



# Opteon™ XP10

Refrigerant

## Product introduction

Opteon™ XP10(R-513A)는 오존층을 파괴하지 않으며 지구온난화지수(GWP)가 낮은 HFO(hydrofluoro-olefin) 기반의 불연성 냉매로서, R-134a보다 GWP가 56% 낮을 뿐 아니라 냉장, 공기조화, 냉동 및 열펌프 등 다양한 용도에서 R-134a에 버금가는 우수한 용량과 효율을 보여줍니다. Johnson Controls, Trane, Smardt Chiller Group은 Opteon™ XP10을 적용한 냉동기를 출시했으며, Emerson과 Bitzer는 Opteon™ XP10을 자사의 압축기용으로 승인 및 채택했습니다.

## Properties

ASHRAE Number	R-513A	R-134a
Composition	HFO-1234yf/R-134a	R-134a
Weight %	56/44	100
Molecular Weight	108.4g/mole	102.03g/mole
Boiling Point at 1 atm(101.3kPa)	-29.2 °C (-20.6°F)	-26.1°C (-14.9°F)
Critical Pressure	3766kPa [abs] (546.2psia)	4060kPa [abs] (588.9psia)
Critical Temperature	96.5°C (173.7°F)	101.1°C (213.9°F)
Liquid Density at 21.1°C (70°F)	1185.7kg/m <sup>3</sup>	1220.6kg/m <sup>3</sup>
Ozone Depletion Potential	0	0
AR5 Global Warming Potential	573	1300
ASHRAE Safety Classification	A1	A1
Temperature Glide	Negligible	OK

## Benefits

- Low GWP: 56% reduction compared to R-134a
- Excellent capacity and energy efficiency match to R-134a
- Close performance match to R-134a for retrofit and new systems
- Azeotrope with zero glide
- Safe and nonflammable(ASHRAE A1)
- Approved by major equipment and component manufacturers
- Extensively field tested with no equipment/lubricant/seal changes (superheat adjustment may be required)
- Compatible with existing equipment design/lubricants



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## Thermodynamic Properties

### Saturation Properties - Temperature Table

Temp [°C]	Pressure [bar]		Density [kg/m <sup>3</sup> ]		Enthalpy [kJ/kg]		Entropy [kJ/K-kg]	
	Liquid p <sub>l</sub>	Vapor p <sub>g</sub>	Liquid d <sub>l</sub>	Vapor d <sub>g</sub>	Liquid H <sub>l</sub>	Vapor H <sub>g</sub>	Liquid S <sub>l</sub>	Vapor S <sub>g</sub>
-40	0.6	0.6	1,383	3	150	352	0.80	1.67
-35	0.8	0.8	1,368	4	156	355	0.83	1.66
-30	1.0	1.0	1,354	5	162	358	0.85	1.66
-25	1.2	1.2	1,339	7	168	362	0.88	1.66
-20	1.5	1.5	1,324	8	174	365	0.90	1.66
-15	1.8	1.8	1,308	10	181	368	0.93	1.65
-10	2.2	2.2	1,292	12	187	371	0.95	1.65
-5	2.7	2.7	1,276	14	193	374	0.98	1.65
0	3.2	3.2	1,260	17	200	377	1.00	1.65
5	3.8	3.8	1,243	20	207	381	1.02	1.65
10	4.5	4.5	1,226	24	213	384	1.05	1.65
15	5.3	5.3	1,208	28	220	387	1.07	1.65
20	6.1	6.1	1,190	32	227	389	1.09	1.65
25	7.1	7.1	1,171	37	234	392	1.12	1.65
30	8.2	8.2	1,151	43	241	395	1.14	1.65
35	9.4	9.4	1,131	50	248	397	1.16	1.65
40	10.7	10.7	1,110	57	256	400	1.19	1.65
45	12.1	12.1	1,087	66	263	402	1.21	1.65
50	13.7	13.7	1,064	75	271	404	1.23	1.65
55	15.5	15.5	1,039	86	279	406	1.26	1.65
56	15.9	15.9	1,034	89	280	406	1.26	1.65
57	16.2	16.2	1,029	91	282	407	1.27	1.65
58	16.6	16.6	1,024	94	283	407	1.27	1.65
59	17.0	17.0	1,018	96	285	407	1.28	1.65
60	17.4	17.4	1,013	99	287	408	1.28	1.65

For more information on the Opteon™ family of refrigerants, or other refrigerants products, visit [opteon.com](http://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.

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