



UNICOOL A RANGE OF MARINE REFRIGERANTS

- **Reliable delivery**
- **World-wide compliance**
- **Assured quality**
- **Committed to protecting the environment**

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 no. 802140).

Changing Regulations

Montreal Protocol

The Montreal Protocol is phasing out substances that depletes the ozone layer, R-22 will be completely phased out globally by 2030. However, The European Union (EU) member states phased out virgin R-22 by Jan 1st, 2010 (reclaimed by Jan 1st 2015). Any charging of R-22 on an EU-flagged ship is a violation of the EU 1005/2009 regulation.

In United States of America R-22 will be permissible until Jan 1st 2020, after which date import or production will be illegal.

Global production of R-22 will be drastically reduced from Jan 1st 2020, so available volumes of R-22 will predominantly come from recycled R-22; if the ship's flag allows the use of R-22.

Climate Change (F-gas regulation)

The EU introduced the F-gas regulation on Jan.1 2015 (EU 517/2014 regulation). The F-gas regulation phases down the use of Hydro Fluoro Carbon (HFC) refrigerants, and phase out HFC with high global warming potential (GWP). From Jan 1st, 2020 HFC refrigerants with GWP above 2,500 will be illegal in EU – this includes R-404A, R-507, R-422D and more.

A similar regulation to the F-gas regulation is announced from the US authorities, in order to limit the use of HFC refrigerants and fight the climate change.

Changeover solutions

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

Please observe the GWP limitation mentioned above, and select a replacement with a low GWP value for any retrofit / changeover solution. Please also ensure to specify a low GWP refrigerant for your new buildings to comply with future regulations.



	ODP	4AR GWP IPCC 4th	Cylinder volume	Filling weight	Product number	Cylinder colour	
UNICOOL R-22 Single fluid. Widely used for low, medium and high temperature applications. Phase-out regulated by the Montreal Protocol.	0,049	1810	12.3 litre 56 litre	12.5 kg 57 kg	905621 905059	green green	
UNICOOL R-134a Single fluid. Long-term replacement for R-12. Best performance in medium and high temperature applications. Suitable for new systems and system changeover.	0	1430	12.3 litre 56 litre	12.5 kg 57 kg	905620 905557	blue blue	
UNICOOL R-404A Near-azeotropic blend. Replacement for R-502 and R-22. Best performance in low and medium temperature applications. Most suitable for new systems.	0	3922	12.3 litre 56 litre	9.5 kg 45 kg	905623 905606	orange orange	
UNICOOL R-407C Zeotropic blend. Long-term replacement for R-22. Best performance in medium and high temperature applications. Suitable for new systems and system changeover.	0	1775	12.3 litre 56 litre	11 kg 52 kg	905624 905607	orange-brown orange-brown	
UNICOOL R-407F Harmless to the ozone layer. Good performance in low, medium and high temperature applications. Possible replacement for R-404A, R-507 and R-22.	0	1825	12.3 litre 56 litre	11 kg 51 kg	905712 905715	light green light green	
UNICOOL R-410A Near-azeotropic blend. Long-term replacement for R-22. Suitable for low, medium and high temperature applications. Our recommendation for new systems installations.	0	2090	12.3 litre 56 litre	9.5 kg 45 kg	905627 905608	rose rose	
UNICOOL R-417A Zeotropic blend. Long-term replacement for R-22. Suitable for low, medium and high temperature applications. Wilhelmsen Ships Services preferred R-22 changeover solution.	0	2345	56 litre	51 kg	905637	green	
UNICOOL R-422D Zeotropic blend to replace R-22 in existing direct expansions chilling systems.	0	2730	56 litre	52 kg	905710	light green	
UNICOOL R-427A Zeotropic blend, replaces R-22 installations with electronic expansions valves.	0	2140	56 litre	53 kg	905708	green	
UNICOOL R-507 Azeotropic blend. Replacement for R-502 and R-22. Best performance in low and medium temperature applications. Most suitable for new systems.	0	3985	12.3 litre 56 litre	9.5 kg 45 kg	905628 905610	teal teal	