

SOLSTICE® 449A (R-449A)

Technical Data Sheet (SI Units)

Solstice® 449A (R-449A) is a zeotropic blend designed to serve as a replacement for R-404A, R-507, R-22, R-407 series and interim blends in low- and medium-temperature commercial refrigeration. This hydrofluoroolefin (HFO) blend demonstrates environmental and performance benefits in retrofits as well as new systems. In addition, Solstice 449A has been approved by major global equipment and component manufacturers.

PHYSICAL PROPERTIES

SOLSTICE® 449A (R-449A)	
Class	Zeotropic Blend
Formula*	24.3%/24.7%/25.7%/25.3% R-32/R-125/ R-134a/R-1234yf
Appearance	Colorless
ODP (ODP-R11=1)	0
GWP 4th/5th IPCC	1397 / 1282
Flammability Limits – ASTM E681-04 @ 21°C	Nonflammable
ASHRAE Std. 34 Safety Class	A1
LFL (% vol)	Nonflammable

PROPERTIES (IP)	
Molecular weight	87.2 g/mol
Boiling temperature @ 101.325kPa	-45.7°C
Critical temperature	82.1°C
Critical pressure	4,499.7 kPa (abs)
Critical volume	2.09 m ³ /kg
Critical density	479.4 kg/m ³
Saturated liquid pressure @ 25°C	1,570.8 kPa (abs)
Saturated vapor pressure @ 25°C	1,112.3 kPa (abs)
Vapor density @ 101.325 kPa boiling pt	3.63 kg/m ³
Vapor density @ 25°C	49.3 kg/m ³
Vapor pressure @ 25°C	1,112.3 kPa (abs)
Liquid density @ 0°C	1,197.6 kg/m ³
Liquid density @ 25°C	1,097.1 kg/m ³
Liquid heat capacity @ 25°C	1.55 KJ/kg-K
Vapor heat capacity @ 25°C	1.16 KJ/kg-K
Liquid thermal conductivity @ 25°C	80.5 W/m-K
Vapor thermal conductivity @ 25°C	14.7 W/m-K
Liquid viscosity @ 25°C	54.4 μPa-s
Vapor viscosity @ 25°C	20.0 μPa-s
Boiling temperature @ 0 psig	-50.3°F
Critical temperature	179.7°F
Critical pressure	652.6 psia
Critical volume	0.03 ft ³ /lbm
Critical density	29.9 lbm/ft ³
Saturated liquid pressure @ 77°F	227.8 psia
Saturated vapor pressure @ 77°F	161.3 psia
Vapor density @ 0 psig boiling point	0.23 lbm/ft ³
Vapor density @ 77°F	3.1 lbm/ft ³
Vapor pressure @ 77°F	161.3 psia
Liquid density @ 32°F	74.8 lbm/ft ³
Liquid density @ 77°F	68.5 lbm/ft ³
Liquid heat capacity @ 77°F	0.37 Btu/lbm-R
Vapor heat capacity @ 77°F	0.28 Btu/lbm-R
Liquid thermal conductivity @ 77°F	0.046 Btu/(h-ft-R)
Vapor thermal conductivity @ 77°F	0.0085 Btu/h-ft-F
Liquid viscosity @ 77°F	0.000093 lbm/ft-sec
Vapor viscosity @ 77°F	0.000083 lbm/ft-sec



BENEFITS

- Reduced GWP: 67% lower than R-404A

APPLICATIONS

Low- and medium-temperature commercial DX refrigeration for both new equipment and retrofits:

- Supermarkets / Convenience stores: freezers, coolers, display cases
- Cold storage warehouses
- Self-contained condensing units

Honeywell

MATERIALS COMPATIBILITY

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

Desiccants

Desiccant driers compatible with Solstice® 449A (R-449A) are commercially available. Individual drier manufacturers should be contacted for specific recommendations.

Lubricants

Polyol ester (POE) oil is recommended for Solstice 449A. 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 449A 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.

