

Non-flammable fluorocarbon refrigerants and GWPs (F-Gas AR4) for transport refrigeration and transportation systems

	Currently used HFCs	Replacement main option HFC/HFO, HFO & HCFO	Comments
Containers (reefers)	R-404A 3922	R-452A 2140	new or retrofit to R-452A, good match of properties and discharge temperature
	R-134a 1430	R-513A 631	units available with R-513A or that can convert to R-513A
Truck and trailers	R-404A	R-452A	replaced R-404A in new trailers in the EU, suitable for retrofit due to similar discharge temperature and performance
Small refrigerated vans	R-134a		all electric vans being introduced with hermetic refrigeration units
Active Containers (air-cargo)	R-134a		battery powered high reliability units with vapour compression cycle meeting IATA and airline requirements. The cooling capacity and refrigerant charge are low.
Bus & train air-conditioning	R-134a 1430	R-513A, R-450A 631, 605	R-513A, R-450A announced for bus AC
	R-407C 1774	R-449C 1251	R-449C proposed as a replacement for train AC
Cruise ships: air-conditioning (chillers)	R-134a R-407C/R-410A		R 134a for very large chiller systems, R -407C or R-410A is used on some smaller cruise ships depending on size.

Transport infrastructure air-conditioning (chillers)

Medium pressure centrifugal and screw	R-134a	R-513A	The replacement refrigerants are offered or used for new chillers, but where there is a good match of properties and performance retrofits are possible. For example, R-514A has very similar properties to R-123 and can be retrofitted for some chillers
Low pressure centrifugal (includes R-123)	R-245fa 1030	HCFO-1233zd(E) 7	
		R-514A 7	
		HFO-1336mzz(Z) 9	
Scroll compressors	R-410A 2088	452B 698	

Note on GWPs: See <https://www.fluorocarbons.org/chemical-families/> for Refrigerants subject to the F-Gas Regulation 517/2014 – April 2018 for F-Gas AR4 and AR5 GWP values. For the HFO and HCFO listed in the table, the AR5 GWPs are all ≤ 1 except HFO-1336mzz(Z) which has a GWP of 2