

1. General

European Union with new regulation (517/2014), is limiting use of refrigerants with high GWP values (GWP – Global Warming Potential). Embraco offers full product line of HC compressors as a final solution to meet EU F-gases regulation. Except hydrocarbons, final replacement for R404A and R507A is not yet ready to meet European regulations in a long term. A series of intermediate GWP blends were proposed in order to bridge the transition to a later final situation. The most significant intermediate refrigerant candidate is HFC blend is called Opteon XP-44 or **R452A**. The main physical proprieties are indicated table below:

	R 404A	R452A
Type	HFC blend	HFC blend
Safety class	A1	A1
Boiling Temp @ 1atm	-47°C	-47°C
Critical Temp	72°C	75°C
Bubble-Dew @1 bar(abs)	0,8K	3,8K

2. Declaration

Embraco, after performing extended testing program on different R404A alternative transition blends concluded, that only R452A is presenting the same or lower thermal profile, when compared with R404A.

Therefore, Embraco approves R452A as an alternative refrigerant for all Embraco R404A compressor series and authorize its use, both in LBP and MBP applications, maintaining same operating envelope of R404A refrigerant.

Refrigerant R452A, according to the calorimetric evaluation is showing no impact on cooling capacity and efficiency, when used in MBP conditions and presents slight decay of performances (from 2 to 8%) when tested in LBP conditions. Actual impact on performances has to be verified on specific application. Embraco R404A compressors, using R452A, are maintaining the same electrical components and are showing the same reliability as with R404A refrigerant. Compressor unit label will no change with addition of R452A alternative.