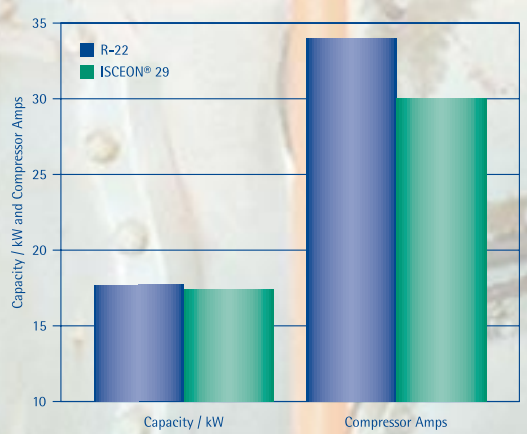
The Direct Replacement for R22 in Water Chillers

ISCEON® 29 offers improved performance compared to other alternatives in water chillers where the equipment is running close to its design capacity.

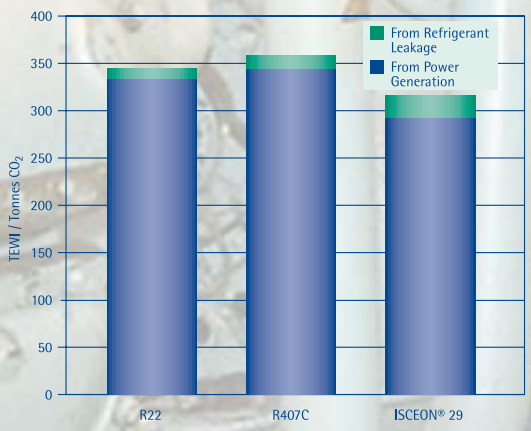
Performance & Environmental Properties

ISCEON® 29 Performance in a Water Chiller*



*Carrier Water Chiller Model 06E-6275 610E, twin circuit with total charge of R-22 49kg (2 x 24.5 kg). Operating at part load, condensing temperature 38°C, evaporating temperature 1°C and suction superheat 7K.

ISCEON® 29 TEWI Comparison**



**Calculations assuming 15 year equipment life, 10% annual leak rate and 0.53 kgCO_2 / kWh electricity generated. For R22 and ISCEON® 29 performance data taken from example opposite, for R407C the performance ratios from the Bitzer Refrigerant Report 11 were used.

- Lower compressor power than R22 and R407C
- Lower pressure than R407C
- 40% Lower Temperature glide than R407C
- Lower compression ratio than R22 and R407C
- Suitable for use with both Mineral and polyol ester based oils
- Zero Ozone Depletion Potential, non-toxic and non-flammable
- No engineering changes needed
- Suitable for New and Existing equipment

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CHALLENGING BOUNDARIES

CONVERSION GUIDELINES ISCEON® 29

Before conversion it is important to ensure the system is in good working order and leak free.
If possible briefly check typical evaporator and condensing pressures of the system.

- Turn on compressor crankcase heater (if fitted) and recover R22 to a cylinder dedicated to that type of refrigerant. Do not vent and do not mix different types of refrigerant.
- If possible, check the condition of the lubricant, e.g. water, acid, solids, and if necessary renew the contaminated oil with the same type of lubricant and dispose of the old oil responsibly. ISCEON® 29 is compatible with Mineral, Alkyl Benzene and Polyol-Ester based lubricants.
- It is considered good practice to change the filter / drier whenever the system is exposed to atmospheric air. In small hermetic systems it may not be necessary to change the filter / drier provided care is taken not to allow moist air to enter the system.
- Check the condition of any seals and replace if in a poor condition. It is not necessary to use any different materials when converting to ISCEON® 29.
- Pressure test the system with dry nitrogen 25 bar and then evacuate to at least 500 mbar (if an oil change is performed, evacuate to at least 50 mbar).
- Charge the equipment with the new refrigerant, removing from the cylinder in the liquid phase. Do not charge liquid refrigerant directly into the compressor. The total charge of ISCEON® 29 is 5% less than R22 by weight. NOTE: It is not unusual for the occasional bubble to be seen in the liquid line sight glass. A small number of bubbles in the sight glass is not a reliable indication of an under-charged system.
- Run the system and check operating conditions. NOTE: the pressure / temperature relationship of ISCEON® 29 is different from that of R22. It is therefore necessary to have the ISCEON® 29 pressure tables available.
- If possible check the oil level. Removal of R22 from the system can result in the loss of significant amounts of oil. If the oil level falls to below the minimum allowed, top up the oil to the minimum level. Do not fill to maximum as the level may rise again. Within a short period the oil level will stabilise.
- Carry out a thorough leak check. Any detection system suitable for detecting HFC refrigerants (e.g. R134a) is suitable for detecting ISCEON® 29.
- Clearly label the system as containing ISCEON® 29.
- In the event of a leak from the system it is possible to top-up the system with virgin product without detriment to the performance.
- It is possible to recycle ISCEON® 29 but care must be taken to ensure the whole of the refrigerant charge is removed from the system. It is equally important to ensure that when recovered product is once again charged to a system, the refrigerant is taken from the liquid phase.

INNOVATION with Rhodia

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