

As a specialist in air and air conditioning, Daikin happily provides you some tips on how to ventilate your house for healthy and confident daily life.

1. Basic Knowledge of Ventilation

- What is ventilation?
- What are pollutants?
- Why do I need to ventilate?
- Can't I use the air conditioner to ventilate?

2. Tips on Ventilation for Home

- What needs to be done for ventilating the house?
 - ① Using the existing 24-hour ventilation system properly
 - ② Opening the windows and creating an air passage
 - ③ Using the ventilation fan in the kitchen
 - ④ Adopting summertime ventilation techniques
- Summary of Home Ventilation Methods

1. Basic Knowledge of Ventilation

What is ventilation?

Ventilation is the replacement of indoor air with fresh outdoor air in order to dilute and displace the air pollutants (substances that are harmful to humans) inside a building.

What are pollutants?

Pollutants (substances that are harmful to humans) include carbon dioxide (CO₂), carbon monoxide (CO), formaldehyde (HCHO), house dust, pollen, bacteria, and viruses that exist in the air of a room.

Ventilation can be expected to dilute these pollutants and displace them from the room.

Why do I have to ventilate?

① Because ventilation dilutes and displaces pollutants in the air of a room

In a completely closed room, air cannot easily leave the room, causing air pollutants to remain and increase in the room. This situation can impact the health of the people in the room.

Ventilation is extremely important for diluting and displacing these air pollutants.

② Because dirty air accumulates in a room with no ventilation

Many of the residences where you live such as houses and condominiums have a high level of airtightness, and dirty air cannot easily leave the room. When nothing is done in these types of residences, there will be insufficient ventilation, and dirty air will increasingly accumulate in the room.

Can't I use the air conditioner to ventilate?

Many people mistakenly believe that air conditioners bring air from outside the home and that this air is used to ventilate the room.

In fact, air conditioners commonly used in Japanese residences create a comfortable environment just by drawing air from **INSIDE** the room, cooling or warming it, then returning that air back to the room.

Indoor air is not replaced by fresh outdoor air.

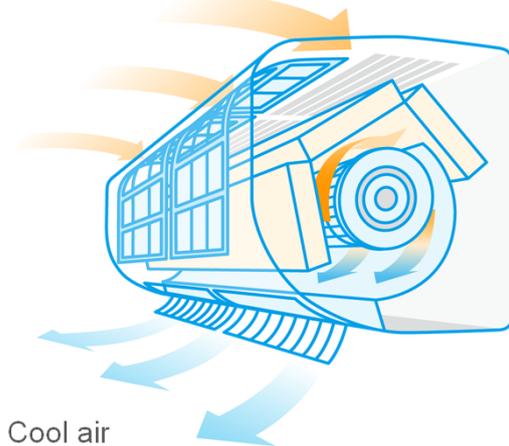
In most cases, air conditioners cannot perform ventilation.

You must ventilate in another way.

How Air Conditioners Work

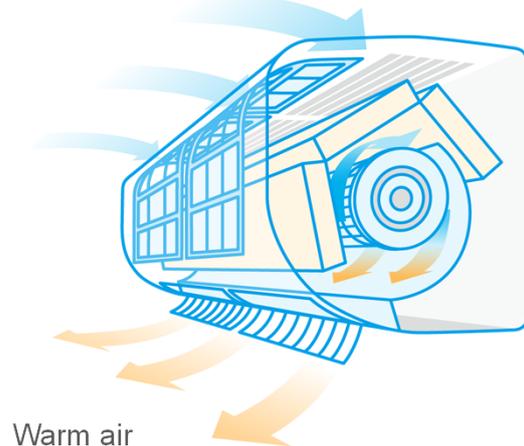
In summer

Warm Air in a Room



In Winter

Cool Air in a Room



2. Tips on Ventilation for Home

What needs to be done for ventilating the house?

