

SOLSTICE® 513A (R-513A)

TECHNICAL DATA SHEET

Solstice® 513A is a non-ozone depleting, low global warming potential (GWP) hydrofluoroolefin (HFO) based refrigerant developed to replace R-134a in positive displacement, direct expansion, medium-temperature commercial and industrial chillers, as well as flooded and/or centrifugal chillers. Solstice 513A is an excellent capacity and efficiency match for R-134a in new systems, as well as for retrofit of existing systems, offering an optimal balance of properties including high energy efficiency.

Solstice® 513A Properties	
ASHRAE Number	R-513A
Composition	HFO R-1234yf/ R-134a
Weight %	56.0/44.0
Molecular Weight	108.4 lb/lb mole (108.4 g/mole)
Boiling Point at 0 psig	-21.2°F (-29.6°C)
Critical Pressure	529.1 psia (3648 kPa)
Critical Temperature	202.8°F (94.9 °C)
Liquid Density at 77 °F (25 °C)	70.8 lb/ft³ (1134.2 kg/m³)
Ozone Depletion Potential (CFC-11 = 1.0)	0
AR5 Global Warming Potential	573
ASHRAE Safety Classification	A1
Temperature Glide	0 °F (0 K)

BENEFITS

- Reduced GWP: 56% reduction compared to R-134a¹
- Excellent capacity and energy efficiency match to R-134a
- Close performance match to R-134a for retrofit and new systems
- Azeotrope with zero glide
- Safe and nonflammable (ASHRAE A1)
- Compatible with existing R-134a equipment design/lubricants
- Oil change and seal replacement is necessary when retrofitting systems running on HCFC service blends.

APPLICATIONS

- Medium-temperature circuit of hybrid cascade systems
- Medium-temperature commercial and industrial DX refrigeration
- Water chillers, air conditioning, and heat pumps
- Ice rinks
- New equipment/retrofit of existing systems



SAFETY AND STORAGE

Solstice Advanced Materials recommends reading the Safety Data Sheet (SDS) before using the product. Solstice® 513A is a nonflammable refrigerant (ASHRAE class A1).

MATERIALS COMPATIBILITY

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

DESICCANTS

Desiccant driers compatible with Solstice 513A are commercially available. Contact individual drier manufacturers for specific recommendations.

LUBRICANTS

Polyolester (POE) oil is recommended for using Solstice 513A. 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

