

# Isceon<sup>®</sup> MO79

(R422A)

Isceon<sup>®</sup> MO79 is a zero ozone depletion (ODP) hydrofluorocarbon (HFC) refrigerant. Isceon<sup>®</sup> MO79 is a ternary blend of R125, R134a and R600a (85.1%/11.5%/3.4%). It is used as a retrofit replacement for HCFC R22 in medium and low temperature direct expansion (DX) systems where increased capacity and efficiency is required and also for CFC R502.

## APPLICATION

Isceon<sup>®</sup> MO79 applications include low temperature commercial and industrial direct expansion (DX) systems such as food storage display cases, food service and ice machines.

## PROPERTIES AND PERFORMANCE

Isceon<sup>®</sup> MO79 is designed to meet the needs of many medium and low temperature refrigeration systems that are running on R22 and R502 and when correctly retrofitted provides similar cooling capacity and energy efficiency to both. Isceon<sup>®</sup> MO79 is a zeotropic HFC refrigerant blend, which is rated A1 by ASHRAE (lowest levels of toxicity and flammability), having zero Ozone Depletion Potential and a Global Warming Potential of 3143.

## LUBRICATION

Isceon<sup>®</sup> MO79 is compatible with mineral oils, alkylbenzene and polyolesters lubricants. Generally, if retrofitting from R22 or R502 there is no need to change the existing lubricant charge. If the system is operating on mineral or alkylbenzene lubricants at very low temperatures, has complex pipe runs or has a liquid receiver and lubrication problems are experienced, replacing 25% the lubricant charge with a polyolester lubricant may improve lubrication.

## CHARGING

Due to the zeotropic nature of Isceon<sup>®</sup> MO79, it should be charged into the system as a liquid to prevent fractionation (changes in refrigerant composition due to vapour charging). In situations where vapour is normally charged into a system, a valve should be installed in the charging line to flash the liquid to vapour while charging.

## RETROFITTING

When retrofitting from R22 or R502 to Isceon<sup>®</sup> MO79, it is not always necessary to replace the existing lubricant with POE oil, unless the problems due to the issues detailed above in LUBRICATION occur. The final charge weight of Isceon<sup>®</sup> MO79 will be about 95% that of the R22/R502 charge. Filter driers and elastomeric seals/gaskets should be replaced as standard for all Isceon<sup>®</sup> MO79 retrofits. Adjustment of expansion valve superheat may be necessary. Detailed retrofit procedures are available from Harp International upon request.

## MATERIAL COMPATIBILITY

Isceon<sup>®</sup> MO79 may not be compatible with the systems existing elastomeric seals and gaskets. For these reasons, before performing any Isceon<sup>®</sup> MO79 retrofit, Harp International recommends contacting the OEM for specific recommendations before retrofitting.



# Isceon<sup>®</sup> MO79 (R422A)

## Technical Data

### Isceon<sup>®</sup> MO79 (R422A) BASIC PROPERTIES

Chemical formula	R125 – CHF <sub>2</sub> CF <sub>3</sub> R134a – CH <sub>2</sub> FCF <sub>3</sub> R600a – (CH <sub>3</sub> ) <sub>3</sub> CH	Molecular weight	113.6
		Boiling point at 1 atmosphere	-46.5°C
		Critical temperature	71.75°C
		Critical pressure	37.47 bar absolute

