



# Refrigerant R-421A

## Replaces R-22 in Multiple Applications

### Save Time and Save Money with a Quick and Easy Conversion to R-421A

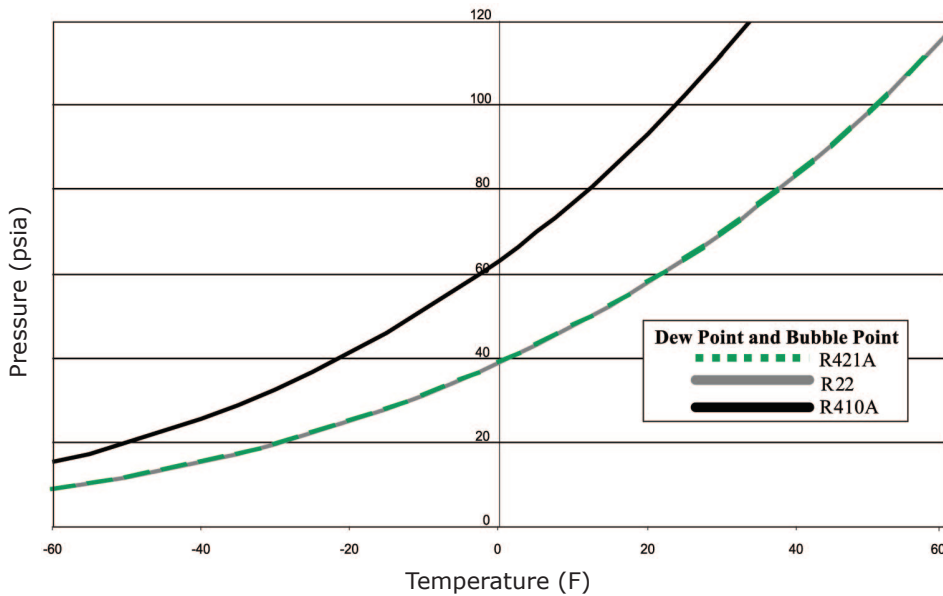
- ✓ **R-421A** is a unique non-ozone depleting long-term replacement for R-22
- ✓ **R-421A** is an environmentally **green** refrigerant
- ✓ **R-421A** can replace R-22 without unit modification and no change of oil
- ✓ **R-421A** does not contain a hydrocarbon, such as Butane
- ✓ **R-421A** can be used in compressors designed for R-22
- ✓ **R-421A** can be used with mineral, AB or POE oils
- ✓ **R-421A** is the only two-component blend to replace R-22
- ✓ **R-421A** is non-flammable and rated A1 by ASHRAE
- ✓ **R-421A** is comparable to R-22 in terms of performance across the R-22 temperature range
- ✓ **R-421A** can be topped off following repair of a system leak
- ✓ **R-421A** is used in a wide variety of applications including:
  - Air Conditioning Split Systems
  - Cold Stores
  - Supermarket Pak Systems
  - Dairy Chillers
  - Reach-in Storage
  - Bakery Applications
  - Refrigerated Transport
  - Self-Contained Display Cabinets
  - Walk-in Coolers

**Available now! CWIP 14046**

**Choice R-421A** is packaged with a proprietary lubricant



### Pressure/Temperature Choice R-421A Refrigerant



Pressure/Temperature Comparison  
PSIG/Vacuum in Inch Water

Temp (F)	R-421A	R-22	R-410A
-60	-12.5	-12.4	0.4
-55	-9.8	-9.7	2.6
-50	-6.7	-6.6	5.1
-45	-3.2	-3.2	7.8
-40	0.5	0.6	10.9
-35	2.6	2.6	14.2
-30	4.9	4.9	17.9
-25	7.4	7.4	22.0
-20	10.2	10.2	26.4
-15	13.2	13.2	31.3
-10	16.5	16.5	36.5
-5	20.1	20.1	42.2
0	24.0	24.0	48.4
5	28.3	28.3	55.1
10	32.9	32.8	62.4
15	37.8	37.8	70.2
20	43.2	43.1	78.5
25	48.9	48.8	87.5
30	55.0	55.0	97.2
35	61.6	61.5	107.5
40	68.7	68.6	118.5
45	76.2	76.1	130.2
50	84.2	84.1	142.7
55	92.8	92.6	156.0
60	101.9	101.6	170.1
65	111.5	111.2	185.1
70	121.8	121.4	201.0
75	132.6	132.2	217.8
80	144.1	143.6	235.6
85	156.2	155.7	254.4
90	169.0	168.4	274.3
100	196.7	195.9	317.3
105	211.7	210.8	340.6
110	227.5	226.4	365.1
115	244.0	242.8	390.9
120	261.4	260.0	418.0
125	279.7	278.0	446.5
130	298.9	296.9	476.5
135	319.0	316.7	508.0
140	340.1	337.4	541.2
145	362.1	359.0	576.0
150	385.3	381.7	612.8

