



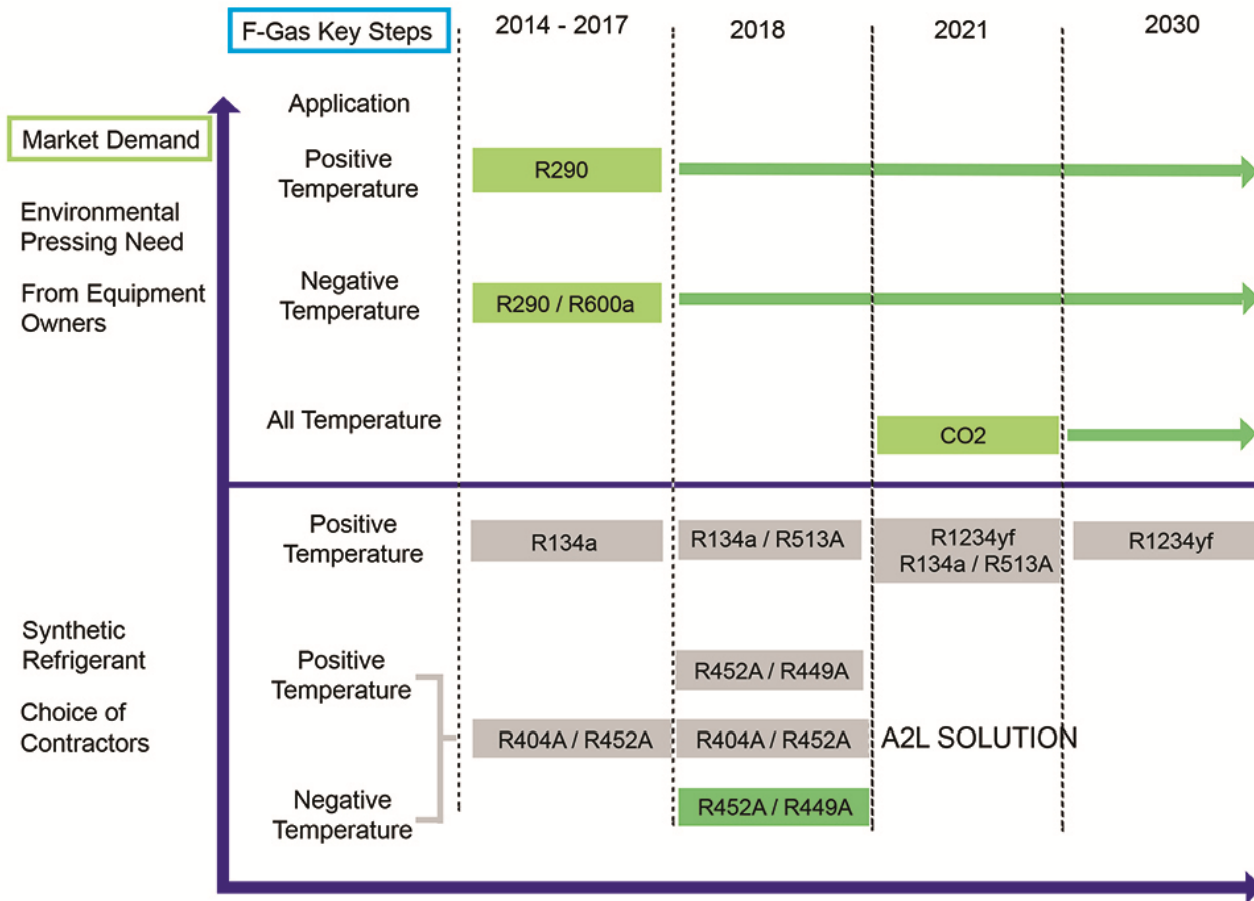
Refrigerant

Cooling for a Better Tomorrow

www.eco-fridge.co.uk

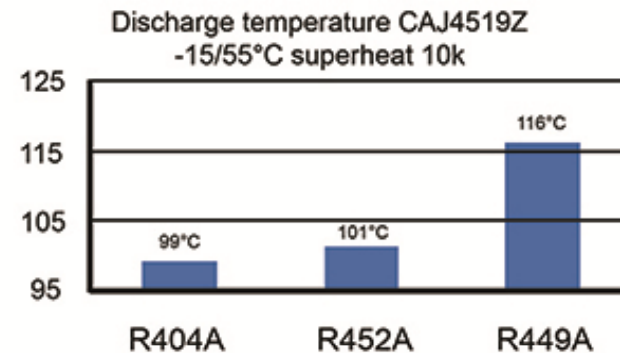
Tel: 01280 811411

Position of Frost-Tech

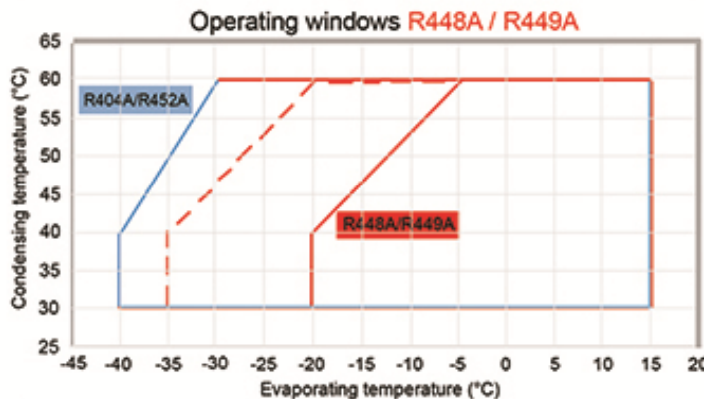


R448A - R449A

Refrigerant	R448A	R449A
GWP	1387	1397
Safety	Not flammable	
Glide	6.1K	6K
GWP 65% lower than R404A Similar glide to R407		



Higher discharge temperature than R404A
(from 10 to 15k)

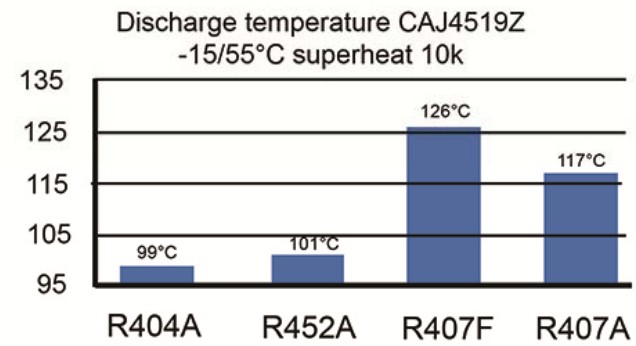


Reduction of operating window required

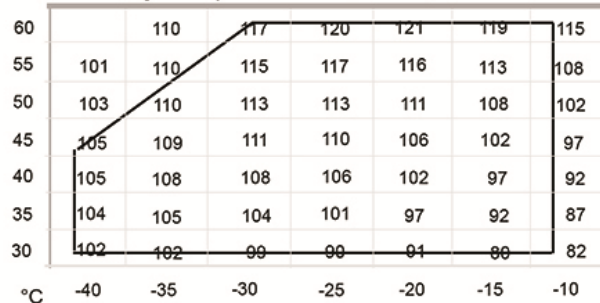
Lower GWP than R-407A/F
 Use restricted to HBP/Medium HBP. Reliability risk identified in negative applications (LBP)

R452A

Refrigerant	R404A	R452A
GWP	3922	2140
Safety	Not flammable	
Glide	0.7K	3.8K
GWP 45% lower than R-404A Lower glide than R-407		



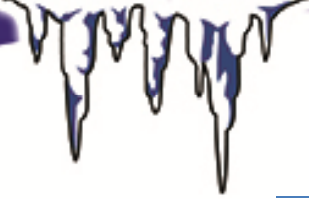
Discharge temperature CAJ2446Z, Return GAS 20°C



Similar running temperature than R-404A

Identical operating window than R-404A

R-452A is an alternative to R-404A in LBP and HBP without modification of the installation
Suitable retrofit solution for hermetic reciprocating compressor



R513A



Class:	A1	A1	A2L
GWP:	1430	573	<1

The largest offer for compressors optimized with R134a from a compressor manufacturer.

Tecumseh also approves **R513A as an acceptable alternative for R134a (Y standard compressor)**

R1234yf is also approved (N compressors and specific condensing units series and dual refrigerants R134a-R1234yf H series)

R290 et HFO1234yf

The future of refrigerants according to Frost-Tech

HC R290 (GWP = 3)

Cooling capacity similar to R-404A

Improved COP from 15 to 40% vs R404A

Identical operating window than R404A

Limitations of charge size and safety requirements to be considered

HFO R1234yf (GWP = 4)

Suitable Low GWP alternative to R134a with a close Cooling capacity (-5%)

Lower efficiency (-10%) but equal at low condensing Temperature condition

Classified A2L mildly flammable, but charge size limitations are greatly raised in standard ISO 5149 and project EN 378 to be published in 2016/2017



R-290 and R-1234yf are very appropriate long-term solutions for specific applications

Large Temperature Range – X range

Application code	Application pressure	Evaporating Temperature Range											
		-40°C	-35°C	-30°C	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C
3 & 4	HBP												
W & X	L/MBP												
1 & 2	LBP												



Low temperature

- Display Case
- Freezers

Medium temperature

- Display Case
- Beverage
- Reach-In
- Bottle cooler

Benefits

- One compressor covers nearly all LBP and MBP application ranges
- Customers have fewer SKU's to buy and stock