

# Solstice® L40X (R-455A)

## Characteristics

Solstice L40X (R-455A) is a mildly flammable, zeotropic blend designed to serve as an alternative for low, medium and high temperature applications in new systems. Its ultra-low GWP of only 145 (below 150) makes it an Fgas-ready solution. Plus, it provides a close capacity match to R-404A, extended operating envelope when compared to propane or air-conditioning refrigerants, and high energy efficiency.

## Applications

Solstice L40X (R-455A) is an excellent refrigerant option for commercial refrigeration low temperature applications like plug-ins, condensing units, foodservice, water-loop systems and other similar. Its low GWP, extended operating envelope, high efficiency, high critical temperature and low critical pressure, makes it a potential match for other applications such as supermarkets, chillers, heatpumps, transport refrigeration, etc.

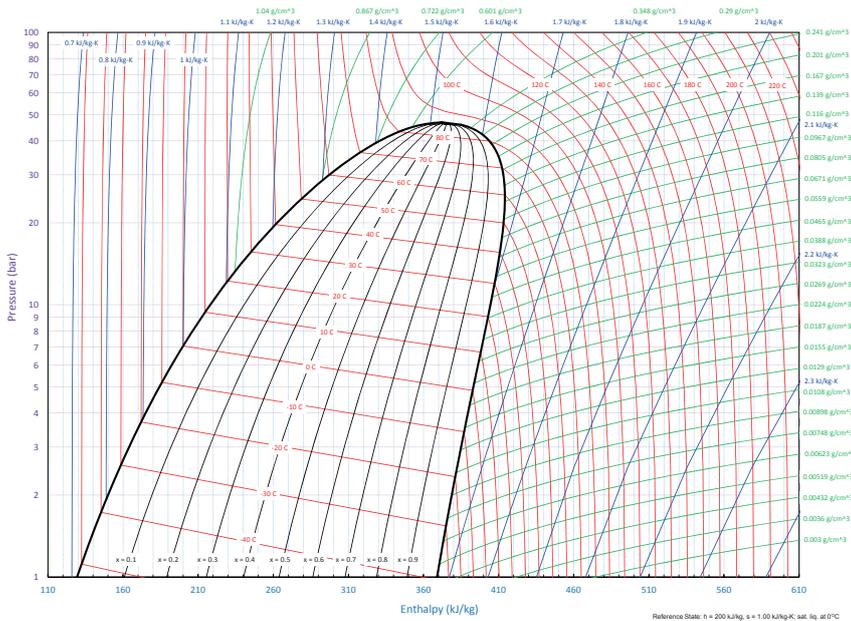
## PHYSICAL PROPERTIES

SOLSTICE® L40X (R-455A)	
CLASS/TYPE	Zeotropic blend
FORMULA	75.5%/21.5%/3% R-1234yf/R-32/R-744
KIND	HFC / HFO
APPEARANCE	Colourless
ODP (ODP-R11=1)	0
GWP REV /5TH IPCC	145
ASHRAE STD. 34 SAFETY CLASS	A2L
ATEL/ODL (kg/m <sup>3</sup> )	0.393
PRACTICAL LIMIT (kg/m <sup>3</sup> )	0.086
LFL (% VOL)	11.8 - 12.9
REACH	Registered
UNITS	SI
MOLECULAR WEIGHT	87.5 kg/mol
BOILING TEMPERATURE	-52.1 °C
CRITICAL TEMPERATURE	85.6 °C
CRITICAL PRESSURE	46.6 bar
CRITICAL VOLUME	0.00222 m <sup>3</sup> /kg
CRITICAL DENSITY	454.74 kg/m <sup>3</sup>
VAPOUR DENSITY AT BOILING POINT	4.69 kg/m <sup>3</sup>
LIQUID DENSITY AT 0°C	1128.8 kg/m <sup>3</sup>
LIQUID DENSITY AT 25°C	1033.4 kg/m <sup>3</sup>
VAPOUR DENSITY AT 25°C	3.63 kg/m <sup>3</sup>
LIQUID HEAT CAPACITY AT 25°C	1.57 kJ/kg·°K
VAPOUR HEAT CAPACITY AT 25°C	1.14 kJ/kg·°K
VAPOUR PRESSURE AT 25°C	1042.2 kPa
LIQUID THERMAL CONDUCTIVITY AT 25°C	88.1 W/m·°K
VAPOUR THERMAL CONDUCTIVITY AT 25°C	12.1 W/m·°K
LIQUID VISCOSITY AT 25°C	127.1 µPa·sec
VAPOUR VISCOSITY AT 25°C	12.3 µPa·sec