**R-421A** is a HFC blend replacement with zero ODP and is compatible with both synthetic and mineral oils.

**R-421A** is a two-component blend packaged with a proprietary lubricant, which we recommend, be transferred from the cylinder in the liquid phase.

In any operational leak scenario, the system may be topped off with **R-421A** without significant effect on performance.

**R-421A** is an effective refrigerant for process cooling and air-conditioning. **R-421A** has demonstrated its effectiveness at higher temperatures, giving the added benefit of lower discharge temperatures. In many instances, lower compressor discharge temperatures have been reported, which can be a bonus where systems are running close to the recommended maximum.

Charge the equipment with **R-421A** as a liquid. Do not charge liquid refrigerant directly into the compressor. The total charge of **R-421A** will depend on the type of system. For those with liquid receivers, it is the same as with R-22. For those without liquid receivers, it is recommended to add sufficient charge to achieve the required evaporator temperature while maintaining acceptable superheat. For optimum performance, it may be necessary to use a larger expansion valve orifice. Capillary systems do not need to be changed.

**NOTE:** It is not unusual for the occasional bubble to be seen in the liquid line sight glass. A small number of bubbles in the sight glass is not a reliable indication of an under-charged system.

E.P.A. regulations stipulate that the equipment converted is clearly labeled as containing **R-421A**.

# Choice™

## R-421A: FAQ

### **Can R-421A be used in a R-410A unit?**

Yes, but the expansion device would have to be changed to a R-22 rated one. Since typically the R-410A condenser is larger, superheat and sub-cooling must be set so as to insure the proper amount of refrigerant is used.

### **Is R-421A compatible with typical oils that are present in typical air-conditioning systems?**

Yes, R-421A has been tested to run in mineral, AB and POE oils.

### **Can you add R-421A to R-22?**

No, it is illegal to intentionally mix refrigerants. A residual amount of R-22 may be left in the converted systems and won't usually harm the system, it is recommended that all the R-22 be recovered to insure that the proper pressure-temperature relationship be achieved.

### **Why was R-421A invented?**

The designed use for R-421A was air conditioning. However, R-421A works very well in other system designs, including heat pumps, refrigeration rack systems, spot coolers, package units and coolers.

### **What components make up R-421A?**

R-421A is a blend of 58% R-125, 42% R-134A and a proprietary lubricant. The lubricant is produced by NuCalgon and was developed for Copeland as a lubricant.

### **Do compressor manufacturers approve R-421A?**

Testing for compressor approvals are currently underway. Work is underway to have R-421A approved to be used in various dry nitrogen charged units, in order that R-421A may be used in compressors that are still under warranty. Currently, American Hermetics, a compressor rebuilder, has approved its use in all compressors they rebuild.

### **Should R-421A be charged as a liquid or vapor?**

R-421A is a blend and has to be charged as a liquid, as do all 400 series blends have to be charged as a liquid. Great care must be given while charging the unit as a liquid so that no damage is done to the unit.

### **Does a contractor have to change the liquid line dryer when converting a unit over to R-421A?**

Yes. Because refrigerants are degreasing chemicals by nature it is recommended that when converting refrigerants, the liquid line dryer be replaced. This is recommended when re-charging a unit with any refrigerant after replacing a component of the air-conditioning system.

### **Is R-421A energy efficient?**

In some instances R-421A actually draws lower amperage than R-22.

### **Does a contractor have to label the unit after it has been converted?**

Yes. The operating pressure is so close to R-22 that it is recommended that every precaution be taken to insure that the next contractor to work on the unit understands that it has been "proudly converted to R-421A."

### **Can you use the same gauge set that was used on R-22 for R-421A?**

Yes. The close pressure and temperature characteristics of R-421A allow the contractor to use his existing cylinder and gauge set that he uses on R-22.