



Air quality in the cabin

The air in the passenger compartment is a complex mixture of air from the outside, supplying the air conditioning and heating systems, and emissions from materials in the cabin. In order to **prevent allergies and unpleasant odours for the car's occupants**, the air coming from immediately outside the car is filtered. In certain cases of high outside concentrations, air recycling enables the car to be insulated.



RENAULT COMMUNICATION

BASIC FACTS

In heavy traffic, the air carries harmful chemical compounds such as sulphur and nitrogen oxides. Unburned hydrocarbons and particulates are added to this mixture, which can cause tiredness, discomfort and unpleasant effects if inhaled over a long period. To maintain passenger comfort, the only solution is to treat the air taken in by the air conditioning or heating circuit before it enters the passenger compartment.

IN SHORT

As well as filtering the air, quality efforts on low-emission materials supplement the panoply of actions which can be taken. Manufacturers also control the sealing of vehicles, thus eliminating any risk of exhaust gases entering the car.



HOW DOES IT WORK?

Several processes can be used. The simplest are based on particulate filtering, optimised to retain pollen. Combined filters may also be used to retain both particulates and gases. These filters, using activated carbon, deal with nitrogen oxides, sulphur dioxide and hydrocarbons. When they are new, efficiency reaches 95%. Regular replacement is recommended, at least once a year or every 15,000 km, to maintain effective demisting. On some vehicles, filtration may be supplemented by gas sensors, sensitive to carbon monoxide or nitrogen oxides, which control the closure of air intake flaps when these compounds are found in high concentrations. The vehicle is put into recyrcing mode.

Pollen filters

Supports are made of non-woven materials with porosity optimised to retain allergenic particles such as pollen. Sieving, inertia, diffusion and interception mechanisms retain the

particles in decreasing order of size.

Activated carbon filters

Activated carbon comes in powder form. The activation is the result of controlled oxidation which attacks the grains on the surface and in-depth, creating networks of channels or "pores" with the ability to adsorb chemical molecules. The finer the pores, the greater the effectiveness. Activated carbon is a low-cost material, as the raw materials used are wood, sawdust, fruit stones, etc.

Future technologies include photocatalysis

Another solution being studied is based on photocatalysis. The activated carbon air filter is covered with catalyst activated by ultraviolet lamps. This causes destruction of the pollutants retained in the filter, such as benzene and aldehydes. Photocatalysis can also reduce nitrogen oxides.

Intake of air from the exterior
Heat comfort

Emissions from materials

- Gases
 - Particulates
 - Odours
- at all phases of the vehicle's life



- Emissions from the engine compartment
- Leaks from circuits: fuel, air conditioning

Rising exhaust gases

SEALING OF VEHICLE

- Wear of abrasive materials
- Brakes
- Clutch
- Tyres
- Anti-corrosion products