

Energy-saving film that reflects heat and maintains the brightness of window areas.

Highly Transparent, Heat-reflective Insulating Film

Features

- Transparent, yet shuts off solar radiation heat and far-infrared rays, thus saving energy consumption by 19% to 35%.
- Prevents broken glass from scattering away, thus eliminating secondary disasters (conforming to JIS A5759).
- Ensures shielding performance to block low-level electromagnetic waves, thus effectively preventing wireless LAN interference, alleviating electromagnetic interference, and protecting secrecy from leaking.



Hotel



Okinawa City Hall

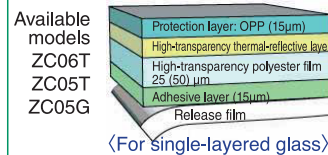
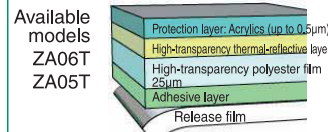
Overview

(Technical principles, actions, etc.)

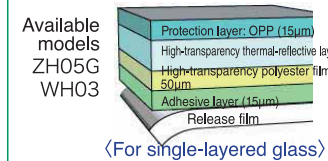
High transparency and heat rejection effects are realized by metal sputtering.

This transparent multi-layered film with high heat reflection is made from polyethylene terephthalate (PET) film, on which an ultra-thin metal film layer is formed by sputtering to increase the visible light transmission rate of the film and make it highly transparent. Unlike standard film that absorbs solar heat radiation, this film fundamentally reflects solar heat, thus maintaining a low heat absorption rate and high heat insulation rate with the inflow of heat from solar heat reradiation shut off.

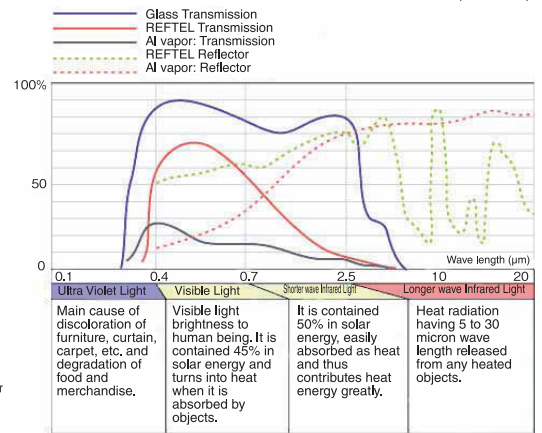
Thermal Reflection and Insulation Type



Thermal Reflection Type (Solar Radiation Adjustment Type)



GENERAL PROPERTIES and APPLICATION (ZC05G)



Effects of Film

① Energy-saving

This film has a high reflection rate of far-infrared rays, thus preventing the inflow and outflow of heat. Therefore, a room to which the film is applied will be kept cool in summer and warm in winter, which makes energy saving possible throughout year.

② Glass Scattering Prevention (JIS A5759)

The high tensile strength and adhesiveness of the PET film prevent broken glass from scattering away.

③ EMI Shielding

The film ensures shielding performance to block low-level electromagnetic waves, thus effectively making improvements in electromagnetic environmental conditions, such as the prevention of wireless LAN interference and data leakage to the outside, alleviation of electromagnetic interference from the outside, and prevention of machinery malfunctioning.

Effects

◎ **The estimated effect of REFTEL is calculated on a trial basis as shown below.** (using software developed by N.I. Teijin Shoji) (Trial calculation conditions: An office building in Tokyo that has 3-mm-thick glass windows with an area of 50 m² each on the north, south, east, and west sides.)

Type	Heat ray blocking type	Heat insulation type
Model	ZH, WH, and ZS	ZC
Energy-saving effect	Approx. 19% to 25%	Approx. 25% to 35%
CO ₂ reduction effect	Approx. 1.8 to 2.5 tons	Approx. 2.3 to 3.0 tons
Reduction effect of sensible temperature (with window-side solar radiation)	Approx. 5°C to 8°C	Approx. 6°C to 9°C

A great blocking effect of solar radiation heat is expected. Film of heat insulation type reduces the far-infrared radiation through glass windows, thus greatly mitigating the hotness of summer and coldness of winter. This film has a high energy-saving effect even at night and during the day when it is cloudy with less sunlight and a low heat transmission rate.

Applicable field
Building Window Films and Electromagnetic Wave Fields

Water

Energy saving/Energy recovery

Energy storage/Energy creation

New energy

Waste disposal/
Recycling/
Resource saving

Air

Soil

Other

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※Note: This publication introduces examples of technologies and products believed useful towards solving environmental and energy issues. In no way does it constitute guarantees concerning their transfer or sale.