

1. General

European Union with new regulation (517/2014) are limiting use of refrigerants with high GWP values (GWP – Global Warming Potential) in light commercial refrigeration segment. Embraco offers full product line of HC compressors as a final solution to meet above mentioned regulations. All final solution refrigerants to replace R134a are flammable (both HC's and R1234yf), therefore subjected to refrigerant charge limitations. A series of intermediate GWP not flammable blends were proposed in order to bridge the transition to a later final situation. The most significant intermediate refrigerant options are the following HFC blends: **Opteon XP10 (R513A)** and **Solstice N13 (R450A)**. The main physical properties are indicated in table below:

	R 134a	R450A	R513A
Type	HFC	HFC blend	HFC blend
Safety class	A1	A1	A1
Boiling Temp @ 1atm	-26°C(-15°F)	-24°C(-11°F)	-29°C(-20°F)
Critical Temp	101°C(214°F)	106°C(223°F)	98°C(208°F)
Bubble-Dew @1 bar(abs)	No glide	0.8K(0.9R)	0.8K(1.4R)
GWP (100y)	1430	547	573

2. Declaration

Embraco, after performing extended testing program on above mentioned R134a alternative transition blends concluded, that both R450A and R513A are presenting the same or lower thermal profile, when compared with R134a.

Embraco approves R450A as well as R513A as an alternative refrigerants for NE/NT/NJ Embraco R134a compressor series and authorize its use, both in LBP and HBP applications, maintaining the same operating envelope of R134a refrigerant and other Embraco application guidelines as for example the system charge limitations defined for each Embraco compressor family.

Refrigerant R513A, according to the calorimetric evaluation is showing no impact on cooling capacity while refrigerant R450A is showing drop of cooling capacity about 12% in average, when tested at calorimeter. Actual impact on performances has to be verified on specific application. Embraco R134a compressors, using R450A and R513A, are maintaining the same electrical components and are showing the same reliability as with R134a refrigerant. Compressor unit label will no change with addition of above mentioned alternatives.