



Forane®
REFRIGERANTS

FORANE® 427A REFRIGERANT

A NEW - 100% HFC - EASIER RETROFIT FOR EXISTING HCFC-22 INSTALLATIONS

www.Forane427A.com



→ → **HCFC-22** → → → **Forane® 427A**



Forane® 427A Refrigerant A New Retrofit for HCFC-22

- ➔ • no equipment change necessary
- similar performance to HCFC-22
- works well with residual mineral oil or AB
- broad range of low, medium, and high temperature applications
- low global warming potential

- ➔ Customers requiring an HFC Retrofit for HCFC-22 can use **Forane® 427A**.
- ➔ For decades HCFC-22 has been used in air-conditioning applications due to its excellent thermodynamic properties. However, due to new regulations, HCFC-22 is being phased out.
- ➔ A non-toxic, non-flammable and zero-ODP refrigerant with an A-1 safety rating, **Forane® 427A** requires just one change-out of the system's oil, followed by replacement by a POE lubricant. Outstanding performance, similar to that of HCFC-22, can be achieved without a complete oil change, thanks to the high tolerance of **Forane® 427A** to residual original oil (mineral or alkylbenzene). No modification of the installation is required.



Forane® 427A is a simplified retrofit solution for existing HCFC-22 direct expansion installations in a large range of applications.

Forane® 427A can be used to retrofit low, medium, and high temperature HCFC-22 refrigeration equipment and air-conditioning installations.

Forane® 427A is **SNAP** approved for a number of HVACR applications.

SAFETY

Forane® 427A refrigerant is non-toxic and non-flammable with an A1 ASHRAE safety classification.

MATERIAL COMPATIBILITY

Forane® 427A is a 100% HFC blend and does not contain any flammable hydrocarbons. It is compatible with elastomers and plastics normally compatible with R-407C and R-404A.

LUBRICANTS

Forane® 427A is compatible with polyolester (POE) lubricants. However, one advantage to **Forane® 427A**, is the ability to tolerate a high residual amount of original oil in the POE lubricant, making for a simplified retrofit procedure.

RETROFIT PROCEDURE

- 1 Recover the entire HCFC-22 charge*
- 2 Remove the original oil from the system
 - An analysis of the original oil is recommended to ensure the HCFC-22 installation is in a good state of repair.
- 3 Charge POE lubricant
 - In most cases, no flushing is required. Only one oil change is required (up to 15% residual AB or mineral oil accommodated).
- 4 Replace the filter dryer.
- 5 Evacuate the installation and recharge with **Forane® 427A**. Arkema recommends a starting charge ratio of 95% of the original charge weight of R-22, increasing up to 100% as necessary.

* Arkema does not recommend mixing Forane® 427A WITH HCFC-22





Physical Properties of Forane® 427A Refrigerant



PROPERTIES	UNITS	FORANE® 427A	HCFC-22
Molecular weight	g/mol	90.4	86.5
Normal boiling point	°F	-45.4	-41.4
Critical temperature	°F	185.5	205.0
Critical pressure	psia	638.0	722.1
Bubble pressure at 77°F	psia	162.4	150.8
Density of saturated liquid at 77°F	lb/ft ³	71.9	74.5
Density of saturated vapor at 1 atm	lb/ft ³	0.30	0.29
Vapor thermal conductivity at 77°F and 1 atm	Btu/hr ft°R	.008	.007
Surface tension at 77°F	lb _f /ft	4.5 x 10 ⁻⁴	5.5 x 10 ⁻⁴
Specific heat of liquid at 77°F (Btu/lb °F)	Btu/lb°F	0.38	0.30
Specific heat of vapor at 77°F (Btu/lb °F)	Btu/lb°F	0.201	0.158
ODP		0	0.055
GWP		1,830	1,500

