FORANE® REFRIGERANTS BY ARKEMA

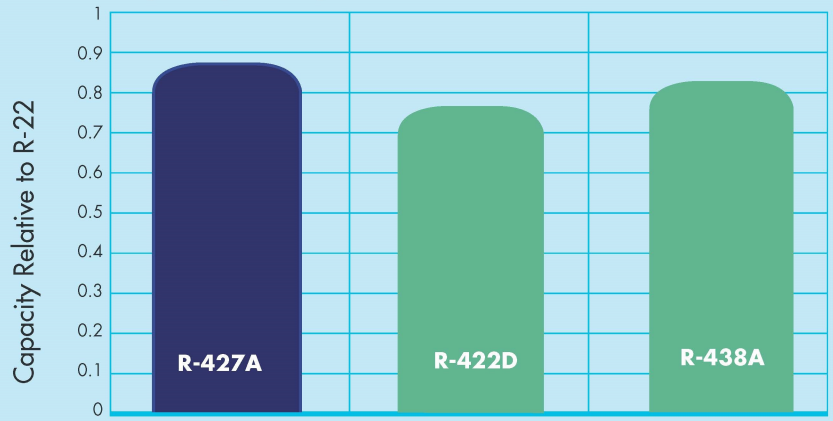
RSD REFRIGERATION SUPPLIES DISTRIBUTOR

Forane® Refrigerants R-22 Alternative

FORANE® 427A – THE EASY RETROFIT™

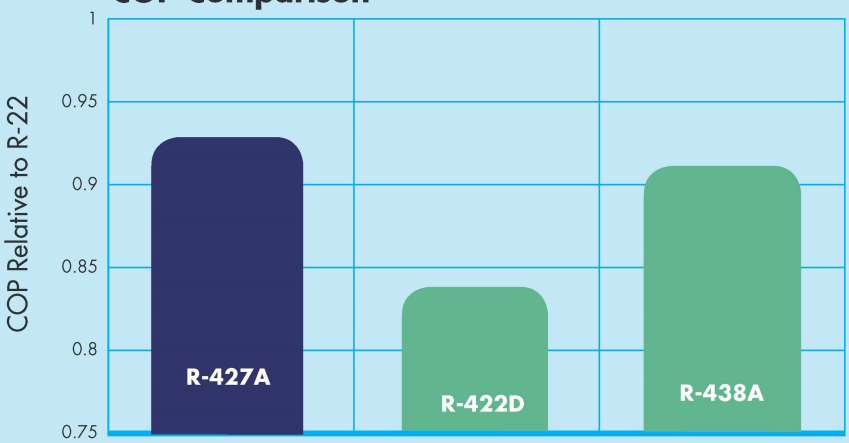
Forane® 427A is an R-22 retrofit for air conditioning, heat pumps, and refrigeration systems. R-427A out performs other common R-22 retrofits in most applications.

Capacity Comparison



Note: Box Temperature 25°F, Ambient 100°F

COP Comparison



Note: Box Temperature 25°F, Ambient 100°F

Minimize the work for R-22 retrofits

- One refrigerant for three applications: air conditioning, heat pumps, and refrigeration
- No TXV replacement required
- Comparable capacity to R-22
- Better efficiency than most R-22 retrofits
- Nearly identical operating pressures to R-22
- Copeland Discus™ and Bitzer Approved

NO OIL CHANGE NEEDED in many installations

iPhone®

Android™

New! Forane® P/T App

- Interactive pressure/temperature charts
- Pressure/temperature calculator
- Product finder
- Subcooling and superheat calculator
- Toggle between 8 different languages

Forane® 427A Retrofit Guides

Step 1: Establish baseline performance

Check the system for leaks and identify any needed repairs. Run the system using the correct OEM charge of R-22 and record performance parameters using an Arkema Retrofit Data Sheet.

Step 2: Recover existing R-22

Recover existing R-22 refrigerant (DO NOT vent to the atmosphere) and make sure not to mix with other refrigerant gases. Record the weight of refrigerant removed.

Step 3: Check lubricant

A lubricant change may not be required, but POE is always recommended for optimal performance. Confirming oil quality is important. Check the oil for moisture, acidity, and metal shavings or sediments. If the oil does not meet the desired specification, a complete oil change using POE is recommended.

