

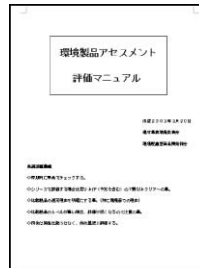
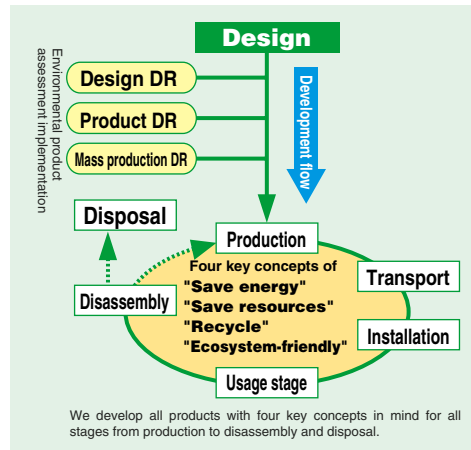
●Developing tools for environmentally friendly products

○Environmental product assessment version 2 put into practice

In 2001 the YKK Group made obligatory an evaluation of all architectural material products using the Environmental Product Assessment Checklist for design review (DR) at the stages of design, development and mass production.

In response to the daily changes in environmental problems and customer demands regarding environmental consideration for products, we have revised this checklist.

As a tool to respond further to customer needs, we began the implementation of Environmental Product Assessment Version 2 in April of 2003 in order to give numerical evaluations to products that will make clear what was considered at the stages of design and production in relation to our four product development concepts. Furthermore, we published the Environmental Assessment Manual to guide strict evaluation for these scores, allowing us to further pursue the development of products with high environmental function.



○YKK AP Eco Clover environmental label certification system begun

Seeking to contribute to creating a sustainable society, the architectural products business is promoting the development and sales of environmentally friendly products. Recognizing the need to make information available to the public about the selection of these products for their high environmental function, we started a certification system for a voluntary environmental label, the Eco Clover, in March 2003.

From this system, we plan on constantly developing products that are environmentally friendly at a high level and continuously presenting new products that meet the standards.

In order to raise confidence in these labels we have adopted standards that are at levels stricter than our existing internal standards for environmentally friendly products for this environmental label certification. We also give priority to external experts (environmental consultants) who also provide consumer opinions in order to conduct certification that is transparent and trustworthy.

The Eco Clover mark is displayed in catalogs and elsewhere for products that meet the standards. Through detailed explanations of the environmental functionality in these places, we provide the environmental information necessary for consumers to make product selections.



The YKK Group's eco-mark shows the four concepts that go into our development of environmentally friendly products: Save energy, Save resources, Recycle and Ecosystem-friendly in the form of a lucky four-leaf clover, the Eco Clover.

Eco Clover products

Products that have exceeded the required standards in our Environmental Product Assessment for all four key concepts



Eco Clover mark

Environmentally friendly products

Products that meet the requirements for one or more of the four key concepts



Clover mark

Normal products

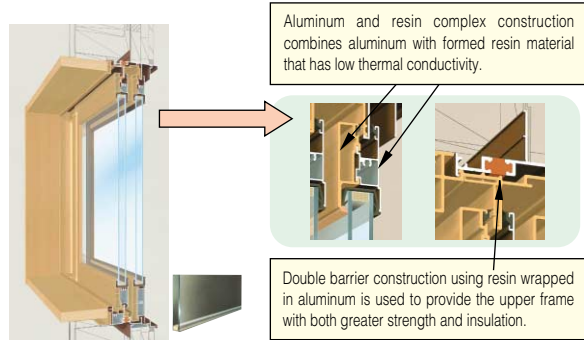
○ Life Cycle Assessment (LCA)

The YKK Group seeks to develop and provide a choice of products appropriate for various uses that also have low environmental impacts by understanding how CO₂ emission amounts and other environmental impacts occur throughout the lifecycles of the products.

