

A Zero ODP Replacement for R12 in centrifugal systems

No engineering modifications needed

General features	ISCEON® 39TC has been specifically designed by Rhodia Ltd. and Star Refrigeration as a long term replacement for R12 in centrifugal systems without any expensive hardware modifications. Its performance is comparable to R12 even without changes to the impellor or gear box.
Performance in existing equipment	ISCEON® 39TC has been formulated to give the necessary physical properties for use in existing R12 equipment. Cooling capacity and efficiency have been found to be comparable without a need for engineering changes. It is necessary to monitor the performance of the installation before conversion to ISCEON® 39TC.
Oil compatibility	Although a number of conversions have retained the same oil type (alkyl benzene/mineral) it is recommended that a single oil change is performed. It has been found that improved heat transfer, and hence improved evaporator performance, is obtained if an alkyl benzene/ester oil mixture is used.
Equipment audit	It is necessary to audit the installation before conversion to ISCEON® 39TC. Information from the audit must be approved by Rhodia before a conversion can proceed. Conversion recommendations, including oil type, will be made by Rhodia at this time. To request audit information contact +44 117 9484212.
Typical applications	Air conditioning and industrial plants with semi-hermetic centrifugal compressors.

Saturated properties

Standard state of liquid at 0°C, Enthalpy = 200 kJ/kg, Entropy = 1.0 kJ/kg.K

Temperature °C	Bubble Pt. Pressure Bar	Dew Pt. Pressure Bar	Density (kg/m ³)		Enthalpy (kJ/kg)			Entropy (kJ/kg.K)	
			Liquid	Vapour	Liquid	Latent	Vapour	Liquid	Vapour
-30	0.793	0.772	1456	4.83	163.7	184.10	347.80	0.861	1.615
-20	1.242	1.212	1428	7.39	175.6	178.50	354.10	0.908	1.611
-10	1.872	1.828	1398	10.92	187.7	172.60	360.30	0.955	1.608
0	2.728	2.667	1367	15.69	200.0	166.40	366.40	1.000	1.607
10	3.859	3.777	1334	22.01	212.6	159.80	372.40	1.045	1.607
20	5.320	5.213	1299	30.28	225.5	152.60	378.10	1.089	1.608
30	7.168	7.033	1261	41.02	238.8	144.70	383.50	1.133	1.609
40	9.466	9.300	1219	54.94	252.4	136.20	388.60	1.176	1.610
50	12.280	12.080	1174	73.06	266.5	126.60	393.10	1.220	1.610
60	15.680	15.460	1123	97.03	281.2	115.60	396.80	1.263	1.609

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ISCEON® 9 SERIES
Effective, pure, simple

ISCEON® 39TC

PHYSICAL PROPERTIES

Physical property	ISCEON® 39TC	R12	Physical property	ISCEON® 39TC	R12		
Composition	HFC Blend	CCl ₂ F ₂	Specific heat, vapour at constant pressure at 25°C	J.mol ⁻¹ .K	118.3	74.98	
Molecular weight	121.4	120.93	Ratio of specific heat at 1 ATMS at 25°C	(Cp/Cv)	1.102	1.137	
Bubble point °C	-24.7	-29.79	Heat of vaporisation at boiling point	kJ.kg ⁻¹	181.5	165.1	
Dew Point °C	-24.1	-	Thermal conductivity liquid at 25°C	W/m.K	0.071	0.070	
Vapour pressure 25°C	psia bara	89.8 6.19	94.5 6.57	Viscosity vapour at 1 ATMS at 25°C	cP	0.012	0.013
Critical temperature	°C K	110.6 383.8	112 385	Viscosity of liquid at 25°C	cP	0.22	0.26
Critical pressure	psia bara	542.7 37.43	596.7 41.15	Speed of sound, saturated vapour at 25°C	m.s ⁻¹	129.8	133.1
Density of liquid at 25°C	kg.m ⁻³	1280	1311	Ozone Depletion Potential (relative to CFC 11=1.0)		0	1
Density of saturated vapour at boiling point	kg.m ⁻³	6.09	6.3	GWP (100yr) (IPCC 1995)		1940	8500
Specific heat, liquid at 25°C	J.mol ⁻¹ .K	161.1	121.4	Flammable		NO	NO

Safety

The ISCEON® 39TC formulation is a blend of well established HFCs and its toxicity profile is in line with that of the individual HFCs. The blend components are non flammable. As with any other HFC refrigerant, in event of a gross leak in an enclosed area, such as a compressor room, ISCEON® 39TC has a tendency to collect in low lying areas. Therefore precautions need to be taken to avoid inhalation before entry. Health and safety data are readily available upon request.

COMMERCIAL

Quality

The ISCEON® business of Rhodia Ltd gained ISO9002 accreditation in 1992. Rhodia Product Specification reference QCS 236 applies.

Available in Bulk Iso tanks, nominal 1000 kg returnable drums, nominal 60 kg returnable cylinders.

The information contained in this document is given in good faith based on our current knowledge. It is only an indication and is in no way binding, particularly as regards infringement of or prejudice to third party rights through the use of our products.

Rhodia Organique Fine Limited Technical Service will be pleased to give further advice and assistance but customers must satisfy themselves (by appropriate testing if necessary) that the product is suitable for their purpose and conditions of use.

ISCEON® 9 Series patented refrigerants developed by Rhodia and Star Refrigeration.

Local Distributor:



ISCEON® & HF

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