

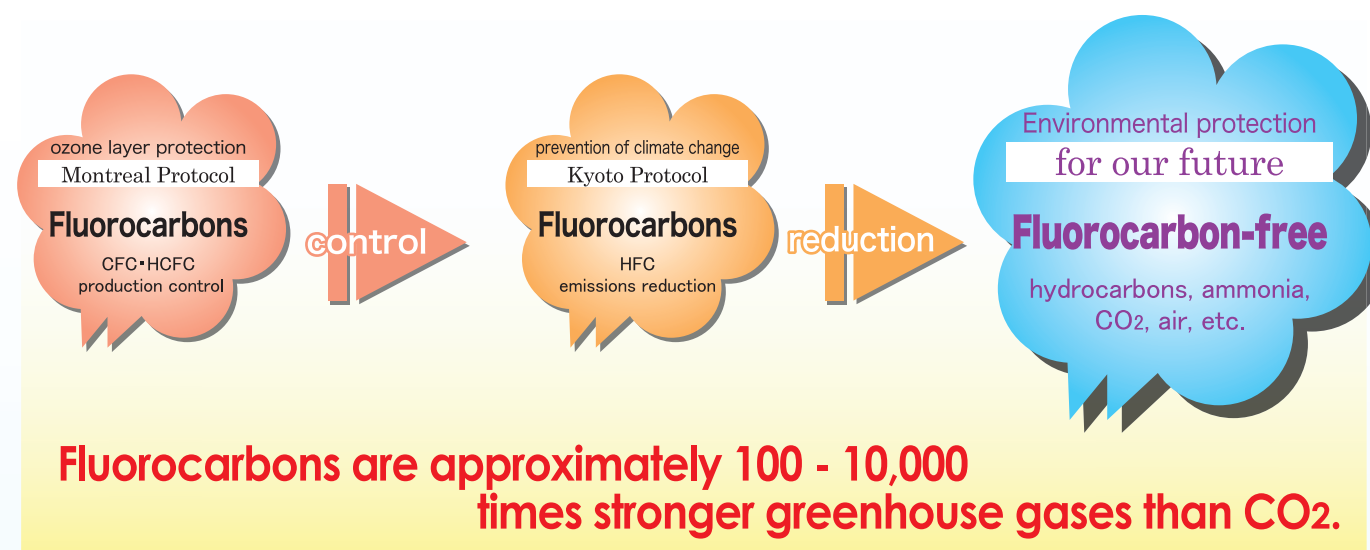
Global Developments in Action on Fluorocarbons

The world is moving forward to prevent climate change and protect the ozone layer

When ozone layer depletion was recognized as a global environmental problem caused by fluorocarbons, the "Montreal Protocol on Substances that Deplete the Ozone Layer" was adopted, under which production of CFCs has been completely phased out in developed countries including Japan. Global actions are also being taken for the phase-out of production of HCFCs, which were introduced as the alternatives to CFCs.

In addition, HFCs, the alternative to CFCs and HCFCs, are controlled under the "Kyoto Protocol" because they have a significant impact on climate change though they don't have any impact on ozone depletion.

In order to protect the ozone layer and prevent climate change, various measures are taken in Japan, including recovery and destruction of a fluorocarbons in equipment such as refrigerators and air-conditioners, and promotion of the use of alternative products.



Choose Fluorocarbon-Free Products

Our choices will change the future

Since fluorocarbons are a cause of climate change and ozone depletion, alternative technologies and products that do not use fluorocarbons are being developed. In Japan, to promote these products, government agencies are obliged to use fluorocarbon-free products in accordance with the "Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Law on Promoting Green Purchasing)" and the government provides subsidies to encourage companies to adopt fluorocarbon-free products.

Fluorocarbon-free products are being developed and marketed in many areas. In this pamphlet, we will introduce **Fluorocarbon-Free Refrigerators, Fluorocarbon-Free Thermal Insulation ~Rigid urethane foam~, Fluorocarbon-Free Air Dusters, Natural Refrigerant-Based Refrigerators and Air-conditioners**. Please carefully consider whether you can choose a fluorocarbon-free product for the sake of the environment.

Take a step towards combating climate change by choosing fluorocarbon-free products.



