

## CAUTION when replacing one refrigerant with another

The temptation is huge to play the role of an apprentice chemist in these times when the availability of refrigerants becomes an issue.

However, this has consequences from both a regulatory and a security point of view.

### The different cases of refrigerant replacement:

This includes, for example, the extraction of the original refrigerant remaining in the circuit and its replacement by another one:

- The replacement refrigerant is not of the same nature as the original one
- The replacement refrigerant is of the same nature, but mildly (lower flammability) flammable
- The replacement refrigerant is of the same nature (replacement of one HFC by another HFC, both non-flammable)

Only equipment manufacturers can authorize the replacement of the original refrigerant by another refrigerant! Often recommendations are added to these authorizations: change of oil, seals, expansion valve settings, etc....

In addition to the regulatory labelling requirement, which provides information on the refrigerant or mixture in the system, this information makes it possible to:

- guarantee the safety of the **contractor**
- check the regulations that apply to the refrigerant
- ensure that all arrangements related to this change have been made.

### In the case of a new installation:

Any installation designed and manufactured to be operated with an HFC class A1 (non-flammable) refrigerant cannot be converted or charged with another type A3 - A2 or even A2L (flammable and mildly flammable) without the approval of the equipment or component manufacturer. There are real risks of lack of performance, failure and also accidents!

Mixing refrigerants, during the charging process of an installation, with a different refrigerant than the original must be avoided.

### In the case of an existing installation:

- Any mixing of refrigerant during the topping up of an existing circuit by a refrigerant different from the original one presents the risks mentioned in the introduction.
- The obligations when converting an existing installation requires the operator to modify the machine labelling, among other things.

### Regulatory requirements - Reminder

Under no circumstances may a mixture of refrigerants be made without the agreement of the manufacturer or manufacturers of the equipment components.

One must comply with the regulations in force:

- A Safety Data Sheet for the mixed refrigerant must be made
- The mixture must meet the requirements of the REACH Directive

**Association of European Refrigeration Component Manufacturers**

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# NEWSLETTER



- CE conformity (**electrical and fluid**)
- PED compliance with the possible change of equipment category
- labelling in accordance with the refrigerants used:
  - Composition
  - GWP, etc....

The risks involved:

#### Technological risks

- Incompatibility of components
- Destruction or reduction of component life
- Discharge temperature too high
- Deterioration of the lubricant
- Deterioration of the refrigerant
- Risk of explosion
- Loss of performance

#### Administrative and regulatory risks

- Loss of CE conformity
- Accident not covered by insurance
- The corresponding sanctions are administrative or criminal
  - up to 2 years' imprisonment and a fine of 75,000 euros (in France).
  - formal notice or report depending on the seriousness of the situation
  - the **national inspectors** who carry out the controls may require a fine for each piece of equipment and may also force the operator to stop its equipment with or without a daily penalty payment.

The user is exposed to the total loss of **warranty** by the manufacturer of the machine or equipment as soon as another non-recommended refrigerant has been introduced into it.

The cases generally reported so far concern mixtures proposed to replace other refrigerants, sometimes only composed of hydrocarbons - possibly cheaper than the original and supposedly as effective as the original; unfortunately, often components do not resist this change for reasons related to oil, temperature or pressure, not to mention the loss of performance of the equipment.

In addition, the operator assumes administrative and criminal liability in the event of an accident (on property or persons) following a charge or recharging with a non-compliant refrigerant.

An accident due to a lack of labelling or information is an aggravating factor.

Source "AFCE" France.

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