

Adopted R32 (HFC32), a new refrigerant featuring excellent energy and environmental efficiency.

Next-generation air conditioner with low burden on the environment

Features

- The global warming potential is approximately 1/2.7 that of conventional air conditioner refrigerant (R22) and approximately 1/3 that of R410A.
- High heating/cooling energy efficiency; in most cases, the energy efficiency is approximately 5% higher than R410A.
- The high refrigerating performance allows the refrigerant amount to be reduced by 20% - 30% per air conditioner.
- The single component refrigerant R32 can be recovered and recycled after use.

Overview

(Technical principles, actions, etc.)

The Montreal Protocol's HCFC Phase-Out Schedule [Fig. 1] for developing countries launched in 2013 requires the replacement of R22 and other HCFCs currently used mainly for air conditioners with alternative refrigerants.

Alternative refrigerants must achieve two objectives: ozone layer protection and global warming prevention.

As the only manufacturer that develops everything from refrigerants to air conditioners, Daikin Industries, Ltd. comprehensively studied next-generation refrigerant candidates from natural to HFC refrigerants, and came to the conclusion that R32 is most suitable for room and industrial-use air conditioners, and became the first manufacturer in the world to switch to the refrigerant. R32 is superior to propane, CO₂ or other refrigerants in terms of global warming impact (LCCP*1) [Fig. 2] and energy efficiency performance [Fig. 3]. R32 is being acknowledged by UN organizations and environmental officers from different countries as one of the next-generation refrigerant candidates that effectively reduces the burden on the environment.

*1: LCCP (Life Cycle Climate Performance)

A comprehensive global warming impact index evaluated taking into account both the impact by the refrigerant and power consumption, instead of just considering the global warming potential (GWP). This is based on the idea that a machine cannot be properly evaluated unless the global warming impact over its life cycle is evaluated.

Introductory Track Record

- Released the world's first room air conditioner using R32 for use in Japan in November 2012. Sold three million units as of the end of March 2015. The models ideal for large areas (4.0kW-7.1kW) have achieved the energy efficiency standard achievement rate of 117% to 142% in relation to the APF standard specified by the revised Law Regarding the Rationalization of Energy Use.

- With the aid of the United Nations Environment Programme (UNEP), the HCFC Phase-Out Schedule is being carried out in India, Thailand, Indonesia, Malaysia, and other countries. Daikin Industries adopted R32 as an alternative refrigerant for room air conditioners, and its use has spread to 43 countries around the world as of the end of March 2015.

Effects

- The adoption of R32 as an alternative refrigerant for air conditioners will improve energy efficiency and suppress energy consumption and reduce the CO₂ emissions from power generation as a result.
- The global-warming prevention effect achieved by replacing all the R410A refrigerants used in our room air conditioners with R32 refrigerants is equivalent to approximately 46,000 tons of CO₂, which roughly corresponds to the CO₂ emissions from approximately 10,000 households for a year.

Applicable field
Room air conditioner
Industrial-use air conditioner

Water

Energy saving/Energy recovery

ENERGY
Energy storage/Energy creation

New energy

Waste disposal/
Recycling/
Resource saving

Air

Soil

Other

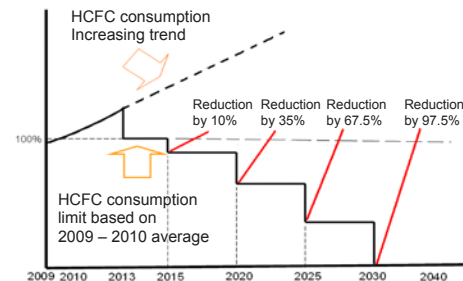


Fig. 1 HCFC Phase-Out Schedule for developing countries

Chart based on reports presented by Japan Refrigeration and Air Conditioning Industry Association and Central Environmental Council (Dec. 2, 2011)

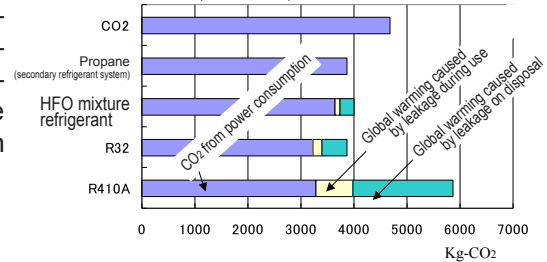


Fig. 2 Evaluation of life cycle climate performance (LCCP) (for 4kW room air conditioners)

Chart based on reports presented by Japan Refrigeration and Air Conditioning Industry Association and Central Environmental Council (Dec. 2, 2011)

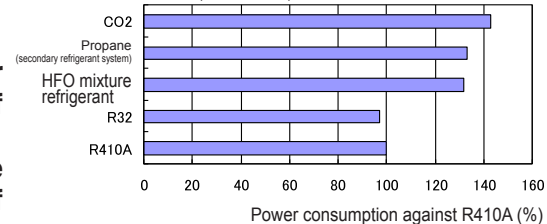


Fig. 3 Comparison of power consumption (for 4kW room air conditioners)