DuPont[™] ISCEON[®] MO99[™]

Frequently Asked Questions and Features and Benefits of ISCEON[®] MO99[®]

The most frequently asked questions from contractors and refrigerant distributors.

What is the difference in the discharge temperature of ISCEON® MO99" and R-22? How much injection cooling is needed compared to the R-407 series refrigerants?	ISCEON [®] MO99 [®] operates between 25 and 45 degrees cooler than R-22. On low temperature systems operating at extremely high ambient temperatures, MO99, R-407C and R-407A may need a small amount of injection cooling.
What is the Copeland® brand products team saying about this refrigerant?	We are working with major component manufacturers to approve MO99 for a variety of applications.
What is current price and future price outlook for ISCEON® MO99" compared to R-22?	Please see your DuPont Distributor for specific pricing. The price of ISCEON® MO99® today is higher than R-22. Pricing is determined by supply and demand dynamics, and we expect R-22 price volatility to increase.
What seals have needed to be changed?	Critical seals need to be changed. Critical seals are seals cannot be isolated when the system is operating. R-22 penetrates elastomeric seals and when it is removed from the system, the R-22 off-gasses and the seals shrink, leaving an opportunity for HFC leaks.
Can ISCEON® MO99" be used in cooling systems using flooded evaporators?	The use of HFC blends in these types of systems will reduce the system performance. We have worked with customers on a case-by-case basis. If you have a specific project, please contact us at www.isceon.com sales & support.
Where is ISCEON [®] MO99 [®] available to be purchased?	ISCEON® MO99" can be purchased from your local DuPont refrigerant distributor. Visit www.isceon.com to find a distributor near you.
Has ISCEON® MO99" been used for new equipment?	We have used ISCEON® MO99® on both new refrigeration and air conditioning systems. See the Edison Chouest Offshore Case history at www.isceon.com.
What has been the impact of the 5–10% capacity loss versus R-22?	The prevailing view from industry experts, which has been confirmed in our field experience, is that any capacity loss within 10% of the original R-22 will not be noticeable by end user because most R-22 refrigeration systems have at least 10–15% excess capacity.
Has ISCEON® MO99® been used in capillary tube systems sized for R-22?	We have limited experience with cap tubes. This really depends on the system. If the cap tube can move 5–10% higher refrigerant volume, then it may be possible.
Can systems running with ISCEON [®] MO99 [™] be topped off with ISCEON [®] MO99 [™] ; in other words, does the glide have a negative impact on the system performance?	You can top off the charge. The issue with blend refrigerants or refriger- ants with glide, is that some of the components "boil off" more quickly than other components, leaving behind a mixture with potentially lower capacity. We have performed a modeling simulation test for MO99 under worst case conditions (20% full vapor leak) and topped off for 8 years, and the total capacity loss was calculated to be only 5% over that entire 8 year modeling period. Please note this was a worst case full vapor leak test.
What is the Global Warming Potential (GWP) of ISCEON® MO99"?	Two values are used in the industry. The GWP values for ISCEON® MO99" are 1) SAR value (used by the EPA) 1890; 2) AR4 value 2264.
If my system has 10 lbs. of R-22, how many pounds of ISCEON® MO99" need to be added during a retrofit?	Most systems are pound for pound; however, the range of charge size is +/- 5% of R22 charge—this depends on the system design. Detailed retrofit guidelines are available at www.isceon.com.
Has ISCEON® MO99" been used in heat pumps? What have been the results?	We have tests for heat pump applications in progress; however, we have not field tested heat pump applications. If you would like to complete product use testing with us, that would be a great next step. Please contact us at www.isceon.com sales & support.
Can ISCEON° MO99" be added on top of R-22 without removing the R-22?	No. Mixing refrigerants can lead to high pressure formulations, unpredictable performance, and is not recommended.
Has ISCEON® MO99" been used in residential A/C systems?	Our field work to date has been focused on commercial A/C and refrigera- tion, however, we are doing development work in residential systems and we will publish results when available.

Summary of Facts about ISCEON® MO99

Refrigerant Market Changes

HCFC refrigerants

Covered under U.S. Clean Air Act

58% "supply" reduction 1/1/10

27.5 million lbs. projected supply shortfall in 2010

2015 further significant reductions (90% of original baseline)

HFC refrigerants

Not phased out under the U.S. Clean Air Act

Climate Control legislation is significant focus of new administration, but in early stages; earliest implementation expected 2012

HFC refrigerants provide bridge from HCFCs to low GWP alternatives

Zero ozone depleting refrigerants

ISCEON[®] MO99[™] Features*

Combines similar R-22 pressureenthalpy characteristics with mineral oil compatibility

Comparable energy efficiency to R-22

42% lower global warming potential than R-404A

Works across evaporator temperatures, applications include both refrigeration and air conditioning systems

Only 5–10% capacity loss versus R-22

Zero ozone depleting refrigerant

SNAP approved for sale in the U.S.

ASHRAE number R-438A

Meets ASHRAE A1 safety classification

7° F evaporator glide

Benefits* of ISCEON[®] MO99[®]

Lowest cost of ownership Lower labor costs No oil change No TXV change No powerhead change No line set changes Use one refrigerant for most evaporator temperatures Minimal pressure adjustments Lowest cost to retrofit No plugging of TXV strainers No plugging of EPR valves

*For most DX systems; see retrofit guidelines before using.

For more information on DuPont[™] ISCEON[®], or other DuPont Refrigerants, please contact your local representative.

DuPont Refrigerants Chestnut Run Plaza 702 Wilmington, DE 19880 Tel: 877-683-3566

www.isceon.com

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