

## Freon R-22 environmental care

*conversion to new environmentally friendly freon solutions*

Number: 2010/02

### The Issue:

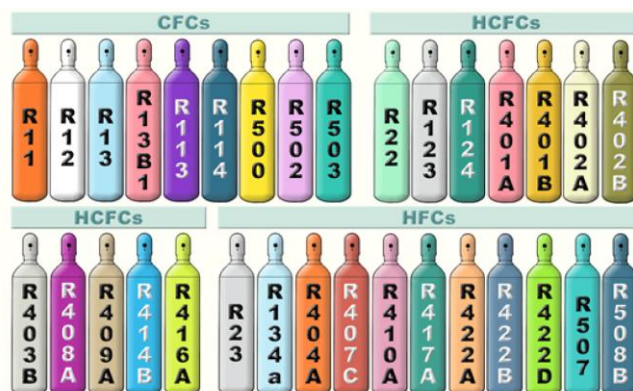
If R-22 is released into the atmosphere, it causes Ozone depletion. So convert to Veclean Eco-Friendly Freon solutions with Vecom.

- We care for the environment. Our slogan is: Clean Ships – Clean Seas
- Worldwide service and support capabilities
- Technical team can support flying worldwide

### Regulation

Regulation of the European Union (EC) No 2037/2000 of 29 June 2000 on substances that deplete the Ozone layer demand the control of the use of hydrochlorofluorocarbons (Article 5).

Or more detailed: From 1 January 2010, the use of virgin hydrochlorofluorocarbons shall be prohibited in the maintenance and servicing of refrigeration and air-conditioning equipment existing at that date; all hydrochlorofluorocarbons shall be prohibited from 1 January 2015 (Paragraph 1. (c) (v)).



All vessel carrying EEC flag will have to change R22 as will not be able to find it in Europe. Phase out of R22 is taking place already and till 2030 will be completely not available worldwide.

### History

The ozone layer protects us from the UV radiation coming from the sun. World already faces problems with marine life, skin cancer and medical problems to humans.

- Possible damage to human immune systems
- Damage to marine life and phytoplankton
- Reduced crop yields
- Increased incidence of skin cancer
- Increased incidence of eye cataracts

### Solutions

Unifrost R417A and Unifrost R407C are the most common alternatives to R22, nevertheless Vecom Marine suggests that above replacements might create problems in Hot waters. We do believe that R404A is the right change over or alternative to the recycling R22 which is still available in the market. Another product that gives the right results is the R427 but the availability of this product worldwide is still a problem. We expect that this product will be distributed worldwide during 2010.

Unifrost R-417A has same operating pressures as R-22, so no need for change of gauges, safety valves, condenser etc, as well as compatible with all systems.

Today's market and availability is still not in a position to justify which Freon is the best to replace R22, so availability of all Freons worldwide still remains a problem.

In Europe we do suggest:

1. R417A (46.6% R125 + 50% R134A + 3.4% R600)
2. R404A (44% R125 + 52% R134A + 4% R134A)
3. R407C (25% R125 + 52% R134A + 23% R32)
4. R507 ( 50% R125 + 50% R134A)
5. Recycling R22 with available – R22 – Reduced availability
6. R134A - Reduced availability

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