



## RS-44 (R424A) v R22

RS-44 (R424A) has proved to be an excellent replacement for R22 in thermostat-controlled air-conditioning units. Practical experience has shown that the energy consumed over a given period is lower than that of R22 operating under similar conditions; in other words R424A is more energy efficient than R22. Furthermore, R424A discharge temperatures and head pressures are lower than those for R22 under comparable conditions. Generally units converted to R424A will show little difference in operation from the original R22 charge, except, on occasion, to run for slightly longer when under high cooling load.

This performance is confirmed by calculations using NIST's Cycle D program. The following tables summarise the calculated performance under cold room conditions.

		Condensing temp 40 °C					
		Run time <sup>1</sup>		Energy consumption <sup>2</sup>		COP	
Evaporating temp		RS-44	R22	RS-44	R22	RS-44	R22
		hour	hour	kWh	kWh		
5	°C	1.15	1	2.81	2.85	3.56	3.50
0	°C	1.16	1	3.33	3.38	3.01	2.96
-5	°C	1.18	1	3.89	3.94	2.57	2.53

<sup>1</sup>Actual operating time to deliver 10 kWh of cooling.  
<sup>2</sup>Energy input to deliver 10 kWh of cooling.

		Condensing temp 45 °C					
		Run time <sup>1</sup>		Energy consumption <sup>2</sup>		COP	
Evaporating temp		RS-44	R22	RS-44	R22	RS-44	R22
		hour	hour	kWh	kWh		
5	°C	1.16	1	3.31	3.34	3.02	2.99
0	°C	1.17	1	3.86	3.90	2.59	2.56
-5	°C	1.19	1	4.46	4.51	2.24	2.21

<sup>1</sup>Actual operating time to deliver 10 kWh of cooling.  
<sup>2</sup>Energy input to deliver 10 kWh of cooling.

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		Condensing temp 40 °C			
		Discharge pressure		Discharge temperature	
Evaporating temp		RS-44	R22	RS-44	R22
		barg	barg	°C	°C
5	°C	13.36	14.90	76.9	102.8
0	°C	13.36	14.90	82.6	113.3
-5	°C	13.36	14.90	88.7	124.6

		Condensing temp 45 °C			
		Discharge pressure		Discharge temperature	
Evaporating temp		RS-44	R22	RS-44	R22
		barg	barg	°C	°C
5	°C	15.25	16.91	86.1	115.5
0	°C	15.25	16.91	91.9	126.2
-5	°C	15.25	16.91	98.1	137.7

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