### Isceon<sup>®</sup> MO79 (R422A) THERMODYNAMIC PROPERTIES

Pressure (bar)	Liquid Temperature (°C)	Vapour Temperature (°C)	Liquid Density (kg/m <sup>3</sup> )	Vapour Density (kg/m <sup>3</sup> )	Liquid Enthalpy (kJ/kg)	Vapour Density (kJ/kg)	Liquid Entropy (kJ/kg.K)	Vapour Entropy (kJ/kg.K)
0.5	-60.1	-57.4	1468.8	3.25	130.4	315.2	0.751	1.615
0.6	-56.8	-54.1	1458.1	3.86	134.2	317.2	0.769	1.611
0.7	-53.9	-51.3	1448.6	4.46	137.6	318.9	0.785	1.608
0.8	-51.3	-48.7	1440.1	5.05	140.6	320.4	0.798	1.605
0.9	-48.9	-46.4	1432.3	5.64	143.4	321.8	0.810	1.603
1.0	-46.8	-44.3	1425.2	6.23	145.9	323.1	0.822	1.601
<b>1.013</b>	<b>-46.5</b>	<b>-44.0</b>	<b>1424.3</b>	<b>6.31</b>	<b>146.2</b>	<b>323.2</b>	<b>0.823</b>	<b>1.601</b>
1.5	-38.0	-35.7	1395.5	9.14	156.2	328.2	0.866	1.595
2.0	-31.3	-29.1	1372.1	12.02	164.3	332.0	0.900	1.591
2.5	-25.8	-23.7	1352.4	14.88	170.9	335.2	0.927	1.589
3.0	-21.0	-19.0	1335.2	17.73	176.7	337.8	0.950	1.587
3.5	-16.9	-14.9	1319.6	20.58	181.9	340.1	0.970	1.586
4.0	-13.2	-11.3	1305.4	23.45	186.6	342.1	0.988	1.585
4.5	-9.8	-7.9	1292.2	26.32	190.8	343.9	1.004	1.584
5.0	-6.7	-4.9	1279.8	29.21	194.8	345.6	1.019	1.583
5.5	-3.8	-2.0	1268.1	32.11	198.5	347.1	1.033	1.583
6.0	-1.1	0.7	1256.9	35.03	202.0	348.4	1.046	1.582
6.5	1.5	3.2	1246.3	37.98	205.3	349.7	1.058	1.582
7.0	3.9	5.5	1236.1	40.95	208.5	350.8	1.069	1.581
7.5	6.1	7.7	1226.2	43.94	211.5	351.9	1.079	1.581
8.0	8.3	9.9	1216.6	46.96	214.3	352.9	1.090	1.581
8.5	10.4	11.9	1207.3	50.01	217.1	353.9	1.099	1.580
9.0	12.3	13.8	1198.2	53.09	219.8	354.7	1.108	1.580
9.5	14.2	15.7	1189.4	56.21	222.4	355.6	1.117	1.580
10.0	16.0	17.5	1180.8	59.35	224.9	356.3	1.126	1.579
11.0	19.5	20.9	1163.9	65.75	229.6	357.7	1.142	1.579
12.0	22.7	24.1	1147.7	72.30	234.1	359.0	1.157	1.578
13.0	25.7	27.0	1131.8	79.01	238.5	360.1	1.171	1.577
14.0	28.6	29.9	1116.3	85.90	242.6	361.0	1.185	1.576
15.0	31.3	32.5	1101.0	92.98	246.6	361.8	1.197	1.575
16.0	33.9	35.1	1086.0	100.28	250.4	362.5	1.210	1.574
17.0	36.3	37.5	1071.1	107.80	254.1	363.2	1.221	1.573
18.0	38.7	39.8	1056.2	115.57	257.7	363.7	1.233	1.572
19.0	40.9	42.0	1041.3	123.61	261.2	364.1	1.244	1.571
20.0	43.1	44.1	1026.5	131.95	264.7	364.4	1.254	1.569
21.0	45.2	46.2	1011.5	140.61	268.0	364.6	1.265	1.568
22.0	47.2	48.2	996.4	149.65	271.3	364.8	1.275	1.566
23.0	49.1	50.1	981.1	159.09	274.6	364.8	1.284	1.564
24.0	51.0	51.9	965.5	168.99	277.8	364.8	1.294	1.562
25.0	52.8	53.7	949.6	179.41	281.0	364.6	1.304	1.560
26.0	54.6	55.4	933.3	190.43	284.2	364.3	1.313	1.557
27.0	56.3	57.1	916.4	202.14	287.4	364.0	1.322	1.555
28.0	58.0	58.7	898.9	214.68	290.5	363.4	1.332	1.552
29.0	59.6	60.3	880.5	228.21	293.7	362.8	1.341	1.548
30.0	61.2	61.8	861.1	242.94	297.0	361.9	1.350	1.544
31.0	62.7	63.3	840.2	259.21	300.3	360.8	1.360	1.540
32.0	64.2	64.7	817.5	277.50	303.7	359.5	1.370	1.535
33.0	65.6	66.1	792.1	298.60	307.3	357.8	1.380	1.529
34.0	67.0	67.5	762.6	323.95	311.2	355.6	1.391	1.521
35.0	68.4	68.8	725.6	356.79	315.6	352.5	1.404	1.511