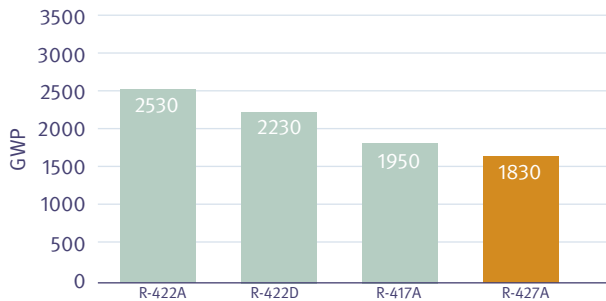
SATURATION PRESSURE (PSIG)		
TEMP (°F)	LIQUID PRESSURE	VAPOR PRESSURE
-50	3.8	11.9
-45	0.1	9.0
-40	1.9	5.9
-35	4.1	2.4
-30	6.6	0.8
-25	9.3	2.9
-20	12.2	5.3
-15	15.4	7.9
-10	18.9	10.8
-5	22.8	14.0
0	26.9	17.5
5	31.4	21.2
10	36.3	25.4
15	41.5	29.9
20	47.2	34.7
25	53.3	40.0
30	59.8	45.7
35	66.8	51.9
40	74.3	58.5
45	82.3	65.6
50	90.8	73.3
55	99.9	81.5
60	109.6	90.3
65	119.9	99.6
70	130.8	109.6
75	142.4	120.3
80	154.6	131.6
85	167.6	143.7
90	181.2	156.4
95	195.6	170.0
100	210.8	184.4
105	226.8	199.6
110	243.6	215.7
115	261.2	232.7
120	279.7	250.6
125	299.1	269.5
130	319.4	289.5
135	340.7	310.5
140	362.9	332.6
145	386.1	355.9
150	410.3	380.4

Red numbers are inches of Hg below atm. Pressure

Forane® 427A Performance Data

ENVIRONMENT

GWP COMPARISON

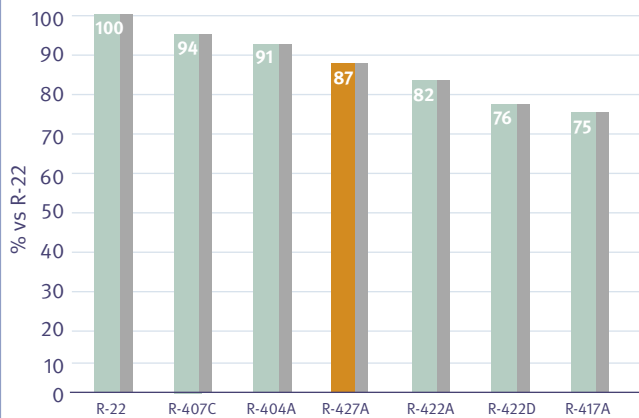


Forane® refrigerants

IPCC 4th SAR GWP Regulatory Country Compliance Values

CAPACITY

CAPACITY RATIOS RELATIVE TO R-22

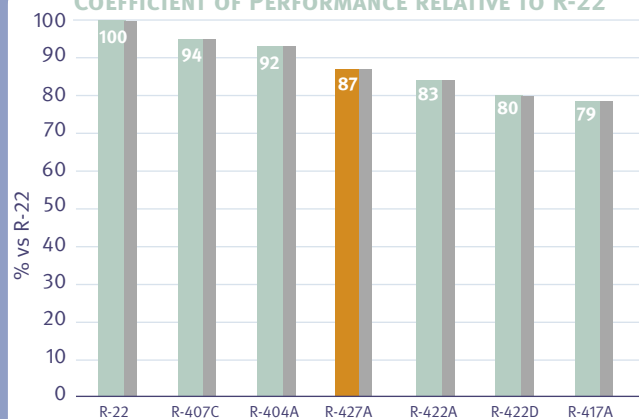


Forane® refrigerants

Test Conditions: 80°F ambient 30°F box, R-22 TXV, Optimized Charge

EFFICIENCY

COEFFICIENT OF PERFORMANCE RELATIVE TO R-22



Forane® refrigerants

Test Conditions: 80°F ambient 30°F box, R-22 TXV, Optimized Charge

Environment

- One of the lower GWP of any current major HCFC-22 retrofit refrigerant
- Zero ozone depletion
- Contains no hydrocarbons

Performance

- Better efficiency than most HCFC-22 retrofit refrigerants
- Comparable capacity versus HCFC-22; nearly identical operating pressures to HCFC-22
- Discharge temperatures can be as much as 40°F lower than HCFC-22 with **Forane® 427A refrigerant.**

Oil Return

- Oil return is good despite a high level of residual mineral or alkylbenzene oil.
- Only one oil change to POE oil
No flushing is required.

Forane® 427A is one of the best options for customers required to manage the phaseout of HCFC-22.

Call our hotline @ (800) 738-7695 or visit our website for more information.
www.Forane427A.com





Forane® Refrigerants Global Manufacturing Facilities



Calvert City, KY •
HFC-32
HFC-134a
HCFC-141b/142b
Blends

Zaramillo, Spain •
HFC-32
HFC-143a
HCFC-22
Blends

Pierre Benite, France
HFC-134a
HCFC-141b/142b
HCFC-22
Blends

Changshu, China
HCFC-22

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

Arkema
420, rue d'Estienne d'Orves
92705 COLOMBES Cedex
Tel.: +33 (0) 1 49 00 80 80
Fax: +33 (0) 1 49 00 83 96
www.arkema.com
www.forane.com

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