① Using the existing 24-hour ventilation system properly

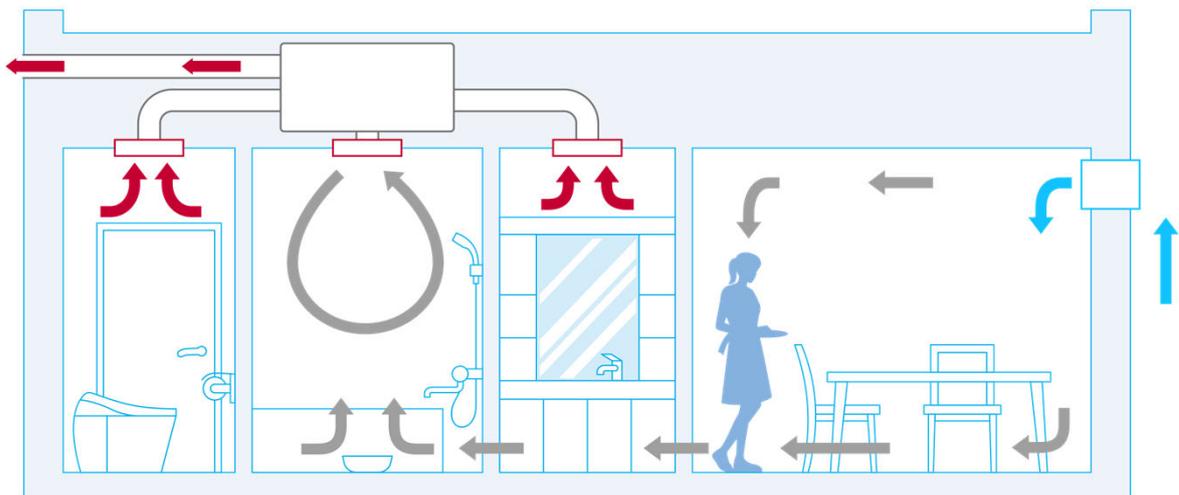
If you are living in a house or condominium built in Japan after July 2003, an effective 24-hour ventilation system is already installed. However, there are many cases that system is not properly used.

The ventilation vents are built into room walls and ceilings. When you use a ventilation fan in daily life for the bath, lavatory, or toilet, dirty indoor air is discharged outside the house (air exhaust) through these ventilation vents while fresh outdoor air is simultaneously drawn inside the home (air supply). This is the most common ventilation system used in houses and condominiums, and it can completely refresh the air inside a room within two hours. It is also the first most basic use of the existing 24-hour ventilation system.

- ◻ Ventilation vent (air supply)

← Airflow enters from outside a building
- ← Flow of indoor air
- ◻ Ventilation vent (air exhaust)

← Airflow leaves from inside a building



Example of 24-hour Ventilation System



Switch example ①



Switch example ②



Wall vent example ①



Wall vent example ②



Bathroom vent example

However, because the air supplied from outside may be cold (or hot), people often close the ventilation vents and turn OFF the 24-hour ventilation system. When that happens, the ventilation system cannot perform its role and, before you know it, dirty air accumulates inside the house. To prevent dirty air from accumulating inside, be sure to always properly ventilate by leaving the ventilation vents open and the 24-hour ventilation system turned ON.

②Opening the windows and creating an air passage

The standard length of time and frequency to ventilate a house by opening windows is about 5-10 minutes per hour.

However, the speed in which air is discharged outside a building varies depending on such factors as window size, area of the room, and type of pollutants floating indoors. For this reason, it is difficult to accurately determine ventilation effectiveness and the degree to which ventilation can reduce the risk of infectious diseases.

Also, the effect is higher when ventilation is performed twice an hour for five minutes than when it is performed once an hour for ten minutes. Consequently, the more often you ventilate your house, the greater improvement you will see in ventilation effectiveness.