SAFETY AND STORAGE

Honeywell recommends reading the Safety Data Sheet (SDS) before using Solstice 449A. According to the compressed gas classification, Solstice 449A is nonflammable. It has similar storage and handling requirements to R-404A in bulk and cylinder.

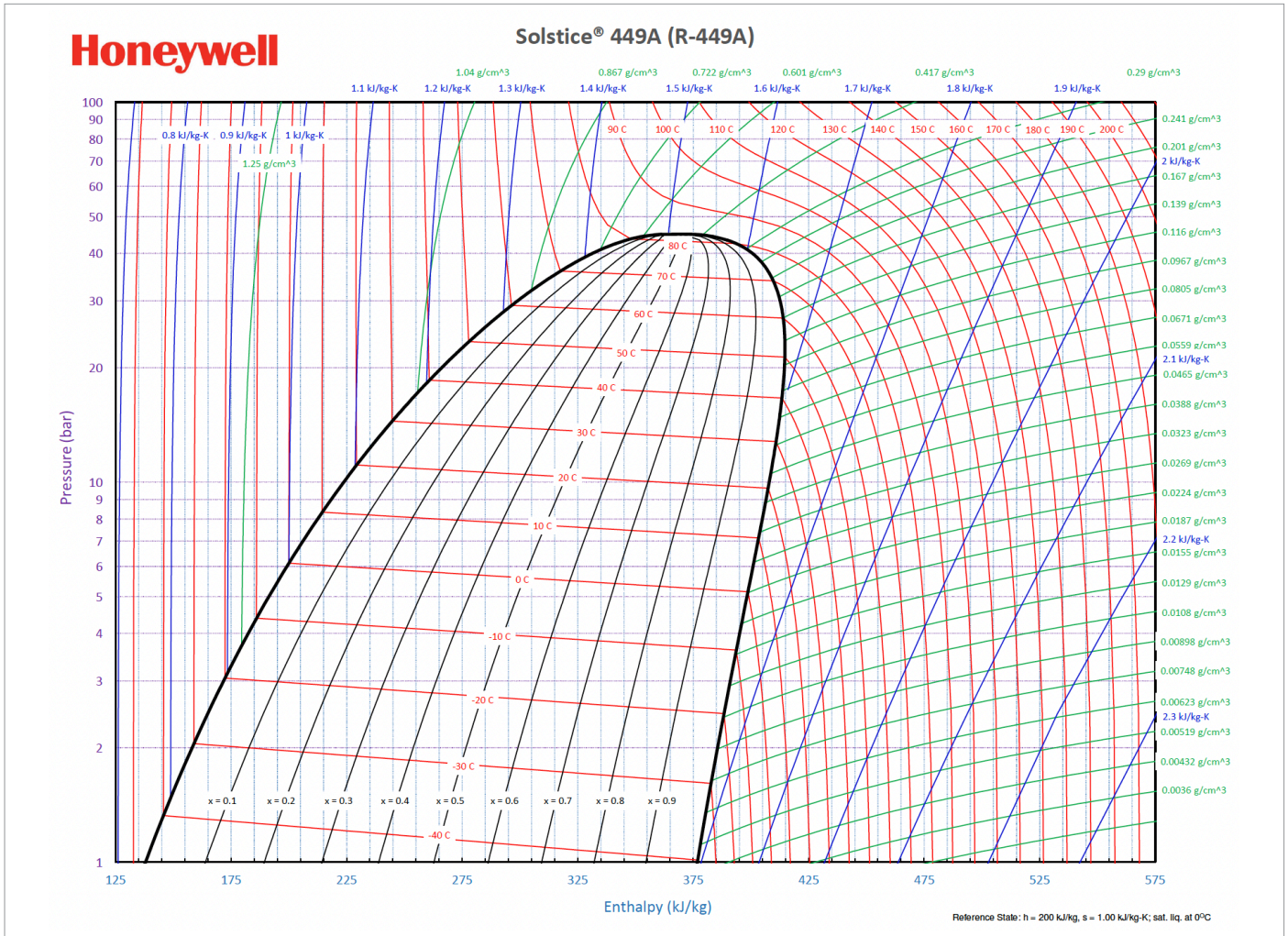
LEAK DETECTION

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.

