

Isceon[®] MO59

(R417A)

Isceon[®] MO59 is a zero ozone depletion (ODP) hydrofluorocarbon (HFC) refrigerant. Isceon[®] MO59 is a ternary blend of R125, R134a and R600 (46.6%/50.0%/3.4%). It is used as a retrofit replacement for HCFC R22 in stationary air conditioning equipment.

APPLICATION

Isceon[®] MO59 applications include residential and commercial air conditioning direct expansion (DX) systems.

PROPERTIES AND PERFORMANCE

Isceon[®] MO59 is designed to meet the needs of residential and commercial air conditioning direct expansion (DX) systems that are running on R22 and when correctly retrofitted provides similar cooling capacity and energy efficiency to R22. Isceon[®] MO59 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 2346.

LUBRICATION

Isceon[®] MO59 is compatible with mineral oils, alkylbenzene and polyolesters lubricants. Generally, if retrofitting from R22 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[®] MO59, 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 to Isceon[®] MO59, 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[®] MO59 will be about 95% that of the R22 charge. Filter driers and elastomeric seals/gaskets should be replaced as standard for all Isceon[®] MO59 retrofits. Adjustment of expansion valve superheat may be necessary. Detailed retrofit procedures are available from Harp International upon request.

MATERIAL COMPATIBILITY

Isceon[®] MO59 may not be compatible with the systems existing elastomeric seals and gaskets. For these reasons, before performing any Isceon[®] MO59 retrofit, Harp International recommends contacting the OEM for specific recommendations before retrofitting.



Isceon® MO59 (R417A)

Technical Data

Isceon® MO59 (R417A) BASIC PROPERTIES

Chemical formula	R125 – CHF ₂ CF ₃ R134a – CH ₂ FCF ₃ R600 – C ₄ H ₁₀	Molecular weight	106.7
		Boiling point at 1 atmosphere	-39.1°C
		Critical temperature	87.04°C
		Critical pressure	40.36 bar absolute

Isceon® MO59 (R417A) THERMODYNAMIC PROPERTIES

Pressure (bar)	Liquid Temperature (°C)	Vapour Temperature (°C)	Liquid Density (kg/m ³)	Vapour Density (kg/m ³)	Liquid Enthalpy (kJ/kg)	Vapour Density (kJ/kg)	Liquid Entropy (kJ/kg.K)	Vapour Entropy (kJ/kg.K)
0.50	-53.2	-47.8	1423.8	2.92	136.1	345.6	0.800	1.740
0.60	-49.7	-44.5	1413.4	3.47	140.4	347.8	0.819	1.736
0.70	-46.7	-41.5	1404.2	4.01	144.1	349.6	0.835	1.732
0.80	-44.0	-38.9	1396.0	4.55	147.4	351.3	0.850	1.729
0.90	-41.6	-36.5	1388.5	5.08	150.4	352.8	0.863	1.727
1.00	-39.4	-34.4	1381.6	5.61	153.2	354.1	0.875	1.725
1.013	-39.1	-34.1	1380.7	5.68	153.5	354.3	0.876	1.724
1.50	-30.3	-25.5	1353.0	8.23	164.6	359.6	0.922	1.717
2.00	-23.3	-18.7	1330.6	10.82	173.4	363.7	0.958	1.713
2.50	-17.6	-13.2	1311.7	13.40	180.7	367.1	0.987	1.709
3.00	-12.7	-8.4	1295.1	15.97	187.0	369.9	1.011	1.707
3.50	-8.4	-4.2	1280.3	18.54	192.6	372.3	1.032	1.705
4.00	-4.6	-0.5	1266.7	21.12	197.7	374.4	1.051	1.704
4.50	-1.0	2.9	1254.1	23.71	202.4	376.3	1.068	1.703
5.00	2.2	6.1	1242.3	26.31	206.7	378.1	1.084	1.702
5.50	5.2	9.0	1231.2	28.92	210.7	379.6	1.098	1.701
6.00	8.0	11.7	1220.6	31.55	214.5	381.1	1.112	1.700
6.50	10.6	14.2	1210.5	34.20	218.1	382.4	1.124	1.699
7.00	13.1	16.6	1200.8	36.87	221.5	383.6	1.136	1.699
7.50	15.4	18.9	1191.5	39.56	224.8	384.8	1.147	1.698
8.00	17.6	21.1	1182.4	42.27	227.9	385.8	1.158	1.698
8.50	19.8	23.2	1173.6	45.00	230.9	386.8	1.168	1.697
9.00	21.8	25.1	1165.1	47.76	233.8	387.7	1.178	1.697
9.50	23.7	27.0	1156.8	50.55	236.6	388.6	1.187	1.696
10.00	25.6	28.9	1148.6	53.36	239.3	389.4	1.196	1.696
11.00	29.2	32.3	1132.8	59.08	244.5	390.9	1.213	1.695
12.00	32.5	35.5	1117.5	64.92	249.3	392.2	1.229	1.694
13.00	35.6	38.6	1102.7	70.90	254.0	393.4	1.243	1.693
14.00	38.6	41.4	1088.2	77.03	258.5	394.4	1.257	1.692
15.00	41.3	44.1	1074.0	83.31	262.7	395.3	1.271	1.690
16.00	44.0	46.7	1060.0	89.77	266.9	396.0	1.284	1.689
17.00	46.5	49.2	1046.1	96.41	270.8	396.7	1.296	1.688
18.00	49.0	51.5	1032.4	103.25	274.7	397.3	1.308	1.687
19.00	51.3	53.8	1018.8	110.30	278.5	397.7	1.319	1.685
20.00	53.5	55.9	1005.1	117.60	282.2	398.1	1.330	1.684
21.00	55.7	58.0	991.4	125.15	285.8	398.4	1.341	1.682
22.00	57.8	60.0	977.7	132.99	289.3	398.6	1.351	1.680
23.00	59.8	61.9	963.9	141.14	292.8	398.7	1.361	1.678
24.00	61.7	63.8	949.8	149.64	296.2	398.7	1.371	1.676
25.00	63.6	65.6	935.6	158.52	299.6	398.6	1.381	1.674
26.00	65.4	67.4	921.1	167.84	303.0	398.4	1.391	1.672
27.00	67.2	69.0	906.3	177.65	306.3	398.1	1.400	1.669
28.00	68.9	70.7	891.0	188.02	309.6	397.7	1.410	1.666
29.00	70.6	72.3	875.2	199.04	312.9	397.1	1.419	1.663
30.00	72.2	73.8	858.8	210.82	316.3	396.4	1.428	1.660
31.00	73.8	75.3	841.6	223.51	319.6	395.6	1.438	1.656
32.00	75.4	76.8	823.4	237.31	323.1	394.6	1.447	1.652
33.00	76.9	78.2	803.9	252.49	326.5	393.4	1.457	1.647
34.00	78.4	79.6	782.7	269.48	330.2	391.8	1.467	1.642
35.00	79.8	80.9	759.1	288.91	334.0	390.0	1.477	1.636