

SOLSTICE® 454B (R-454B)

Technical Data Sheet

Solstice® 454B (R-454B) is a non-ozone depleting, zeotropic blend designed to serve as a low GWP alternative to R-410A in comfort air cooling and reversible heating applications.

A key feature of Solstice® 454B is its 78% lower GWP with improved efficiency and matching capacity to R-410A, helping to further minimize the re-design costs and capital expenditures.

Solstice® 454B (R-454B) is the most optimized R-410A replacement with improved capacity and efficiency that provides easy conversion with minimal changes from an R-410A design.

Thanks to its high critical temperature and broader operating envelope in low evaporating temperatures, Solstice® 454B outperforms other refrigerant alternatives in normal and high ambient conditions in a variety of applications such as:

- Direct expansion (DX) chillers
- High pressure heat pumps
- Residential/Light commercial A/C
- Commercial packaged systems



GENERAL PROPERTIES

Class/Type	Zeotropic Blend
Formula	"R-32 / R-1234yf (68.9% / 31.1%)"
Appearance	Colourless
ODP	0
GWP (IPCC AR5*)	467
Flammability Limits (% vol)	11.25% (LFL) - 22.00% (UFL)
ASHRAE Standard 34 Class	A2L

UNITS

Molecular weight	62.614 kg/kmol
Boiling Temperature	-50.5 °C
Critical Temperature	78.1 °C
Critical Pressure	52.7 bar
Critical Volume	0.00226 m ³ /kg
Critical Density	443.1 kg/m ³
Vapour Density at 0 kPa (Boiling Point)	3.57 kg/m ³
Liquid Density at 0 °C	1081.5 kg/m ³
Liquid Density at 25 °C	984.6 kg/m ³
Vapour Density at 25 °C	50.7 kg/m ³
Liquid Heat Capacity at 25 °C	1.80 kJ/kg·°K
Vapour Heat Capacity at 25 °C	1.43 kJ/kg·°K
Vapour Pressure at 25 °C	1515.9 kPa
Liquid Thermal Conductivity at 25 °C	105.4 mW/m·°K
Vapour Thermal Conductivity at 25 °C	15.0 mW/m·°K
Liquid Viscosity at 25 °C	114.8 µPa·sec
Vapour Viscosity at 25 °C	12.8 µPa·sec

BENEFITS

- Reduced GWP: 78% lower than R-410A
- Closest match to R-410A design with minimal changes
- Excellent performance in normal and high ambient conditions
- Similar discharge temperature to R-410A
- Low temperature glide
- Miscibility with POE lubricants
- Lower mass flow than R-410A and R-32
- Higher critical temperature provides excellent performance in high ambient conditions

*For F-Gas reporting purposes, a different GWP value may be used.

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SAFETY AND STORAGE

Honeywell recommends reading the Material Safety Data Sheet (MSDS) before using the product. Solstice® 454B is a mildly-flammable refrigerant (ASHRAE class A2L).

Refrigerant Solstice is registered under the European Union's REACH program (Registration, Evaluation, Authorisation and Restriction of Chemicals).

MATERIAL COMPATIBILITY

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

Desiccants

Desiccant driers compatible with Solstice® 454B are commercially available. Individual drier manufacturers should be contacted for specific recommendations.

Lubricants

POE (polyol ester) oil is recommended for using Solstice® 454B. 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® 454B is compatible with most common materials. Since there are many different grades and formulations of these materials, we recommend that compatibility testing to 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.

