



Unicool

A range of marine refrigerants

Unicool[®]
by Wilhelmsen Ships Service

You can rely on Unicool

- Performance, quality and compliance

Reliable Delivery

Wilhelmsen Ships Service offers world wide availability and is the leading supplier of refrigerant gases to the maritime industry. We have more than 120,000 refillable refrigerant cylinders constantly in circulation world wide. Before a cylinder is refilled with our Unicool refrigerants, it is carefully inspected and refurbished. Cylinders that do not meet our standard are scrapped.

Assured quality

Our Unicool selection of marine refrigerants complies with the global standard ARI700/2006 quality-controlled specification to assure the right quality and avoid system down-time. Unicool refrigerants are supplied in colour-coded refillable cylinders. This provides an environmentally sound way of dealing with marine refrigerants.

Committed to protecting the environment

Wilhelmsen Ships Service follows the global development of rules and regulations pertaining to refrigerants, and we are therefore able to offer advice on compliance to the marine industry. As a leading company in the maritime industry we are committed to work for a better environment. We develop onboard competence by providing useful and informative material such as the *Refrigerant Handling Guide* (product number 802140) .

Changing regulations

European Union

Under the Montreal Protocol (MP), the European Union member states are phasing out virgin HCFC (hydro chlorofluorocarbon) refrigerants with effect from 1 January 2010. It is prohibited to top-up a refrigeration system on an EU-flagged vessel using virgin HCFC refrigerants. R-22 is the most commonly used HCFC refrigerant in the maritime industry.

For EU-flagged vessels, it is still legal to use reclaimed R-22 obtained from an approved company within the EU to top-up and service systems until 2015. Buying virgin R-22 outside the EU after 1 January 2010 is a violation of the EU1005/2009 regulation.

Non article-5 countries

From 1 January 2010 a limitation on production and import of HCFC's in the non article-5 countries was introduced.

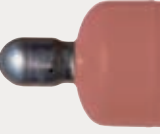
The yearly allowed production is now limited to 25% of the base level established in 1996.

United States of America

In the United States of America it will only be permissible to use virgin R-22 to top-up existing systems constructed before 1 January 2010. No construction of new systems utilising R-22 will be allowed.

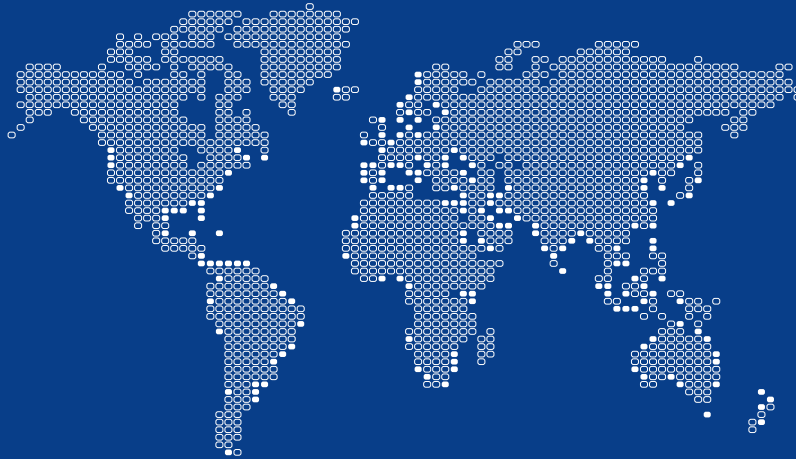
R-22 changeover solutions

Evaluating capacity changes against the cost of doing the changeover, Wilhelmsen Ships Service recommends Unicool R-417A as the most economical solution for changing over existing R-22 systems and maintaining sufficient performance. However, a careful evaluation of each system should be made, in some cases a more expensive changeover solution should be selected. For these systems refrigerants like Unicool R-407C, R-422D, R-427A and sometimes R-134a are possible alternatives.

Refrigerant types	ODP	GWP (IPCC 3rd Assessment)	Cylinder volume	Filling weight	Product number	Cylinder colour	Picture
<h2>Unicool R-22</h2> <p>Widely in use for a variety of marine applications. Phase-out regulated by MP.</p>	0,049	1700	12.3 litre 56 litre	12.5 kg 57 kg	591 905621 591 905059	green green	
<h2>Unicool R-134a</h2> <p>Long-term replacement for R-12. Best performance in medium and high temperature applications.</p>	0	1300	12.3 litre 56 litre	12.5 kg 57 kg	592 905620 592 905557	blue blue	
<h2>Unicool R-404A</h2> <p>Best performance in low and medium temperature applications. Common in new marine systems.</p>	0	3784	12.3 litre 56 litre	9.5 kg 45 kg	594 905623 594 905606	orange orange	
<h2>Unicool R-407C</h2> <p>Best performance in medium and high temperature applications. Suitable for new systems and R-22 changeover.</p>	0	1653	12.3 litre 56 litre	11 kg 52 kg	594 905624 594 905607	orange-brown orange-brown	
<h2>Unicool R-410A</h2> <p>Twice as efficient as R-22. Recommended for new systems only.</p>	0	1975	12.3 litre 56 litre	9.5 kg 45 kg	594 905627 594 905608	rose rose	
<h2>Unicool R-417A</h2> <p>Replaces R-22 in existing direct expansion system across a variety of applications.</p>	0	2140	12.3 litre 56 litre	11 kg 51 kg	593 905705 593 905637	green green	
<h2>Unicool R-422D</h2> <p>Design to replace R-22 in existing direct expansion chiller systems.</p>	0	2623	56 litre	52 kg	593 905710	green	
<h2>Unicool R-427A</h2> <p>Used for replacing R-22 in installations with electronic expansion valves.</p>	0	2013	56 litre	53 kg	593 905708	green	
<h2>Unicool R-507</h2> <p>Best performance in low and medium temperature applications. Common in new systems.</p>	0	3850	12.3 litre 56 litre	9.5 kg 45 kg	594 905628 594 905610	teal teal	

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- Assured quality
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For a full listing of Customer Services, please refer to our Network Directory or visit us at www.wilhelmsen.com/shipsservice

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