

DuPont Refrigerants

U.S. GENERAL REPLACEMENT GUIDE

RECOMMENDED R-22 REPLACEMENTS*

<p>ISCEON® MO99™ R-438A</p> <p>HFC Retrofit</p> <p>Lubricant MO AB POE</p> <p>Evaporator Temp High Medium Low</p> <p>Applications AC: Commercial Lt Commercial Refrigeration: Commercial Industrial</p>	<p>ISCEON® MO29 R-422D</p> <p>HFC Retrofit</p> <p>Lubricant MO AB POE</p> <p>Evaporator Temp Medium Low</p> <p>Applications Refrigeration: Commercial Industrial</p>	<p>Suva® 407A R-407A</p> <p>HFC New Equipment Retrofit</p> <p>Lubricant POE</p> <p>Evaporator Temp Medium Low</p> <p>Applications Refrigeration: Commercial Industrial</p>	<p>Suva® 407C R-407C</p> <p>HFC New Equipment Retrofit</p> <p>Lubricant POE</p> <p>Evaporator Temp High</p> <p>Applications AC: Commercial Residential Refrigeration: Commercial</p>	<p>Suva® 410A R-410A</p> <p>HFC New Equipment Only Designed for R-410A</p> <p>Lubricant POE</p> <p>Evaporator Temp High Medium</p> <p>Applications AC: Commercial Heat Pumps Residential</p>
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R-12, Suva® MP39, MP66, R409A REPLACEMENTS*

<p>ISCEON® MO49Plus™ R-437A</p> <p>HFC Retrofit</p> <p>Lubricant MO AB POE</p> <p>Evaporator Temp Medium Low</p> <p>Applications Refrigeration: Commercial Industrial</p>	<p>ISCEON® 39TC® R-423A</p> <p>HFC Retrofit</p> <p>Lubricant POE single lubricant change</p> <p>Evaporator Temp High Medium</p> <p>Applications Centrifugal Chillers</p>	<p>Suva® 134a R-134a</p> <p>HFC New Equipment Retrofit</p> <p>Lubricant POE PAG (auto AC)</p> <p>Evaporator Temp High Medium (Above +20°F /-7°C)</p> <p>Applications Commercial Refrigeration: Appliances Chillers Automotive AC</p>
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R-503, R-13 REPLACEMENTS*

<p>Suva® 95 R-508B</p> <p>PFC New Equipment Retrofit (for R-503)</p> <p>Lubricant POE</p> <p>Evaporator Temp Very Low Temp (VLT) Below -40°F</p> <p>Applications Refrigeration: Cascade Systems</p>	<p>Freon® 23 R-23</p> <p>HFC New Equipment Retrofit (for R-13)</p> <p>Lubricant POE</p> <p>Evaporator Temp Very Low Temp (VLT) Below -40°F</p> <p>Applications Refrigeration: Cascade Systems</p>
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*For more detailed information on DuPont Refrigerants and their applications, please visit www.refrigerants.dupont.com and/or www.isceon.com.

SUGGESTED OIL GUIDE

ISCEON® Refrigerant	Recommended Lubricant	Alternate Lubricant
ISCEON® MO99™ (R-438A)	MO	AB - POE
ISCEON® MO79 (R-422A)	MO	AB - POE
ISCEON® MO59 (R-417A)	MO	AB - POE
ISCEON® MO49Plus™ (R-437A)	MO	AB - POE
ISCEON® MO29 (R-422D)	MO	AB - POE
ISCEON® 39TC® (R-423A)	POE (single lubricant change)	

ISCEON® Refrigerants - Oil Change Guidelines

- ISCEON® Refrigerants are compatible with traditional and new lubricants – mineral oil, alkylbenzene and polyol ester. In systems where oil return is a potential concern, replacement of all, or part (10~25%) of the compressor oil charge with an OEM approved polyol ester is recommended.
- ISCEON® 39TC® requires one lubricant change to POE during retrofit. ISCEON® 39TC® tolerates high residual levels of mineral oil; therefore no system flushing is required after changing the original lubricant to POE.

Suva® Refrigerant	Recommended Lubricant	Alternate Lubricant
Suva® 95 (R-508B)	POE	
Suva® 123	MO	AB
Suva® 134a	POE/PAG (Auto AC)	
Suva® 404A	POE	
Suva® 407A	POE	
Suva® 407C	POE	
Suva® 410A	POE	
Suva® 507	POE	

Suva® Refrigerants - Oil Change Guidelines

- Where possible, use OEM-recommended oil type, charge size, and viscosity.
- When converting a CFC or HCFC system to an HFC refrigerant such as Suva® 134a, 407C or 407A, POE is the recommended lubricant. At least 95% of the MO or AB should be replaced with POE of similar viscosity. This typically requires multiple oil changes.

