FROST-TECH

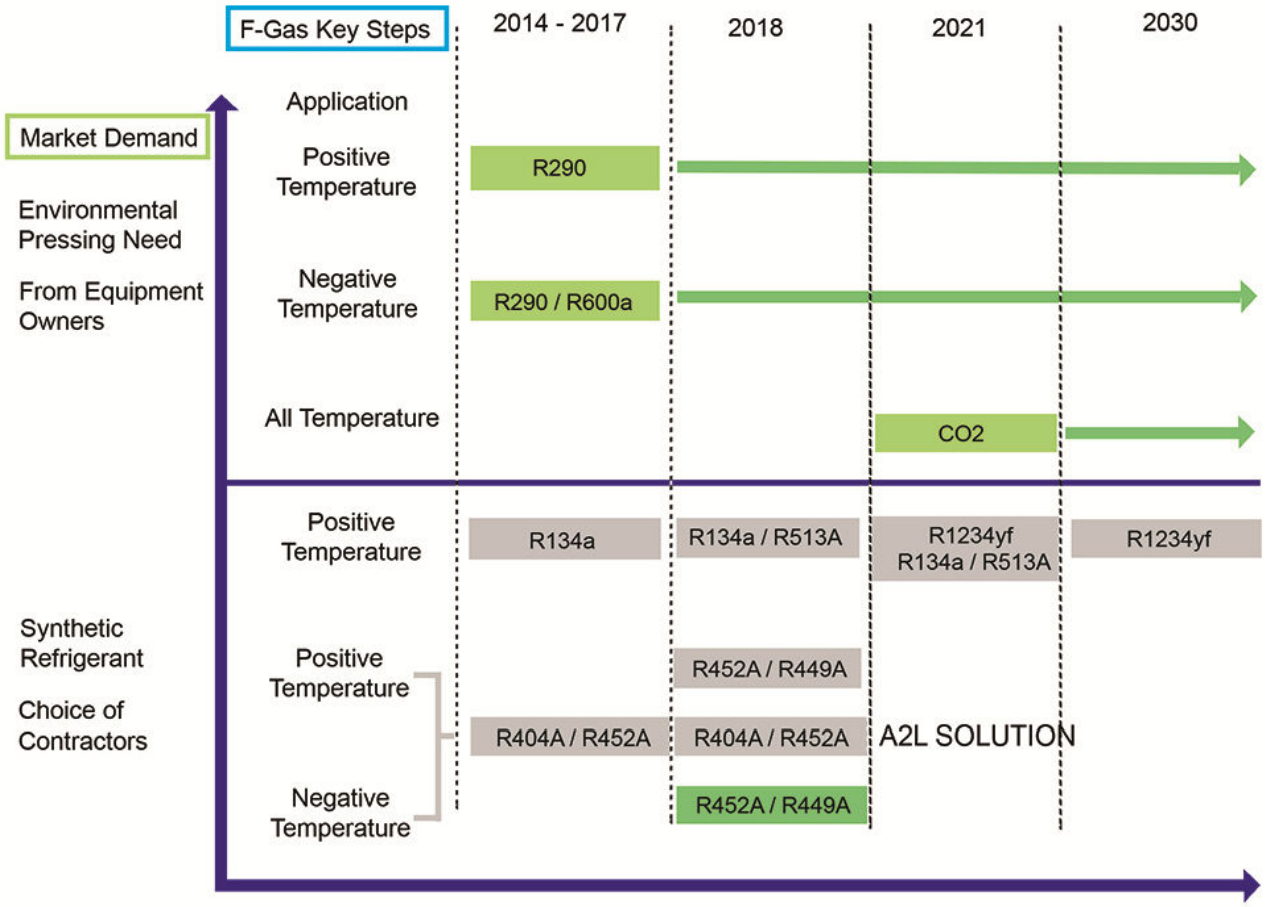
Refrigerant

Cooling for a Better Tomorrow

www.eco-fridge.co.uk

Tel: 01280 811411

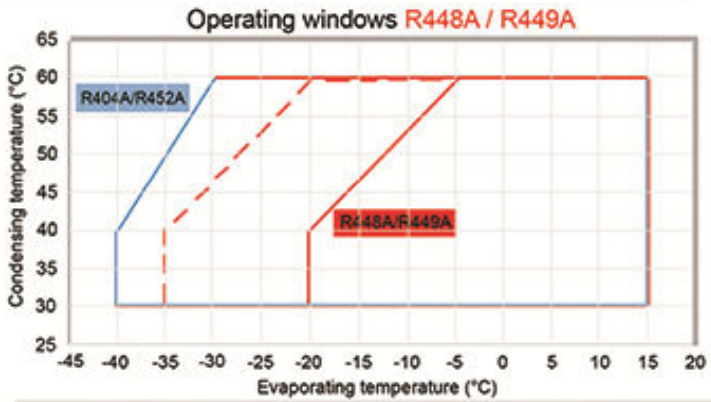
Position of Frost-Tech



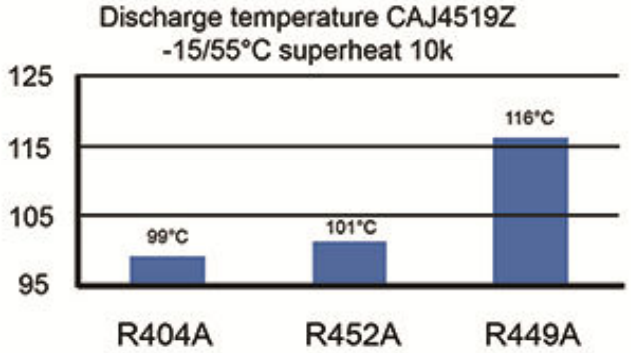
R448A - R449A

Refrigerant	R448A	R449A
GWP	1387	1397
Safety	Not flammable	
Glide	6.1K	6K

GWP 65% lower than R404A
Similar glide to R407



Reduction of operating window required



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

—— Return Gas 20°C
– – Superheat 10K

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

R452A

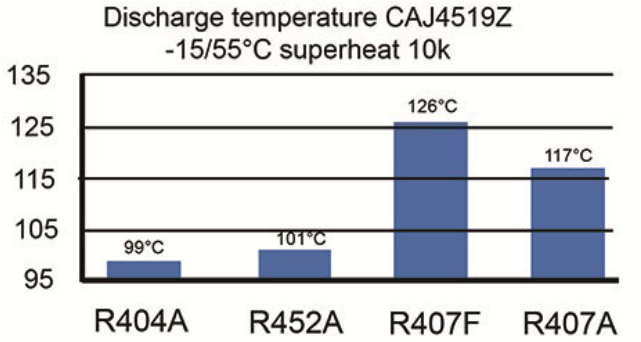
Refrigerant	R404A	R452A
GWP	3922	2140
Safety	Not flammable	
Glide	0.7K	3.8K

GWP 45% lower than R-404A
Lower glide than R-407

Discharge temperature CAJ2446Z, Return GAS 20°C

	-40	-35	-30	-25	-20	-15	-10
60		110	117	120	121	119	115
55	101	110	115	117	116	113	108
50	103	110	113	113	111	108	102
45	105	109	111	110	106	102	97
40	105	108	108	106	102	97	92
35	104	105	104	101	97	92	87
30	102	102	99	99	91	86	82

°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**