



Opteon™ YF

Automotive Refrigerant

Product introduction

Opteon™ YF(HFO-1234yf)는 오존층을 파괴하지 않으며 지구온난화지수(GWP)가 낮은 HFO(hydrofluoro-olefin) 냉매로 자동차 공조 시스템에 쓰이는 기존 냉매인 HFC-134a(GWP 1,300, AR5 기준)의 감축을 위한 유럽 환경 규제(EU Mobile Air Conditioning Directive)에 대응하기 위해 개발되었습니다. Opteon™ YF의 지구온난화지수는 1 이하(AR5 기준)로 각국의 환경 규제를 만족하는 수준이며, HFC-134a과 매우 유사한 성능을 보이고 있어 향후 약가연성 냉매가 적용가능한 모든 영역에서 HFC-134a를 대체할 것으로 기대하고 있습니다.

Properties

ASHRAE Number	HFO-1234yf	R-134a
Molecular Weight	103.5g/mole	102.03g/mole
Boiling Point at 1 atm(101.3kPa)	-29.5°C (-21.1°F)	-26.1°C (-14.9°F)
Critical Pressure	4002kPa [abs] (580.4psia)	4060kPa [abs] (588.9psia)
Critical Temperature	94.7°C (202.5°F)	101.1°C (213.9°F)
Liquid Density at 25 °C (77 °F)	1092kg/m ³	1207kg/m ³
Ozone Depletion Potential	0	0
AR5 Global Warming Potential	1	1300
ASHRAE Safety Classification	A2L	A1

Benefits

- Non-ozone depleting hydrofluoro-olefin (HFO)
: Not subject to phaseout under Montreal Protocol
- Low GWP refrigerant
- Toxicity comparable to R-134a (A rating)
- Good environmental performance, lowest Life Cycle Climate Performance (LCCP) potential of all next generation alternatives
- Similar operating conditions compared to R-134a (similar Pressure-Temperature [P-T] curve)
- Thermally stable under extreme use conditions encountered in a MAC system
- Cooling capacity and energy efficiency similar to R-134a



Opteon™ YF

Automotive Refrigerant

Thermodynamic Properties

Saturation Properties - Temperature Table

Temp [°C]	Pressure [bar]	Density [kg/m ³]		Enthalpy [kJ/kg]		Entropy [kJ/kg-K]	
		Liquid d _l	Vapor d _g	Liquid h _l	Vapor h _g	Liquid s _l	Vapor s _g
-40	0.6	1,292	4	151	337	0.81	1.60
-35	0.8	1,278	5	157	340	0.83	1.60
-30	1.0	1,265	6	163	343	0.86	1.60
-25	1.2	1,251	7	169	347	0.88	1.60
-20	1.5	1,236	9	175	350	0.91	1.60
-15	1.8	1,222	10	181	353	0.93	1.60
-10	2.2	1,207	13	187	357	0.95	1.60
-5	2.7	1,192	15	194	360	0.98	1.60
0	3.2	1,176	18	200	363	1.00	1.60
5	3.7	1,160	21	207	367	1.02	1.60
10	4.4	1,144	24	213	370	1.05	1.60
15	5.1	1,127	28	220	373	1.07	1.60
20	5.9	1,110	33	227	376	1.09	1.60
25	6.8	1,092	38	233	379	1.12	1.60
30	7.8	1,073	44	241	382	1.14	1.61
35	9.0	1,054	50	248	385	1.16	1.61
40	10.2	1,034	58	255	387	1.19	1.61
45	11.5	1,013	66	262	390	1.21	1.61
50	13.0	990	76	270	392	1.23	1.61
55	14.6	967	87	278	394	1.25	1.61
60	16.4	941	100	286	396	1.28	1.61

For more information on the Opteon™ family of refrigerants, or other refrigerants products, visit opteon.com or call (800)235-7882. The information set forth herein is furnished free of charge and based on technical data that Chemours believes to be reliable. It is intended for use by persons having technical skill, at their own risk. Because conditions of use are outside our control, Chemours makes no warranties, expressed or implied, and assumes no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under, or a recommendation to infringe, any patents or patent applications.

© 2015 The Chemours Company FC, LLC. Opteon™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC. Chemours™ and the Chemours Logo are trademarks of The Chemours Company.



Chemours™

케무어스코리아 주식회사
서울시 강남구 논현로 430(역삼동) 아세아타워 3층
Tel : 02-2015-5000 Fax : 02-2015-5091
www.chemours.com



ECOFINE

에코화인
충청북도 진천군 이월면 산수산단2로 144
Tel : 043-537-7677 Fax : 043-537-7678
www.ecofine.kr