Heat Shielding and Heat Insulation Glass Units

Features

In an ordinary Japanese house with single glazed windows, 71% of the heat inside the entire house comes through its openings in the summer and 48% of the heat generated for heating escapes through the openings in the winter. However, it is possible to moderate the temperature and to live an amazingly comfortable life in such a house just by changing the window glass. In fact, the following benefits are expected from the replacement of single-glazing windows by heat shielding or heat insulation glass units.

• Reduction in the cooling and heating costs
• Moderation of room temperature in summer
• Reduction in dew condensation on glass, etc.

Basic Concept or Summary

Heat shielding Low-E Double-Glazing Glass Units

◊ Reduction in the cooling load with the heat shielding performance
  The special metal coating on the glass reduces the cooling load by blocking the solar radiation heat.

◊ Energy saving achieved with the reduction in the heating load
  The special metal coating on the glass reduces the heating load significantly by keeping heat inside the house.

◊ Elimination of chill through windows
  The improved heat shielding performance curtails chill through windows.

◊ Elimination of unpleasant dew condensation

◊ Comfortable effective room temperature in summer
  The improved heat shielding performance alleviates the heat around windows.

◊ Transparent view
  The heat shielding Low-E Double-Glazing Glass has a higher visible light transmittance than the previous product (Sunbalance). The high visible light transmittance allows better natural illumination.

◊ Significant reduction in UV transmittance

Heat insulation Low-E Double-Glazing Glass Units

◊ Energy saving achieved with the reduction in the heating load
  The units create warmth in a house in the daytime in winter with their higher capacity to capture solar radiation heat than the heat shielding units. In addition, the special metal coating on the glass reduces the heating load significantly by keeping heat inside the house.

◊ Elimination of chill through windows
  The improved heat shielding performance curtails chill through windows.

◊ Elimination of unpleasant dew condensation

◊ Significant reduction in UV transmittance

◊ Transparent view
  The heat insulation Low-E Double-Glazing Glass has a higher visible light transmittance than the previous product (Sunbalance). The high visible light transmittance allows better natural illumination.
**Effects or Remarks**

Heat shielding Low-E Double-Glazing Glass Units
The Low-E glass is on the outdoor side. The special metal coating reduces the cooling load significantly in summer by blocking solar radiation and reduces the heating load in winter by keeping heat inside the house. They are ideal for the areas where cooling is used frequently in the summer. The costs of heating and cooling a house with ordinary (transparent) double glazing glass windows in Tokyo are 38,000 yen/year and 18,000 yen/year, respectively. The costs of heating and cooling a house with Sunbalance Aqua Green-E windows in Tokyo will be 32,000 yen/year and 15,000 yen/year, respectively. The difference in the total cost of heating and cooling between the two houses will be 9,000 yen/year. The difference will be 24,000 yen/year between a house with Sunbalance Aqua Green-E windows and that with single-glazing glass windows.

Heat insulation Low-E Double-Glazing Glass Units
The Low-E glass is on the indoor side. The special metal coating on the glass reduces the heating load significantly by keeping heat inside a house. These types of windows reduce the cooling load by blocking the solar radiation heat in summer, though less than the heat shielding windows do. They are ideal for the areas where heating is used frequently in winter. The heating and cooling costs of a house with ordinary (transparent) double glazing glass windows in Tokyo are 38,000 yen/year and 18,000 yen/year, respectively. The costs of heating and cooling a house with Sunbalance Pure Clear-E windows in Tokyo will be 30,000 yen/year and 19,000 yen/year, respectively. The difference in the total cost of heating and cooling between the two houses will be 8,000 yen/year. The difference will be 23,000 yen/year between a house with Sunbalance Pure Clear-E windows and that with single-glazing glass windows.

(Bases for the estimation)
1. Housing model: Calculation program: SMASH ver. 2.0, The Institute for Building Environment and Energy Saving, 2. Model of a detached house: Standard model of the Architectural Institute of Japan (with the ratio of opening areas of 25 %), 3. The values for the standard year in the Expanded AMeDAS Weather Data are used. 4. Opening areas/Lace curtains are drawn during the day and thick curtains are drawn during the night. 5. Air-conditioning set temperatures/heating: 22ºC at ambient humidity, cooling: 28ºC at 60 % RH, 6. Frequency of ventilation: 0.5 time/hour, 7. Main components: Heat insulation performance of walls, floor, ceiling etc.: at the levels provided by the Next-generation Energy Saving Standards, 8. Appliance efficiency: 3.0 for both the heating and cooling systems.

**Installation in Practice or Schedule**

Domestic
Please refer to the URLs mentioned below for the cases of the installation of and further information on our products including heat shielding and heat insulation glass units.

http://www.asahiglassplaza.net/kaiteki/ecoglass/index.html

https://www.asahiglassplaza.net/gp-pro/exp/index.html

Overseas
Please refer to the homepages of our AGC Group companies overseas for our products including heat shielding and heat insulation glass units available abroad.

http://www.agc.com/english/company/group_world.html

**Contact:**
AGC Inc.
Please refer to the HPs mentioned below for corporate information, product information and contacts.
In Japanese http://www.agc.com/index2.html
In English http://www.agc.com/english/index.html