HONEYWELL PT CHARTS - R449A			
PRESSURE (BARG)	AVERAGE TEMPERATURE (C)	BUBBLE TEMPERATURE (C)	VAPOR TEMPERATURE (C)
0.0	-43.1	-46.0	-40.3
0.5	-34.4	-37.3	-31.6
1.5	-22.3	-25.1	-19.6
2.0	-40.4	-45.5	-35.2
3.0	-38.1	-43.2	-33.0
3.5	-37.1	-42.2	-31.9
4.0	-36.0	-41.1	-30.9
4.5	-35.0	-40.1	-29.9
5.0	-34.0	-39.1	-28.9
5.5	-33.0	-38.1	-27.9
6.0	-32.0	-37.1	
6.5	-31.0	-36.1	-26.0
7.0	-30.1	-35.2	-25.0
7.5	-29.2	-34.3	-24.1
8.0	-28.3	-33.4	-23.2
8.5	-27.4	-32.5	-22.3
9.0	-26.5	-31.6	-21.5
9.5	-25.7	-30.7	-20.6
10.0	-24.8	-29.9	-19.8
10.5	-24.0	-29.0	-18.9
11.0	-23.2	-28.2	-18.1
11.5	-22.4	-27.4	-17.3
12.0	-21.6	-26.6	-16.5
12.5	-20.8	-25.8	-15.7
13.0	-20.0	-25.0	-15.0
13.5	-19.3	-24.3	-14.2
14.0	-18.5	-23.5	-13.5
14.5	-17.8	-22.8	-12.7
15.0	-17.0	-22.1	-12.0
15.5	-16.3	-21.3	-11.3
16.0	-15.6	-20.6	-10.6
16.5	-14.9	-19.9	-9.9
17.0	-14.2	-19.2	-9.2
17.5	-13.5	-18.5	-8.5

HONEYWELL PT CHARTS - R449A			
PRESSURE (BARG)	AVERAGE TEMPERATURE (C)	BUBBLE TEMPERATURE (C)	VAPOR TEMPERATURE (C)
18.0	-12.8	-17.8	-7.8
18.5	-12.2	-17.2	-7.2
19.0	-11.5	-16.5	-6.5
19.5	-10.8	-15.8	-5.9
20.0	-10.2	-15.2	-5.2
20.5	-9.6	-14.5	-4.6
21.0	-8.9	-13.9	-3.9
21.5	-8.3	-13.3	-3.3
22.0	-7.7	-12.7	-2.7
22.5	-7.1	-12.0	-2.1
23.0	-6.5	-11.4	-1.5
23.5	-5.9	-10.8	-0.9
24.0	-5.3	-10.2	-0.3
24.5	-4.7	-9.6	0.3
25.0	-4.1	-9.1	0.9
25.5	-3.5	-8.5	1.4
26.0	-2.9	-7.9	2.0
26.5	-2.4	-7.3	2.6
27.0	-1.8	-6.8	3.1
27.5	-1.3	-6.2	3.7
28.0	-0.7	-5.6	4.2
28.5	-0.2	-5.1	4.8
29.0	0.4	-4.6	5.3
29.5	0.9	-4.0	5.8
30.0	1.4	-3.5	6.4
30.5	2.0	-3.0	6.9
31.0	2.5	-2.4	7.4
31.5	3.0	-1.9	7.9
32.0	3.5	-1.4	8.4
32.5	4.0	-0.9	8.9
33.0	4.5	-0.4	9.5
33.5	5.0	0.1	10.0
34.0	5.5	0.6	10.4
34.5	6.0	1.1	10.9

PRESSURE AND ENTHALPY



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For more information visit

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