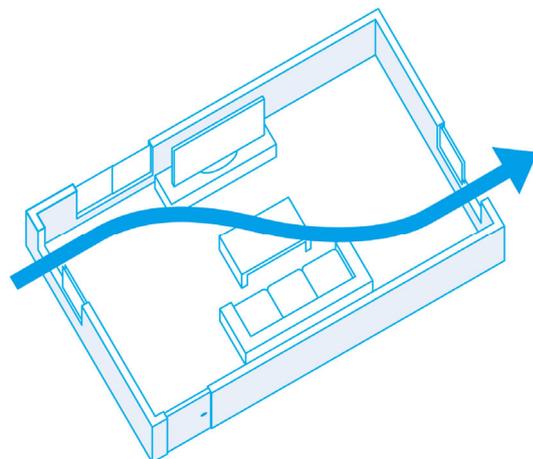
For those worried about pollen when ventilating with an open window, placing an air purifier near the window is somewhat effective in keeping pollen from entering the room. Lace curtains are also an effective measure against pollen.

Method for opening windows to create an air passage

When ventilation is performed by opening windows, it is better to open two windows instead of one in order to create an air passage for efficient ventilation. It is even more efficient if the two windows are diagonal to each other.

Good example:

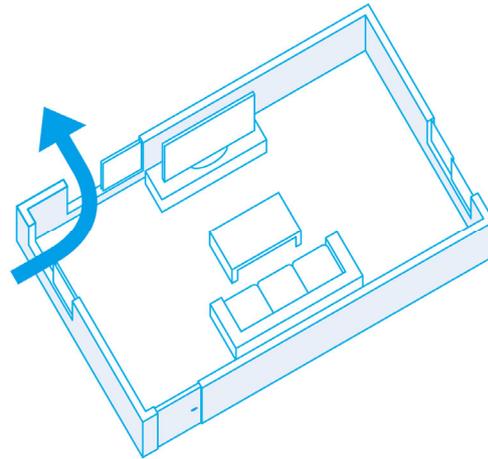
It is efficient to open windows that are diagonal to each other.



Opening two windows positioned closely to each other will prevent air from flowing through the entire room.

Bad example:

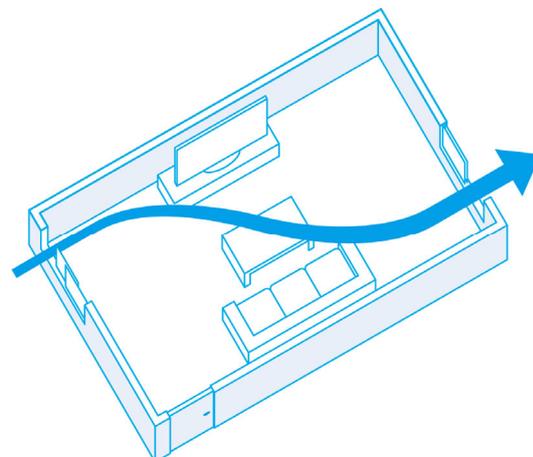
Inefficiency results from opening nearby windows due to the small area in which air circulates.



For difficulties in letting a breeze inside even when windows are open

Wind and air tend to smoothly enter a room through small gaps while easily leaving a room through larger gaps (with a small force). If you find it difficult for a breeze to flow into a room, try opening the window supplying air only a narrow distance while opening the window discharging air a much wider distance. This will increase ventilation efficiency.

When it is difficult for a breeze to flow into the room, adjust the width that the window is opened (so that a little can discharge a lot).

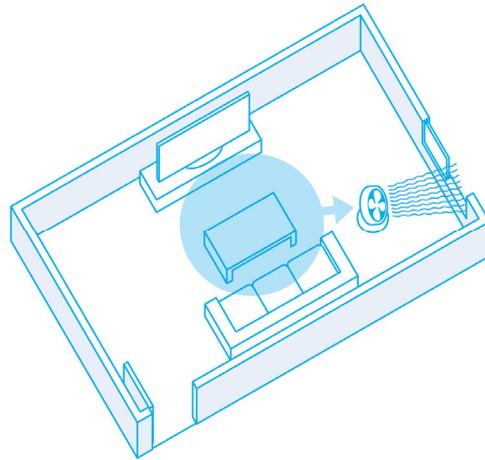


For rooms with only one window

When there is only one window, it is effective to open the room door and place a fan or similar device near the window.