## PRESSURE AND TEMPERATURE

PRESSURE	LIQUID (BUBBLE) TEMPERATURE	VAPOUR (DEW) TEMPERATURE
(kPa)	(°C)	(°C)
100	-52.30	-39.45
150	-43.31	-30.58
200	-36.43	-23.80
250	-30.76	-18.24
300	-25.90	-13.48
350	-21.63	-9.30
400	-17.79	-5.56
450	-14.30	-2.16
500	-11.09	0.96
550	-8.11	3.85
600	-5.33	6.54
650	-2.71	9.07
700	-0.24	11.45
750	2.11	13.71
800	4.34	15.86
850	6.48	17.90
900	8.52	19.86
950	10.48	21.73
1000	12.37	23.53
1050	14.19	25.27
1100	15.95	26.94
1150	17.65	28.55
1200	19.30	30.11
1250	20.90	31.62
1300	22.46	33.09
1350	23.97	34.51
1400	25.44	35.90
1450	26.88	37.24
1500	28.27	38.55
1550	29.64	39.83
1600	30.98	41.07
1650	32.28	42.29
1700	33.56	43.48
1750	34.81	44.63
1800	36.04	45.77
1850	37.24	46.88
1900	38.42	47.96
1950	39.57	49.03
2000	40.71	50.07
2050	41.83	51.09
2100	42.92	52.09
2150	44.00	53.08
2200	45.06	54.04
2250	46.11	54.99
2300	47.14	55.92
2350	48.15	56.83
2400	49.15	57.73
2450	50.13	58.61
2500	51.10	59.48

## Pressure and enthalpy



## Safety and Storage

Honeywell recommends reading the Material Safety Data Sheet (MSDS) before using the product. Solstice L40X is a mildly flammable refrigerant (ASHRAE class A2L) and needs to be handled appropriately.

## Literature

Honeywell has a range of literature available on Solstice L40X.

## Package Sizes

Solstice L40X is available in 50kg cylinders and rolldrum. For other packing sizes please contact Honeywell distribution network.

## Leaks and leak detection

If a large release of Solstice L40X vapour occurs, the same measures as with any other non-azeotropic blend need to be taken. Hand-held leak detectors can be used for pinpointing leaks. Leak detection is important for protection of those in proximity of the system, refrigerant conservation, equipment protection and performance, and reduction of emissions. Customers should consult the equipment manufacturer for appropriate detectors.

## For more information

[www.honeywell-refrigerants.com/europe](http://www.honeywell-refrigerants.com/europe)

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## Materials compatibility

Honeywell does not recommend the use of chlorinated solvents to clean refrigeration systems or components.

## Desiccants

Desiccant driers compatible with Solstice L40X are commercially available.

Individual drier manufacturers should be contacted for specific recommendations.

## Lubricants

POE (polyol ester) oil is recommended for using Solstice L40X.

Compressor manufacturers typically qualify specific lubricants for use with their products. Users should check with the equipment manufacturer for the recommended lubricants for their system.

## Plastics and elastomers

Solstice L40X is compatible with most common materials. Since there are many different grades and formulations of these materials, we recommend that compatibility testing be performed on the specific grade of materials under consideration and at the conditions of use when designing new systems. Customers should consult the manufacturer or conduct further independent testing.



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