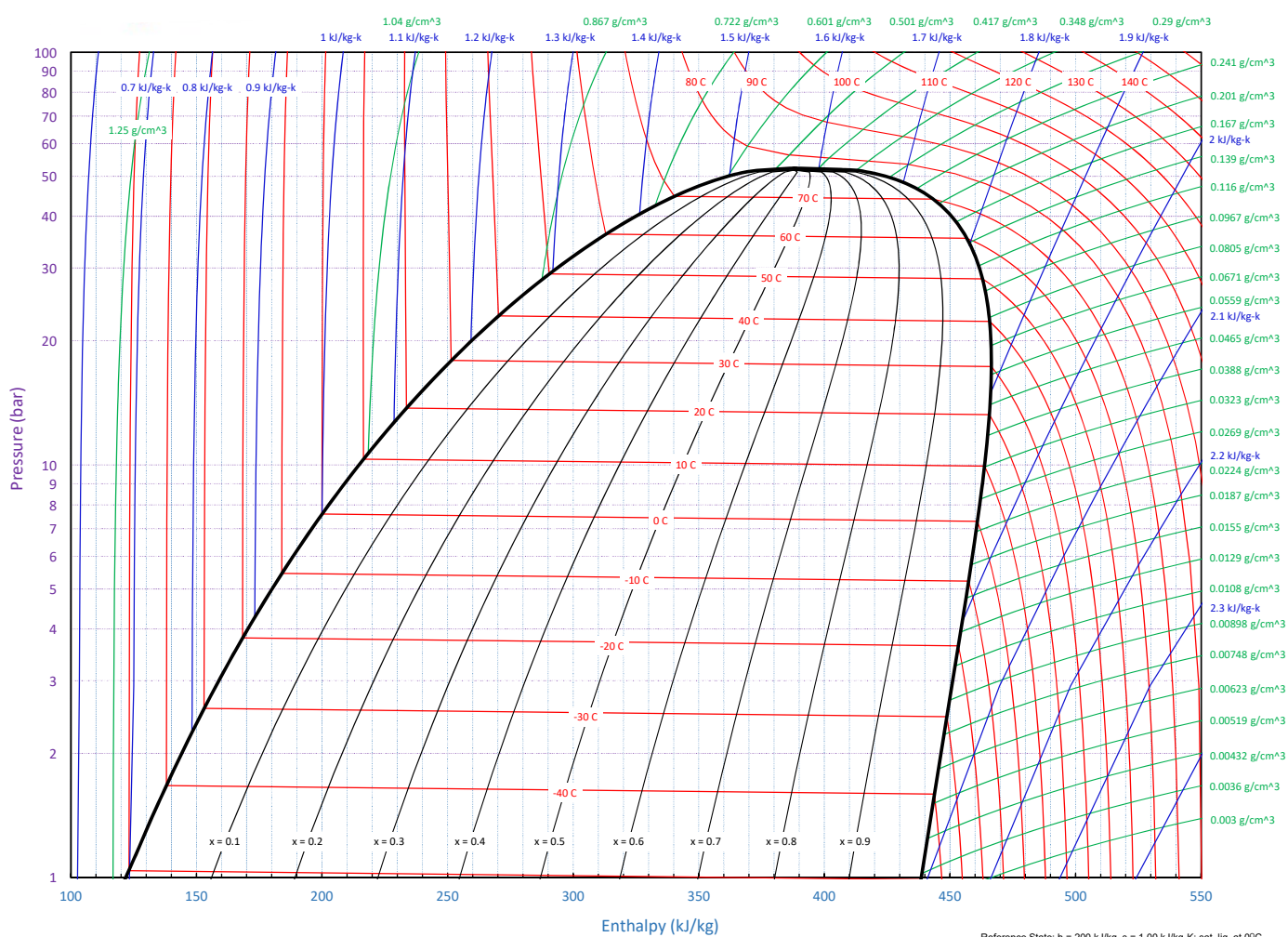
PACKAGE SIZES

Solstice® 454B is available in 45kg cylinders and 750kg vertical drums. For other packing sizes please contact Honeywell distribution network.

LEAK DETECTION

Leak detectors can be used for pinpointing specific leaks or for monitoring an entire room on a continual basis. Leak detection is important for refrigerant conservation, equipment protection and performance, reduction of emissions and protection of those coming in contact with the system. Customers should consult the equipment manufacturer for appropriate detectors.

PRESSURE AND ENTHALPY



SOLSTICE 454B P-T CHART			SOLSTICE 454B P-T CHART		
“PRESSURE (kPA)”	“LIQUID (BUBBLE) TEMPERATURE (°C)”	“VAPOUR (DEW) TEMPERATURE (°C)”	“PRESSURE (kPA)”	“LIQUID (BUBBLE) TEMPERATURE (°C)”	“VAPOUR (DEW) TEMPERATURE (°C)”
100	-50,76	-49,76	2600	45,24	46,48
150	-42,35	-41,30	2650	46,05	47,29
200	-35,93	-34,84	2700	46,86	48,09
250	-30,67	-29,55	2750	47,65	48,87
300	-26,17	-25,02	2800	48,44	49,64
350	-22,22	-21,04	2850	49,21	50,41
400	-18,67	-17,48	2900	49,97	51,16
450	-15,46	-14,25	2950	50,72	51,90
500	-12,50	-11,28	3000	51,46	52,64
550	-9,77	-8,52	3050	52,20	53,36
600	-7,21	-5,96	3100	52,92	54,08
650	-4,82	-3,55	3150	53,64	54,78
700	-2,55	-1,28	3200	54,34	55,48
750	-0,41	0,87	3250	55,04	56,16
800	1,62	2,92	3300	55,73	56,84
850	3,57	4,87	3350	56,41	57,51
900	5,43	6,73	3400	57,09	58,18
950	7,21	8,52	3450	57,75	58,83
1000	8,92	10,24	3500	58,41	59,48
1050	10,57	11,89	3550	59,07	60,12
1100	12,17	13,49	3600	59,71	60,75
1150	13,71	15,03	3650	60,35	61,38
1200	15,20	16,52	3700	60,98	61,99
1250	16,64	17,97	3750	61,61	62,61
1300	18,04	19,37	3800	62,22	63,21
1350	19,40	20,74	3850	62,84	63,81
1400	20,73	22,06	3900	63,44	64,40
1450	22,02	23,35	3950	64,04	64,98
1500	23,27	24,61	4000	64,64	65,56
1550	24,50	25,83	4050	65,22	66,13
1600	25,70	27,03	4100	65,81	66,70
1650	26,86	28,19	4150	66,38	67,26
1700	28,01	29,34	4200	66,96	67,81
1750	29,13	30,45	4250	67,52	68,36
1800	30,22	31,54	4300	68,08	68,90
1850	31,29	32,61	4350	68,64	69,44
1900	32,34	33,66	4400	69,19	69,97
1950	33,37	34,69	4450	69,73	70,50
2000	34,38	35,69	4500	70,27	71,01
2050	35,37	36,68	4550	70,81	71,53
2100	36,35	37,65	4600	71,34	72,04
2150	37,30	38,60	4650	71,87	72,54
2200	38,24	39,54	4700	72,39	73,03
2250	39,17	40,45	4750	72,91	73,53
2300	40,08	41,36	4800	73,42	74,01
2350	40,97	42,25	4850	73,93	74,49
2400	41,85	43,12	4900	74,43	74,96
2450	42,72	43,98	4950	74,93	75,43
2500	43,57	44,83	5000	75,43	75,89
2550	44,41	45,66			

For More Information visit

www.honeywell-refrigerants.com/europe

Honeywell Belgium N.V.

Gaston Geenslaan 14
3001 Heverlee, Belgium
Phone: +32 16 391 212
Fax: +32 16 391 371
fluorines.europe@honeywell.com

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