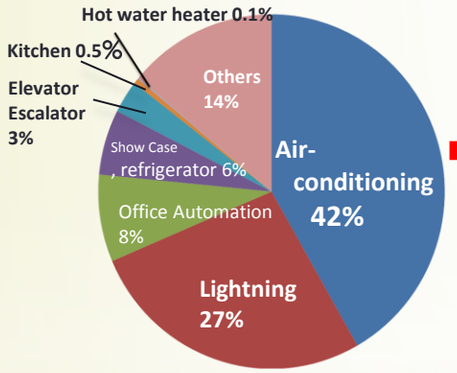


● Winter-Heat Loss





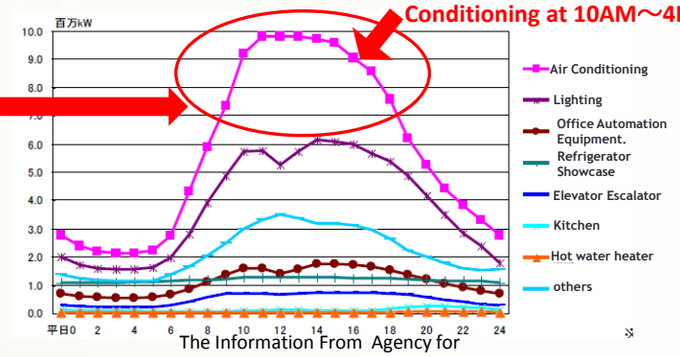
Issues 2) Electricity fee of air conditioning fee in summer



Demand Structure of 2PM at office building

Demand for electric power at hourly intervals

Peak hour cut of the Air-Conditioning at 10AM～4PM



The Information From Agency for Japanese Natural Resources and Energy on May,2011

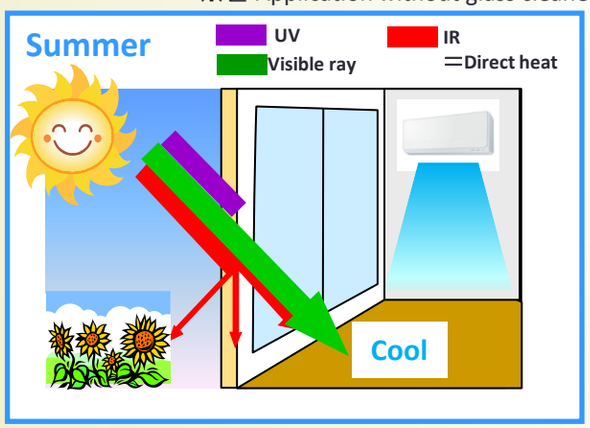
NO.1 Energy saving measures of air conditioning load reduction is from the window glass

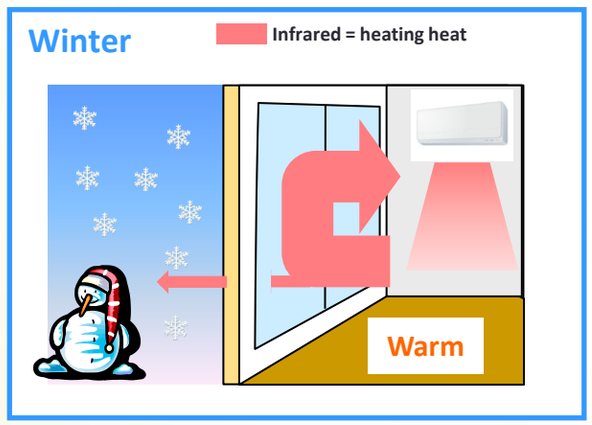
What is IRUV CUT COAT H-SP, No.1 market share in JAPAN?

Cut infrared and ultraviolet coating that can be applied with a roller to the window glass

IR CUT	UV CUT	Durability	Energy-saving rate
80% ※1	99% ※1	5 years to 10years ※2	At a temperature changed by more than 2 ℃ **20% to 30%**

※1 In order to change the amount of coating, the value of the performance does not guarantee.
※2 Application without glass cleaner



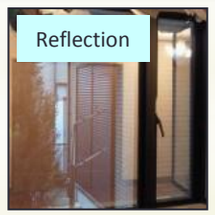


Performance comparison chart of thermal barrier products of window glass

Products	Eco glass	High performance film	Other coating	IRUV CUT COAT
name	Madonna	V-KooL	Company K	H-SP
① IR CUT ＊	56%	86%	43%	～80%
② UV CUT ＊	65%	99%	99%	99%
③ Visible light transmittance ＊	72%	69%	85%	75%～
④ Durability	20-25 years	5-7 years	10years	5-10years without glass cleaner 10 to 15 years with glass cleaner
⑤ Pencil Hardness	9H	H-2H	6H	4H
⑥ Application	instlattion	Film	Sponge	Roller
⑦ Application Difficulty	Glass Company	Difficult	Difficult	Easy
⑧ Per 1 person		50㎡	20㎡	50sqm (without glass cleaner) 20sqm with glass cleaner
⑨ Big window	High cost	Divided lines	Difficult	possible to apply by two person

※Optical measurement L103A

IRUV can solve all the problems that the thermal barrier film cannot be resolved.



Application of IRUV CUT COAT H-SP / New Application without IRUV

No glass cleaner

①Cleaning

②Super Hydrophilic Primer

③Roller application

≪Other coating≫
Washing + Covering + Glass Cleaner(80% work) + one person apply 20 square meters per 1 day
≪ Application of IRUV CUT COAT H-SP ≫
Washing + Covering + one person apply 50 square meters per 1 day
-Other company products
10000㎡ construction by 25 people in 20days
VS
H-SP by 25 people in 8 days / by 10 people in 25 days