An example of the application of LCA

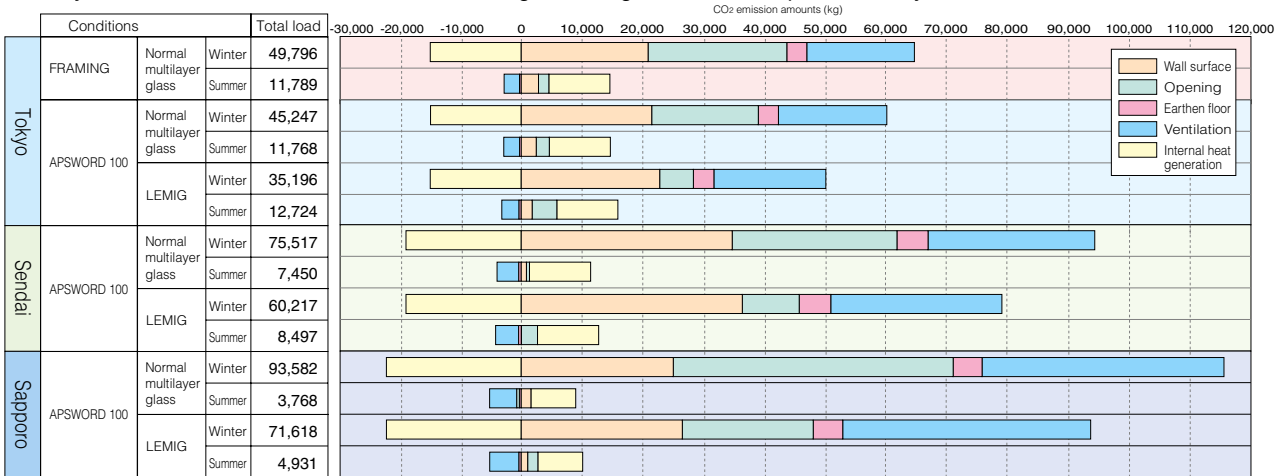
We analyzed in detail the emissions of CO₂ at the use stage based on the results of LCA evaluation of the APSWORD 100 sliding window. The chart below is a summary of the CO₂ emission amounts of single building houses for one set of sashes. The results for a normal sash (FRAMING) set used in Tokyo are provided for comparison. Negative values indicate that the amount of CO₂ emitted by the use of air conditioners has been reduced. From this it is clear

that CO₂ emissions are reduced effectively by improving window insulation, which, particularly in winter, lowers the heating load.



Product given LCA assessment (APSWORD 100)

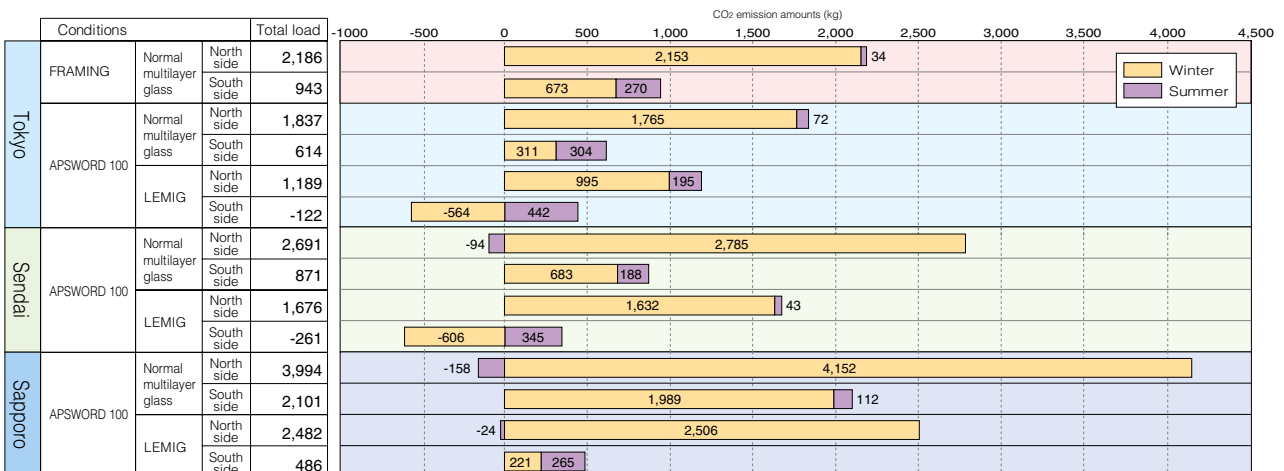
◆ Analysis results of CO₂ emission amounts for single building houses over a period of 30 years



This shows that for one sash set, in Sendai when LEMIG (low radiation multilayer glass) was used on the south side of a building the heating load was reduced, and that when normal multilayer glass was used on the north side of a building in Sapporo the cooling load was reduced. This effect is due to sun radiation heat absorption in the winter and the diffusion of heat in the summer.

We believe that with this LCA analysis of CO₂ emission amounts produced in actual use, as shown in this example, we can provide customers with more effective aperture proposals suitable to different locations and directional facings. In the future we intend to raise further the level of our environmental impact assessments by incorporating the research results of related research agencies.

◆ Results of analysis of CO₂ emission amounts for single sets of sashes over a period of 30 years



[Calculation conditions] · Products tested: APSWORD 100 sliding window 1613 (normal multilayer glass or LEMIG), FRAMING sliding window 1613 (normal multilayer glass)
 · Heat load calculation model: basic model of the Architectural Institute of Japan · Software used: The Institute for Architectural Environment and Energy Conservation's SMASH (housing heat load calculation program)
 · Climate Data: Extended AMeDAS average year climate data, Architectural Institute of Japan