MO = Mineral Oil AB = Alkylbenzene POE = Polyol Ester

Performance Comparison of Retrofit Refrigerants

Refrigerant	Compared to	Discharge Pressure (psi)			Discharge Temp (°F)			Est. Cooling Capacity (%)			Est EER (%)		
		LT*	MT**	HT***	LT*	MT**	HT***	LT*	MT**	HT***	LT*	MT**	HT***
R-22 HFC Replacements													
ISCEON® MO99™	R-22	+3	+6	+5	-22	-45	-31	-6	-8	-7	+7	-1	-2
ISCEON® MO29	R-22	+10	+12		-31	-66		-3	-6		+8	-4	
ISCEON® MO59	R-22		-23	-20		-62	-40		-17	-17		-2	-1
Suva® 407C	R-22		+19	+18		-29	-18		-4	-1		-1	-2
Suva® 407A	R-22	+28	+35		same	-36		-1	+2		+1	-4	
R-502 HFC Replacements													
ISCEON® MO79	R-502	+23	+30		-32	-19		-1	-6		-4	-8	
Suva® 404A	R-502	+21	+27		-20	-10		+1	+1		-2	-3	
Suva® 507	R-502	+29	+36		-22	-12		+2	+2		-2	-3	

*Low Temperature: -25°F evaporator, 105°F condenser, 65°F return gas, 10°F subcooling

**Medium Temperature: 20°F evaporator, 120°F condenser, 65 °F return gas, 10°F subcooling

***High Temperature: 45°F evaporator, 115°F condenser, 65 °F return gas, 10°F subcooling

R-22 assumes demand cooling with discharge temp of 275°F

Refrigerant	Compared to	Discharge Pressure (psi)	Discharge Temp (°F)	Est. Cooling Capacity (%)	Est EER (%)
R-12 HFC Replacements Chillers					
ISCEON® 39TC®	R-12	Same	-20	0 to -5	
ISCEON® MO49Plus™	R-12	+30 to +39	-28 to -16	+4 to +10	-3 to -4
Suva® 134a	R-12	+10	-10	-15*	
R-503, R-13 Replacements					
Suva® 95	R-503	+2	-40	-2	
Freon® 23	R-503	-26	+53	-26	
Freon® 23	R-503	-41	-27	-29	

Performance data based on normal application conditions and is intended to serve as a guide; actual performance will vary depending on system design and conditions.

+ is increase - is decrease

*Capacity loss can be determined by performing an engineered retrofit. Contact DuPont for details.

PRESSURE CONTROL SETTINGS GUIDE

(approximate)