The most effective method is to turn the fan toward the window and let air outside the room. If the fan is directed toward the room, even though fresh outdoor air will enter the room through the window, the dirty air in the room will remain inside.

For a room with only one window, place a fan toward the window to create a breeze.

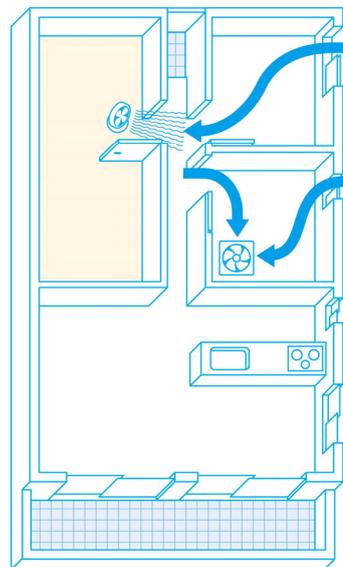


For a room without a window

When a room has no windows, you can open the room door and place a fan or similar device to enable the flow of air outside the room. The air from other rooms is also effectively discharged outside the house by operating a ventilation fan for a bath, lavatory, or toilet.

Ventilation method for a room without a window

-  Room without a window
-  Ventilation fan



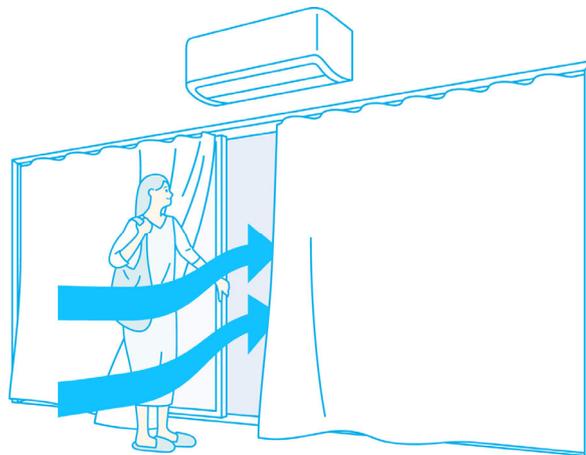
③ Using the ventilation fan in the kitchen

Operating a kitchen ventilation fan can be especially effective since it can discharge the largest volume of air among all the ventilation fans installed in the house. Try opening a window located as far away as possible from the kitchen to ventilate the entire room effectively. Even when two windows are available, the kitchen ventilation fan can still assist in ventilation. For this reason, we recommend using the kitchen ventilation fan in addition to opening windows.

④ Adopting summertime ventilation techniques

When arriving home: Open a window to ventilate a room before turning on the air conditioner

In summer, a room will cool down faster and more efficiently when you first ventilate and discharge hot indoor air before turning on the air conditioner.



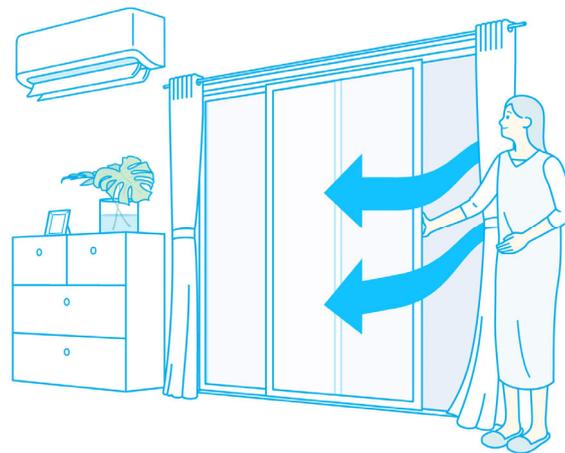
When ventilating: Slightly lower the set temperature and leave the air conditioner on

When you open a window to ventilate indoor air in the summer, outdoor air can easily enter the room and raise room temperature. For this reason, if you feel a little hot while ventilating, you should slightly lower the set temperature and leave the air conditioner on to prevent a heat stroke.

