

Manufacturer's advice on the use of 'Drop In' Refrigerants R417A & R422D to replace R22

R22 refrigerant, having both Ozone Depleting Potential and Global Warming Potential is currently being phased out under EC2037/2000.

R22 (and other HCFC based refrigerants) will no longer be manufactured or available as 'new' refrigerants from 31st December 2009. Recycled R22 will still be available, and able to be used for the repair of existing systems, until the 31st December 2014.

There are also 2 alternate 'drop in' refrigerants that are being promoted as direct replacements for R22. These are both HFC based refrigerants with zero Ozone Depleting Potential manufactured by DuPont.

The manufacturer's summarised data on these refrigerants are as follows:

DuPont™ ISCEON® MO29 (R422D)

DuPont™ ISCEON® MO29 (R422D) is an easy to use, non-ozone depleting HFC refrigerant blend of R125, R134a and R600a.

ISCEON® MO29 is used to replace R22 in a wide variety of high, medium and low temperature refrigeration applications as well as air conditioning and water chiller systems. It has also been used in new equipment and selected 'flooded' applications.

ISCEON® MO29 is a close match to R22 in terms of capacity and efficiency in most systems, but with a significantly lower discharge temperature which may prolong life of the compressor.

ISCEON® MO29 is compatible with traditional and new lubricants, providing easy, quick, cost effective retrofits and can be topped up during service without removing the entire refrigerant charge.

As ISCEON® MO29 is a blend it should always be removed from the cylinder as a liquid when charging a system.

DuPont™ ISCEON® MO59 (R417A)

ISCEON® MO59 (R417A) is an easy to use, non-ozone depleting HFC retrofit refrigerant blend of R125, R134a and R600.

ISCEON® MO59 is typically used to replace R22 in direct expansion stationary air conditioning and medium temperature refrigeration systems.

ISCEON® MO59 has a significantly lower discharge temperature than R22, which may prolong the life of the compressor. In most systems ISCEON® MO59 provides the required cooling capacity and has shown energy savings (please see our download section). However, some systems may experience reduced capacity.

ISCEON® MO59 is compatible with traditional and new lubricants, providing easy, quick, cost effective retrofits and can be topped up during service without removing the entire refrigerant charge.

As ISCEON® MO59 is a blend it should always be removed from the cylinder as a liquid when charging the system.

For full product specifications and retrofit recommendations please refer to http://refrigerants.dupont.com/Suva/en_US/products/index.html

We have approached the main Air Conditioning manufacturers for their comments / advice with respect to using the above refrigerants in their R22 based equipment and they have responded as follows:

Toshiba

Not tested any replacement refrigerants. Some research has been done on R417A and it was found to give a 6 - 10% drop in performance and a 15 - 25% increase in power consumption. It is also recommended that the mineral oil be replaced with poly oil.

At present they have no plans to carry out any further investigations or tests. The use of these replacement refrigerants will be at the discretion of the contractor.

Sanyo

Recommend R417A for ALL Sanyo R22 systems including VRF - 'straight forward drop in'

Several Sanyo systems were charged with R417A at installation more than 10 years ago with no noticeable effect on performance.

Mitsubishi Electric

The official guide line is not to use them. They will reduce the efficiency and shorten the compressor life as the units are not designed on the 'drop in' refrigerants.

The client will have to take the risk on using them.

Fujitsu

Fujitsu have never done any tests with 'drop in' refrigerants, therefore can not comment on the life expectancy or efficiency of the system if alternate refrigerant is used.

Hitachi

All of our systems are tested with their specified refrigerants, so all COP's, duties and the general durability is tested and based with that units specific refrigerant. We have not tested our equipment with other refrigerants, so we cannot suggest or recommend our units to work with them.

Daikin

Daikin have not carried out any testing with 'drop in refrigerants'. If the customer wishes to try a 'drop in' refrigerant, Daikin can take no responsibility for the performance of the equipment, as the refrigerant utilised will not be the refrigerant that the equipment was originally manufactured to work with. Doing so will be entirely at the risk of the owner of the equipment.

Other considerations

It is reported on several web sites that refrigerant leaks are common after replacing R22 with either of the above 'drop ins'. R22 tends to swell the elastomeric seals in the system, a characteristic not experienced with either R417A or R422D. It is recommended that all elastomeric seals which come into contact with the refrigerant be changed during the refrigerant replacement process.

As recycled R22 will be available until the end of 2014, there is no legislative need to change to the 'drop in' alternates at present, unless the Ozone Depleting Potential of R22 is of concern to individuals or companies. After this 'drop in' alternates will have to be used.