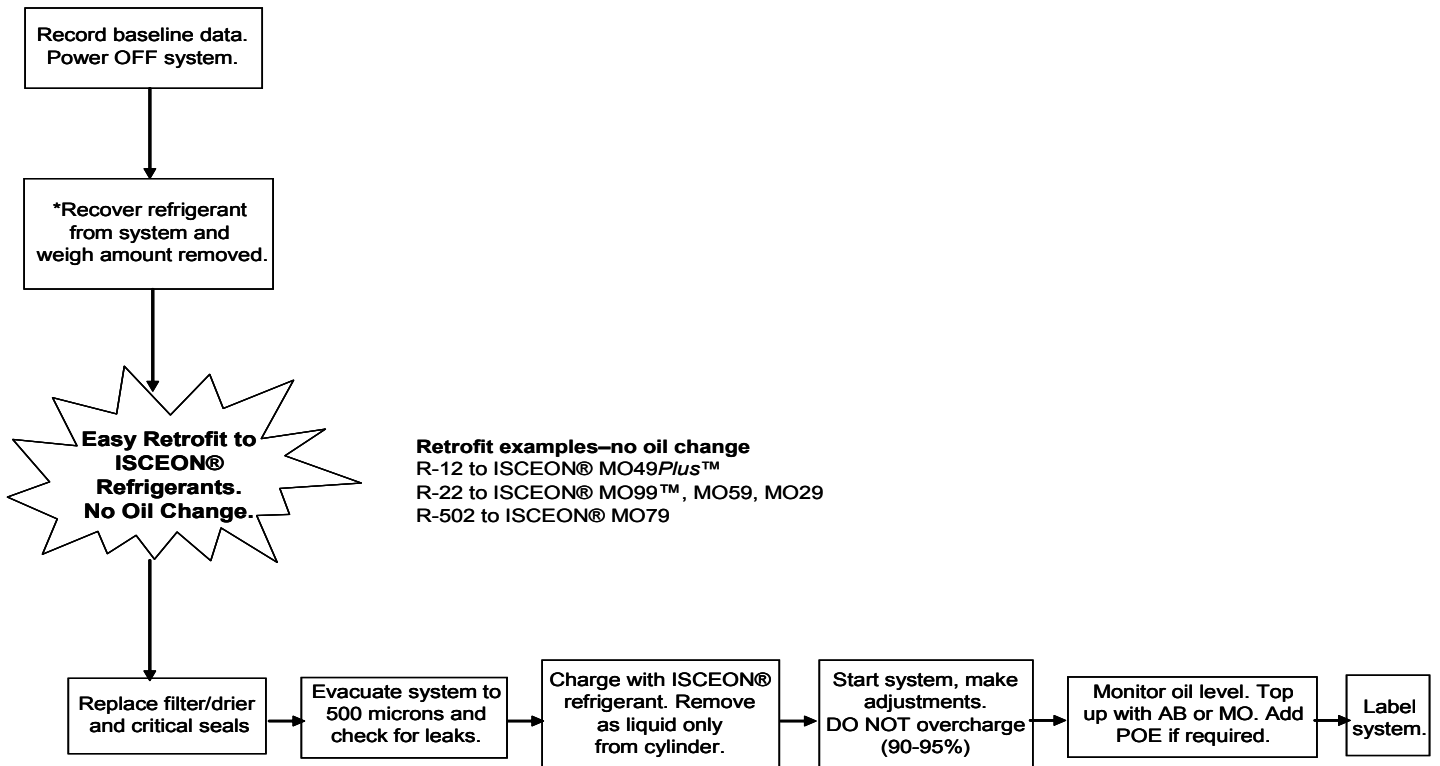
SUPERMARKET REFRIGERATION RETROFITS

This pressure control setting guide provides you with approximate settings that can be used as starting points to help you optimize your system. Recognize that the values expressed can vary with specific conditions, such as actual relative humidity, pressure drop, line sets, equipment location and design. If your current settings for R-22 vary from the baseline values given below, the alternative refrigerant settings will vary proportionally. For more information on retrofits, go to www.refrigerants.dupont.com

Application	Temp Range (°F)	Evap ΔT (°F)	Refrigerant (psig)																	
			R-22		ISCEON® MO99™		ISCEON® MO29		ISCEON® MO79		R-404A		R-507		HP80 (R-402A)		R-502			
			Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In		
Beverage Cooler	35 to 38	15	41	66	38	63	42	69	52	82	53	82	56	86	59	91	50	78		
Floral Cooler																				
Produce Cooler																				
Smoked Meat Cooler	32 to 35	15	38	62	35	59	39	64	49	77	49	77	52	82	55	86	47	73		
Meat Reach Thru																				
Service Deli																				
Seafood																				
Multi-Deck Fresh Meat	26 to 29	15	32	54	29	51	33	56	42	69	42	68	45	72	47	76	40	65		
Frozen Glass Door	-10 to 0	10	9	24	7	21	9	23	14	32	15	33	16	35	37	48	31	41		
Frozen Glass Walk-In																				
Frozen Ice Cream	-30 to -20	10	0	10	4 in Hg	8	0	10	4	15	4	16	5	18	6	20	3	15		
Frozen Food - Open Type																				

GENERAL RETROFIT GUIDE

For detailed information, please see our retrofit guidelines at www.refrigerants.dupont.com and/or www.isceon.com.



Retrofit examples—no oil change
 R-12 to ISCEON® MO49Plus™
 R-22 to ISCEON® MO99™, MO59, MO29
 R-502 to ISCEON® MO79

*For retrofit to HFC multiple oil changes, DO NOT remove CFC or HCFC refrigerants until AFTER oil flushing is complete.

DuPont Refrigerants

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R-502, Suva® HP80, HP81, R-408A REPLACEMENTS*		
ISCEON® MO79 R-422A	Suva® 404A R-404A	Suva® 507 R-507
HFC Retrofit	HFC New Equipment	HFC New Equipment
Lubricant MO AB POE	Lubricant POE	Lubricant POE
Evaporator Temp Medium Low	Evaporator Temp Medium Low	Evaporator Temp Medium Low
Applications Refrigeration: Commercial Industrial	Applications Refrigeration: Commercial Industrial	Applications Refrigeration: Commercial Industrial

R-11 REPLACEMENTS*
Suva® 123 R-123
HCFC New Equipment Retrofit
Lubricant MO
Evaporator Temp High Medium
Applications Centrifugal Chillers

*For more detailed information on DuPont Refrigerants and their applications, please visit www.refrigerants.dupont.com and/or www.isceon.com.

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www.refrigerants.dupont.com
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