When ventilating: Open a window that is away from the air conditioner

Many air conditioners are installed close to windows. When ventilating with the air conditioner turned on, you should open a window that is away from the air conditioner. This is because the air conditioning load increases when an air conditioner intakes hot outdoor air, resulting in high electrical bills.

Additionally, opening a window that is away from the air conditioner can prevent condensation, including condensation at the air outlet, that occurs when rapidly cooling hot air.



Summary of Home Ventilation Methods

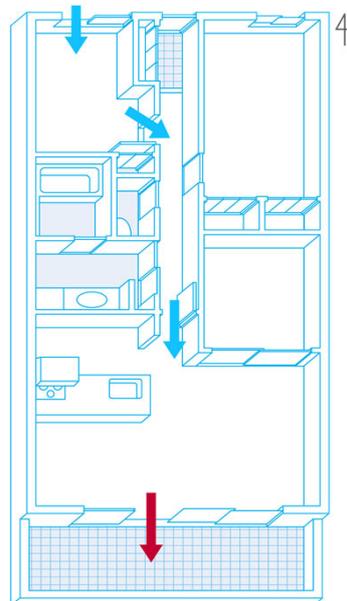
Depending on your living environment, you can combine the four ventilation methods explained above:

- ① Using the existing 24-hour ventilation system properly,
- ② Opening the windows and creating an air passage
- ③ Using the ventilation fan in the kitchen, and
- ④ Adopting summertime ventilation techniques.

Knowing these methods will enable you to perform efficient ventilation of your home.

Want to ventilate the entire room?

Open the windows on the entrance side and balcony side, and be sure to open the doors along the air passage.



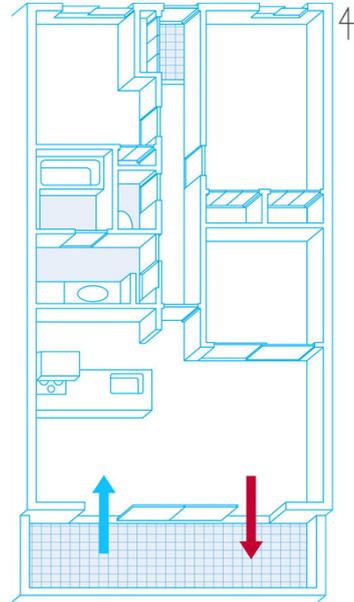
Ventilation example of a typical apartment in Japan

Want to ventilate the living room? (when you cannot open an entrance window)

Open two windows facing the balcony.

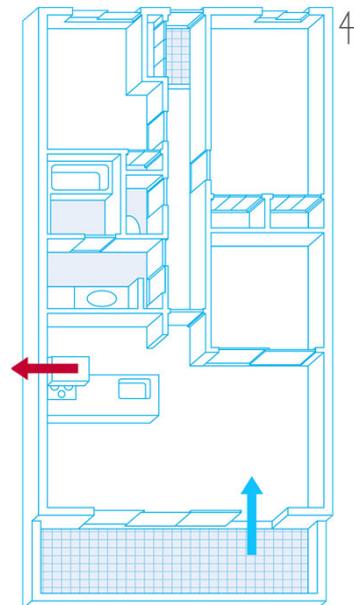
※No breeze will enter or leave when only one window is open, so be sure to open both ends to allow air to flow.

The balcony windows should be opened at two places (both ends).



If a breeze does not flow into the room even when the windows are open, operate the kitchen ventilation fan (for the range hood) and open the balcony window farthest away from the ventilation fan.

Operate the kitchen ventilation fan and partially open the window facing the balcony which is farthest away from the kitchen.



Daikin, as a company that provides solutions with air, will continue to bring comfortable air and confidence to customers around the world while pursuing the new possibilities of air and conveying its importance.