SOLSTICE® N15 (R-515B)

Technical Data Sheet

Solstice N15 (R-515B) is a nonflammable (A1) azeotropic blend designed as a long-term replacement for R-134a in medium- and high-temperature applications. It has a low Global Warming Potential (GWP) of only 292, 80% lower than R-134a. Performance is nearly identical to R-1234ze (GWP<1), allowing for an easy transition to this ultra-low GWP refrigerant in the future.

PHYSICAL PROPERTIES

GENERAL PROPERTIES	
Class/Type	Azeotropic blend
Formula	R-1234ze / R-227ea (91.1% / 8.9%)
Appearance	Colorless
ODP	0
GWP 4th IPCC	292
Flammability limits – ASTM E681-04 @21°C	Nonflammable
ASHRAE Standard 34 class	A1
LFL (%vol)	Nonflammable
UNITS	
Molecular weight	117.5 lbm/lb-mol
Boiling temperature @ 0psig	-2.0°F
Critical temperature	228.0 °F
Critical pressure	507 psig
Critical volume	0.0322 ft³/lbm
Critical Density	31.03 lbm/ft³
Vapor Density At 0psig Boiling Point	0.367 lbm/ft³
Liquid Density At 32°F	78.56 lbm/ft³
Liquid Density At 77°F	73.65 lbm/ft³
Vapor Density At 77°F	1.69 lbm/ft³
Liquid Heat Capacity At 77°F	0.33 Btu/lbm-°F
Vapor Heat Capacity At 77°F	0.23 Btu/lbm-°F
Heat Of Vaporization At Boiling Point	81.7 Btu/lbm
Saturated Pressure At 77°F	57.45 psig
Liquid Thermal Conductivity At 77°F	0.042 Btu/hr-ft-°F
Vapor Thermal Conductivity At 77°F	0.008 Btu/hr-ft-°F
Liquid Viscosity At 77°F	0.4864 lbm/ft-hr
Vapor Viscosity At 77°F	0.0299 lbm/ft-hr

BENEFITS

- Nonflammable (ASHRAE A1)
- Reduced GWP: 80% lower than R-134a
- Efficiency comparable to R-134a
- Zero glide
- Lower discharge temperature compared to R-134a
- Can be used in equipment designed for R-1234ze
- Higher critical temperature compared to R-134a
- Low operating pressures

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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® N15 (R-515B) are commercially available. Individual drier manufacturers should be contacted for specific recommendations.

