SOLSTICE® 454B (R-454B)

Technical Data Sheet

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

Solstice® 454B demonstrates improved efficiency and matching capacity to R-410A, with a GWP that is 78% lower. It minimizes capital expenditures and provides easy conversion with minimal changes from a R-410A design.

Solstice $^{\otimes}$ 454B (R-454B) is the most optimized R-410A replacement, providing easy conversion with minimal changes from a 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:

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

GENERAL P	ROPERTIES		
Class/Type	Zeotropic Blend		
Formula	"R-32 / R-1234yf (68.9% / 31.1%)"		
Appearance	Colorless		
ODP	0		
GWP (IPCC AR4)	466		
Flammability Limits (% vol)	11.25% (LFL) - 22.00% (UFL)		
ASHRAE Standard 34 Class	A2L		
IP U	NITS		
Property	Refprop result		
Molecular weight	62.6 lbm/lb-mol		
Boiling temperature @ 0 psig	-58.9 F		
Critical temperature	172.6 F		
Critical pressure	763.9 psia		
Critical volume	0.03616 ft³/lbm		
Critical density	27.7 lbm/ft ³		
Saturated liquid pressure @ 77°F	103.5 psia		
Saturated vapor pressure @ 77°F	219.9 psia		
Vapor density @ 0 psig boiling point	0.212 lbm/ft^3		
Vapor density @ 77°F	3.167 lbm/ft^3		
Vapor pressure @ 77°F	219.868 psia		
Liquid density @ 32°F	67.51 lbm/ft ³		
Liquid density @ 77°F	61.47 lbm/ft ³		
Liquid heat capacity @ 77°F	0.43 Btu/lbm-R		
Vapor heat capacity @ 77°F	0.343 Btu/lbm-R		
Liquid thermal conductivity @ 77°F	0.061 Btu/(h-ft-R)		
Vapor thermal conductivity @ 77°F	0.0087 Btu/h-ft-F		
Liquid viscosity @ 77°F	7.70E-05 lbm/ft-sec		
vapor viscosity @ 77°F	8.60E-06 lbm/ft-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.

SAFETY AND STORAGE

Honeywell recommends reading the Safety Data Sheet (SDS) before using this product. Solstice® 454B is a mildly flammable refrigerant (ASHRAE Class A2L) and should be handled appropriately.

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. Contact individual drier manufacturers for specific recommendations.

PRESSURE AND ENTHALPY

Lubricants

POE (polyol ester) oil is recommended for Solstice® 454B. Compressor manufacturers typically qualify specific lubricants for use with their products. 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 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 a variety of packaging containers in the US. These include disposable 20 lb jugs, returnable 100 lb cylinders, half ton and **one** ton tanks. Iso tanks and bulk trailers of material are also available. Please consult your Honeywell sales representative if a bulk container is required for your application.

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.



R-454B					R-454B			
PRESSURE	RESSURE TEMPERATURE (°F)			PRESSURE TEMPERATURE (°F)				
(PSIG)	AVERAGE	BUBBLE	DEW	(PSIG)	AVERAGE	BUBBLE	DEW	
0	-58.1	-59.0	-57.3	310	103.0	101.9	104.1	
20	-24.3	-25.2	-23.3	320	105.2	104.2	106.3	
40	-3.6	-4.6	-2.6	330	107.4	106.4	108.5	
60	11.9	10.9	13.0	340	109.6	108.5	110.7	
70	18.5	17.4	19.6	345	110.7	109.6	111.7	
80	24.5	23.4	25.6	350	111.7	110.6	112.8	
90	30.0	29.0	31.1	355	112.7	111.7	113.8	
95	32.7	31.6	33.8	360	113.8	112.7	114.8	
100	35.2	34.1	36.3	365	114.8	113.7	115.8	
105	37.7	36.6	38.8	370	115.8	114.7	116.8	
110	40.0	38.9	41.1	375	116.8	115.7	117.8	
115	42.3	41.2	43.4	380	117.8	116.7	118.8	
120	44.6	43.5	45.7	385	118.7	117.7	119.8	
125	46.7	45.6	47.9	390	119.7	118.7	120.7	
1.30	48.9	47.7	50.0	395	120.7	119.6	121.7	
135	50.9	49.8	52.1	400	121.6	120.6	122.6	
140	52.9	51.8	54.1	405	122.5	121.5	123.6	
145	54.9	53.8	56.0	410	123.5	122.5	124.5	
150	56.8	55.7	58.0	415	124.4	123.4	125.4	
155	58.7	57.6	59.8	420	125.3	124.3	126.3	
160	60.5	59.4	61.7	425	126.2	125.2	127.2	
170	64.1	63.0	65.2	430	127.1	126.1	128.1	
180	67.5	66.4	68.6	435	128.0	127.0	129.0	
190	70.8	69.6	71.9	440	128.9	127.9	129.9	
200	73.9	72.8	75.1	445	129.8	128.8	130.7	
210	77.0	75.9	78.1	450	130.6	129.7	131.6	
220	80.0	78.8	81.1	460	132.3	131.4	133.3	
240	85.6	84.5	86.7	470	134.0	133.1	135.0	
260	90.9	89.8	92.0	480	135.7	134.7	136.6	
270	93.4	92.3	94.6	490	137.3	136.4	138.2	
280	95.9	94.8	97.0	500	138.9	138.0	139.8	
290	98.3	97.2	99.5	510	140.5	139.6	141.4	
300	100.7	99.6	101.8	520	142.1	141.2	142.9	
200	200.1	00.0	101.0	530	143.6	1427	1445	



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