Systems with complex piping schemes could impede proper oil return. In these cases, adding or changing over to POE is recommended.

Step 4: Replace the filter dryer and seals

Replace the filter dryer and, if necessary, elastomeric seals and gaskets, such as Schrader valve cores.

Step 5: Leak check and evacuate the system

Conduct a pressure test using dry nitrogen to determine if the system has a leak, staying below the system pressure limitations. Repair any leaks as necessary.

Pull a minimum vacuum of 500 microns and ensure that it maintains a vacuum. If the system does not hold vacuum, leaks may still be present.

Step 6: Charge the system with Forane® 427A

Remove refrigerant as a liquid only from the cylinder, being careful not to damage the compressor. The initial weight should be approximately 95% of the original charge for R-22, charging up to 100% if necessary.

Step 7: Start the system and check performance

Start system and record system performance, noting superheat and subcooling. Adjust TXV set-point and/or refrigerant charge to achieve the desired superheat. Low side pressure control settings may also need to be adjusted.

Step 8 : Label the system

Properly label the system as being retrofitted with Forane® 427A. For Forane® 427A system labels, call Arkema's customer service at (800) 245-5858.

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Customer Service: 800-245-5858
Technical Service: 800-738-7695

www.r22retrofits.com

ARKEMA
INNOVATIVE CHEMISTRY

forane.com

Arkema Inc.
900 First Avenue
King of Prussia, PA 19406
USA
Tel.: (+1) 610-205-7000

Headquarters: Arkema France
420, rue d'Estienne d'Orves
92705 Colombes Cedex – France
Tel.: +33 (0)1 49 00 80 80
Fax: +33 (0)1 49 00 83 96
arkema.com