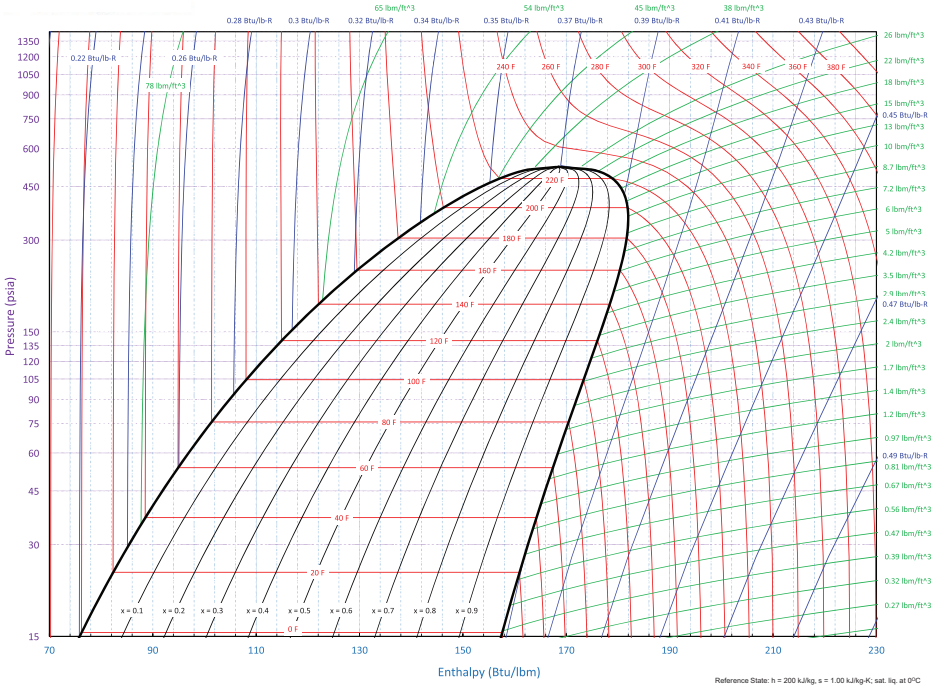
Lubricants

Polyol ester (POE) oil is recommended for Solstice N15. 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 N15 is compatible with most common materials. In the case of retrofit systems that may contain chlorinated materials, please contact your Honeywell sales representative for specific information.

PRESSURE AND ENTHALPY



SAFETY AND STORAGE

Honeywell recommends reading the Safety Data Sheet (SDS) before using Solstice N15. According to ASHRAE 34/ISO817, Solstice N15 is classified in safety group A1 (nonflammable). It has similar storage and handling requirements to R-134a in bulk and cylinder.

PACKAGE SIZES

Solstice N15 is available in 100lb and half ton refillable cylinders. For other packaging 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.

CHARGE LIMITATIONS AND RISK ASSESSMENT

As an A1 refrigerant, R-515B is not subject to charge limit regulations or flame mitigation measures.

It is important to ensure compliance with the instructions of the equipment manufacturer, national safety standards and regulations, as well as the relevant building codes. See your Honeywell representative for details.

GUIDANCE FOR USE IN NEW SYSTEMS

Honeywell can provide detailed recommendations for the use of Solstice N15 (R-515B) in various types of systems, including charging of the refrigerant as well as setting optimization. As improving coefficient of performance (COP) of any system is a common trend within the industry, we recommend optimizing systems by proper charging, minimizing running superheat, and reducing leaks. The relevant component manufacturer can provide further application advice.

PT CHART

R-515B

Temperature (°F)	Pressure (psig)
0	0.7
2	1.5
4	2.3
6	3.1
8	3.9
10	4.8
12	5.7
14	6.6
16	7.6
18	8.6
20	9.6
22	10.7
24	11.8
26	13.0
28	14.2
30	15.4
32	16.6
34	17.9
36	19.3
38	20.7
40	22.1
42	23.6
44	25.1
46	26.7
48	28.3
50	29.9
52	31.6
54	33.4
56	35.2
58	37.1
60	39.0
62	40.9
64	42.9
66	45.0
68	47.2
70	49.3
72	51.6
74	53.9
76	56.2
78	58.7
80	61.2
82	63.7
84	66.3
86.0	69.0
88.0	71.7
90.0	74.6
92.0	77.4
94.0	80.4
96.0	83.4
98.0	86.5

Temperature (°F)	Pressure (psig)
100.0	89.7
102.0	92.9
104.0	96.2
106.0	99.6
108.0	103.1
110.0	106.6
112.0	110.3
114.0	114.0
116.0	117.8
118.0	121.6
120.0	125.6
122.0	129.6
124.0	133.8
126.0	138.0
128.0	142.3
130.0	146.7
132.0	151.2
134.0	155.7
136.0	160.4
138.0	165.2
140.0	170.1
142.0	175.0
144.0	180.1
146.0	185.3
148.0	190.5
150.0	195.9
152.0	201.4
154.0	207.0
156.0	212.7
158.0	218.5
160.0	224.4
162.0	230.4
164.0	236.5
166.0	242.8
168.0	249.2
170.0	255.7

COMMERCIAL REFRIGERATION APPLICATIONS:

- Supermarket refrigeration systems
- Remote condensing units
- High-temperature side of cascade refrigeration systems
- Flooded systems
- Stand-alone units
- Waterloop systems for discount stores and supermarkets
- Food service

HEATING / COOLING APPLICATIONS:

- Chillers
- Heat pumps
- High-ambient air conditioning

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