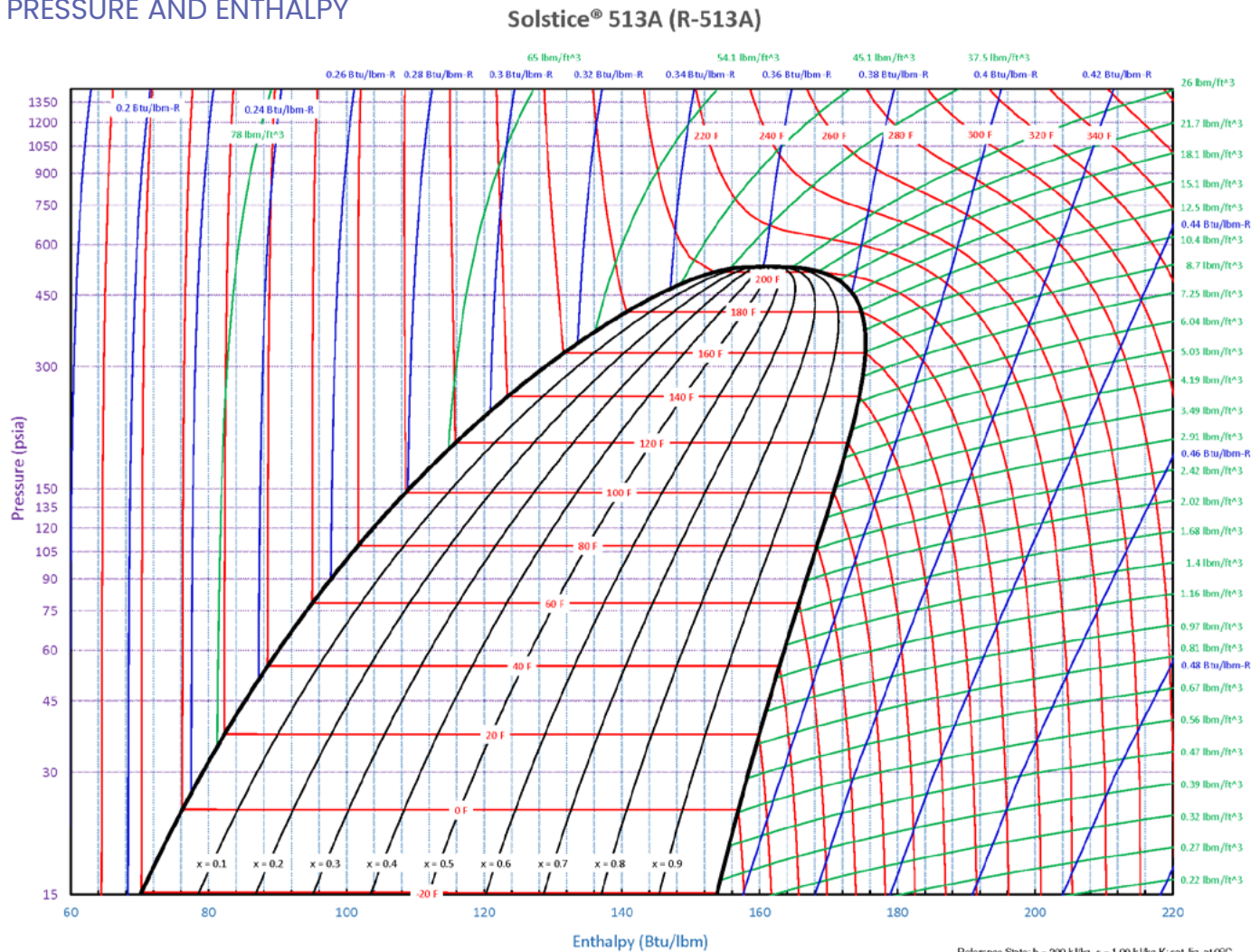
Solstice 513A is compatible with most common materials, select elastomers that resist degradation from both the refrigerant and any lubricants used. Since there are many different grades and formulations of these materials, we recommend that compatibility testing be performed on the specific grade of materials under consideration and at the conditions of use when designing new systems.

Customers should consult the manufacturer or conduct further independent testing.

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 in case of contact with the system. Customers should consult the equipment manufacturer for appropriate detectors.

PRESSURE AND ENTHALPY



PRESSURE AND TEMPERATURE

R-513A	
Pressure (psig)	Temperature (°F)
0	-21.2
5	-9.1
10	0.8
15	9.3
20	16.6
22	19.4
24	22.0
26	24.5
28	26.9
30	29.3
32	31.5
34	33.7
36	35.8
38	37.9
40	39.9
42	41.8
44	25.1
46	26.7
48	28.3

R-513A	
Pressure (psig)	Temperature (°F)
50	29.9
55	34.3
60	39.0
70	49.3
80	61.2
90	74.6
100	89.7
105	97.9
110	106.6
115	115.9
120	125.6
125	135.9
130	146.7
135	158.1
140	170.1
145	182.7
150	195.9
155	209.8
160	224.4

R-513A	
Pressure (psig)	Temperature (°F)
165	239.7
170	255.7
175	272.4
180	290.0
185	308.4
190	327.6
195	347.7
200	364.5
205	364.5
210	364.5
215	364.5
220	364.5
230	364.5
240	364.5
250	364.5
260	364.5
270	364.5
280	364.5



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