Forane® Refrigerant Pressure Temperature Chart

PRESSURE (PSIG)																		
Sat. Temp (°F)	R-22	R-407C Liquid Pressure	R-407C Vapor Pressure	R-410A Liquid Pressure	R-427A Liquid Pressure	R-427A Vapor Pressure	R-407A Liquid Pressure	R-407A Vapor Pressure	R-123	R-12	R-134a	R-409A Liquid Pressure	R-409A Vapor Pressure	R-401A Liquid Pressure	R-401A Vapor Pressure	R-401B Liquid Pressure	R-401B Vapor Pressure	Sat. Temp (°C)
-50	***6.2***	***2.9***	***11.4***	5.3	***3.8***	***11.9***	***0.8***	***9.0***	***29.2***	***15.4***	***18.7***	***12.4***	***17.2***	***13.5***	***17.9***	***12.2***	***16.8***	-45.6
-45	***2.7***	0.4	***8.5***	8.0	***0.1***	***9.0***	1.7	***5.7***	***29.0***	***13.3***	***16.9***	***9.7***	***15.2***	***11.1***	***16.0***	***9.6***	***14.7***	-42.8
-40	0.5	2.5	***5.2***	11.0	1.9	***5.9***	3.9	***2.0***	***28.9***	***11.0***	***14.8***	***6.8***	***13.1***	***8.4***	***13.8***	***6.7***	***12.4***	-40.0
-35	2.6	4.8	***1.5***	14.2	4.1	***2.4***	6.4	1.0	***28.7***	***8.4***	***12.5***	***3.5***	***10.7***	***5.3***	***11.4***	***3.4***	***9.7***	-37.2
-30	4.9	7.3	1.3	17.8	6.6	0.8	9.2	3.3	***28.4***	***5.5***	***9.8***	0.0	***8.1***	***2.0***	***8.7***	0.1	***6.8***	-34.4
-25	7.4	10.1	3.6	21.8	9.3	2.9	12.2	5.8	***28.1***	***2.3***	***6.9***	2.0	***5.1***	0.8	***5.6***	2.0	***3.5***	-31.7
-20	10.1	13.1	6.1	26.1	12.2	5.3	15.6	8.5	***27.8***	0.6	***3.7***	4.1	***1.9***	2.9	***2.2***	4.1	0.1	-28.9
-15	13.2	16.5	8.8	30.8	15.4	7.9	19.2	11.5	***27.4***	2.4	***0.1***	6.5	0.8	5.1	0.7	6.5	2.0	-26.1
-10	16.5	20.1	11.9	35.9	18.9	10.8	23.2	14.9	***27.0***	4.5	1.9	9.0	2.8	7.5	2.8	9.1	4.2	-23.3
-5	20.0	24.0	15.2	41.5	22.8	14.0	27.5	18.5	***26.5***	6.7	4.1	11.8	4.9	10.1	5.0	11.9	6.6	-20.6
0	23.9	28.3	18.9	47.5	26.9	17.5	32.2	22.5	***25.9***	9.1	6.5	14.8	7.2	13.0	7.4	14.9	9.2	-17.8
5	28.2	33.0	22.9	54.1	31.4	21.2	37.3	26.9	***25.3***	11.8	9.1	18.1	9.7	16.1	10.1	18.2	12.1	-15.0
10	32.8	38.0	27.3	61.2	36.3	25.4	42.8	31.6	***24.6***	14.6	11.9	21.7	12.5	19.5	13.0	21.8	15.2	-12.2
15	37.7	43.5	32.0	68.8	41.5	29.9	48.7	36.7	***23.7***	17.7	15.0	25.5	15.4	23.1	16.2	25.7	18.6	-9.4
20	43.0	49.3	37.2	77.1	47.2	34.7	55.1	42.3	***22.8***	21.0	18.4	29.6	18.7	27.1	19.6	29.9	22.3	-6.7
25	48.7	55.7	42.7	86.0	53.3	40.0	62.0	48.3	***21.8***	24.6	22.1	34.0	22.2	31.4	23.4	34.4	26.3	-3.9
30	54.9	62.5	48.7	95.5	59.8	45.7	69.3	54.8	***20.7***	28.4	26.0	38.7	26.0	36.0	27.4	39.3	30.6	-1.1
35	61.5	69.8	55.2	105.7	66.8	51.9	77.2	61.8	***19.5***	32.5	30.3	43.8	30.1	40.9	31.8	44.5	35.2	1.7
40	68.5	77.6	62.1	116.6	74.3	58.7	85.6	69.4	***18.1***	36.9	35.0	49.2	34.5	46.2	36.5	50.1	40.2	4.4
45	76.0	86.0	69.5	128.3	82.3	65.6	94.6	77.4	***16.6***	41.6	40.0	54.9	39.2	51.8	41.6	56.0	45.6	7.2
50	84.0	94.9	77.5	140.8	90.8	73.3	104.2	86.1	***15.0***	46.7	45.4	61.0	44.3	57.9	47.0	62.4	51.4	10.0
55	92.5	104.5	86.0	154.1	99.9	81.5	114.4	95.3	***13.1***	52.0	51.1	67.6	49.8	64.3	52.8	69.2	57.5	12.8
60	101.6	114.6	95.1	168.2	109.6	90.3	125.2	105.2	***11.2***	57.7	57.3	74.5	55.6	71.2	59.0	76.5	64.1	15.6
65	111.2	125.4	104.8	183.2	119.9	99.6	136.7	115.7	***9.0***	63.7	63.9	81.8	61.9	78.5	65.7	84.2	71.2	18.3
70	121.4	136.9	115.2	199.2	130.8	109.6	148.8	127.0	***6.6***	70.2	71.0	89.5	68.6	86.3	72.8	92.3	78.7	21.1
75	143.6	149.1	126.2	216.1	142.4	120.3	161.7	138.9	***4.0***	76.9	78.6	97.7	75.8	94.5	80.3	101.0	86.7	23.9
80	143.6	162.1	137.8	234.0	154.6	131.6	175.3	151.6	***1.2***	84.1	86.6	106.4	83.4	103.2	88.4	110.2	95.2	26.7
85	155.7	175.8	150.2	253.0	167.6	143.7	189.7	165.1	0.9	91.7	95.1	115.5	91.5	112.4	96.9	119.8	104.2	29.4
90	168.4	190.2	163.4	273.0	181.2	156.4	204.8	179.3	2.5	99.7	104.2	125.2	100.2	122.2	106.0	130.1	113.8	32.2
95	181.8	205.5	177.4	294.1	195.6	170.0	220.8	194.4	4.2	108.2	113.8	135.3	109.4	132.5	115.6	140.9	123.9	35.0
100	195.9	221.6	192.1	316.4	210.8	184.4	237.6	210.4	6.1	117.1	124.1	146.0	119.2	143.3	125.7	152.3	134.7	37.8
105	210.7	238.5	207.8	339.9	226.8	199.6	255.3	227.4	8.1	126.5	134.9	157.2	129.6	154.8	136.5	164.3	146.0	40.6
110	226.3	256.4	224.4	364.6	243.6	215.7	273.9	245.2	10.3	136.4	146.3	169.0	140.6	166.8	147.8	176.9	158.0	43.3
115	242.7	275.1	241.9	390.5	261.2	232.7	293.5	264.1	12.6	146.7	158.4	181.4	152.3	179.4	159.8	190.1	170.6	46.1
120	259.9	294.7	260.5	417.7	279.7	250.6	314.0	284.0	15.1	157.6	171.1	194.4	164.7	192.7	172.4	204.0	183.9	48.9
125	277.9	315.2	280.1	446.3	299.1	269.5	335.4	305.0	17.7	169.0	184.5	208.0	177.8	206.6	185.7	218.6	197.9	51.7
130	296.8	336.7	300.9	476.3	319.4	289.5	357.9	327.1	20.6	180.9	198.7	222.3	191.6	221.2	199.7	233.9	212.6	54.4
135	316.5	359.2	322.9	507.6	340.7	310.5	381.5	350.5	23.6	193.5	213.6	237.2	206.3	236.5	214.5	250.0	228.1	57.2
140	337.2	382.6	346.2	540.5	362.9	332.6	406.2	375.1	26.8	206.5	229.3	252.9	221.8	252.5	229.9	266.7	244.3	60.0
145	358.8	407.0	370.8	574.8	386.1	355.9	431.9	401.0	30.2	220.2	245.7	269.3	238.2	269.3	246.2	284.3	261.4	62.8
150	381.5	432.4	396.9	610.6	410.3	380.4	458.9	428.3	33.8	234.5	263.0	286.4	255.5	286.8	263.2	302.6	279.3	65.6