About Fluorocarbon-Free Refrigerators

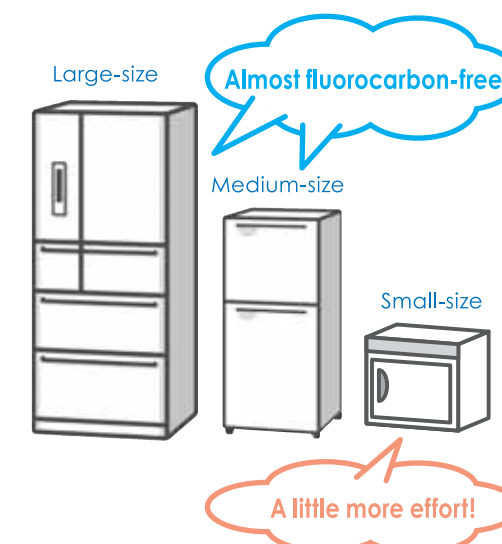
What is a fluorocarbon-free refrigerator?



Refrigerators and freezers are indispensable in everyday life for conserving fresh food.

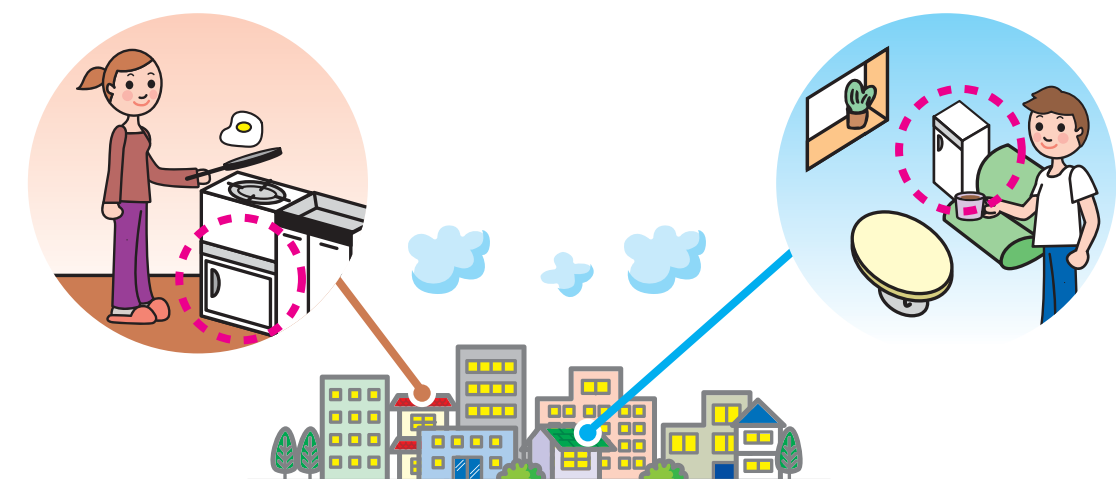
Chlorofluorocarbons (CFC), which are a variety of fluorocarbons, have traditionally been used as refrigerants to release heat from inside domestic refrigerators. When CFC production was restricted in order to protect the Earth's ozone layer, hydro-fluorocarbons (HFC) were replaced with CFC as refrigerants.

However, HFC is a substance that has an effect on climate change one thousand times as strong as carbon-dioxide. For example, a large-sized domestic refrigerator contains about 150g of HFC134a. When this is released into the atmosphere, the impact on climate change is the same as the emission of 0.2t of carbon-dioxide (the equivalent of 20,000 soccer balls in volume). Since HFC is included in the list of restricted greenhouse gases under the Kyoto Protocol, its use must be reduced as much as possible, and research and development into new refrigerants has been undertaken. Refrigerators using isobutane, a hydrocarbon-type refrigerant, have already been put to practical use. At present, fluorocarbon-free refrigerators using isobutane as refrigerant are most commonly used for large- and medium-sizes.



Practical use of fluorocarbon-free refrigerators

On the other hand, in terms of small-sized refrigerators used mostly by students or unmarried people living on their own, products using either isobutane or HFC are both marketed. It is hoped that these small-sized refrigerators will also become fluorocarbon-free.



Small-sized refrigerators for which fluorocarbon-free is desirable
(Models used mostly by students and unmarried people living on their own)