Red Numerals (in bold and italics) - Inches Hg. Below 1 ATM

Forane® Refrigerant Basic Property Data Chart

Properties	R-410A	R-427A	R-407A	R-407C	R-134a	R-404A	R-507A	R-22	R-408A	R-409A	R-123
Average Molecular Weight (g/mol)	72.6	90.4	90.1	86.2	102.0	97.6	98.8	86.5	87.0	97.4	152.9
Normal Boiling Point (NBP) (°F)	-61.9	-44.8	-49.0	-46.1	-14.9	-51.5	-52.8	-41.3	-47.9	-30.1	82.1
Latent Heat of Vaporization at NBP (BTU/lb)	116.7	102.0	101.3	107.4	92.8	86.0	84.3	100.5	97.6	94.6	73.7
Critical Temp (°F)	162.0	185.6	180.1	187.2	214.1	161.6	159.8	204.8	182.6	224.2	362.7
Critical Pressure (psia)	717.9	637.1	654.9	670.1	590.3	539.5	539.5	722.3	629.5	667.2	532.9
Density of Saturated Vapor @ NBP (lb/ft^3)	0.26	0.30	0.30	0.29	0.33	0.34	0.34	0.29	0.30	0.31	0.40
Density of Saturated Liquid at 77°F (lb/ft^3)	66.3	71.9	71.5	71.1	75.3	65.2	65.0	74.5	66.3	75.9	91.3
Specific Heat of Saturated Vapor at NBP (BTU/lb °R)	0.17	0.18	0.18	0.17	0.19	0.18	0.18	0.14	0.16	0.15	0.16
Specific Heat of Saturated Liquid at 77°F (BTU/lb °R)	0.44	0.38	0.36	0.38	0.34	0.39	0.39	0.30	0.37	0.30	0.23
Ozone Depletion Potential (ODP) (CFC-11 = 1.0)	0	0	0	0	0	0	0	0.055	0.026	0.05	0.02
ASHRAE Safety Group Classification	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	B1
Occupational Exposure Limits (8 hr time/wt. Avg.) (ppm)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	50
Global Warming Potential (GWP)	2,100	2,130	2,100	1,800	1,430	3,900	4,000	1,810	2,650	1,290	77

See MSDS for Health & Safety Considerations
Forane® is a registered trademark belonging to Arkema

ARKEMA
The world is our inspiration

Arkema Inc.
2000 Market Street
Philadelphia, PA 19103-3222
Tel.: 215-419-7000
www.arkema-inc.com

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