



# Refrigerant replacement solutions

		New equipment		
Application		Current Refrigerant	Low GWP (<750) Interim Solution	Very Low GWP (<150) Long Term Solution
	Packaged Chiller	R-134a (1430, A1)	R-513A (631, A1) R-515B (293, A1)	R-1234ze (7, A2L) R-1234yf (4, A2L)
	Packaged Chiller Single split or VRF	R-410A (2088, A1)	R-32 (675, A2L) R-452B (698, A2L) R-454B (466, A2L)	R-1234ze (7, A2L) R-471A (148, A1)
	Monobloc (outdoors)	R-410A (2088, A1)	R-32 (675, A2L) R-454B (466, A2L)	Propane* (R-290) (3, A3) R-1234yf (4, A2L) R-454C (148, A2L) R-455A (148, A2L)
	Split systems	R-410A (2088, A1)	R-32 (675, A2L) R-454B (466, A2L)	R-1234yf (4, A2L) R-454C (148, A2L) R-455A (148, A2L)
	Multi-compressor >40kW	R-448A (1387, A1) R-449A (1397, A1)		CO <sub>2</sub> (R-744) (1, A1) R-471A (148, A1) R-454C (148, A2L) R-455A (148, A2L)
	Single compressor or <40kW	R-448A (1387, A1) R-449A (1397, A1)	R-454A (239, A2L)	R-471A (148, A1) MT Only R-454C (148, A2L) R-455A (148, A2L)
	MT Condensing Unit	R-134a (1430, A1)	R-513A (631, A1) R-515B (293, A1)	R-1234ze (7, A2L) R-1234yf (4, A2L) R-471A (148, A1)
	LT Condensing Unit	R-448A (1387, A1) R-449A (1397, A1) R-452A (2140, A1)	R-454A (239, A2L)	R-454C (148, A2L) R-455A (148, A2L)
	Blast Chiller	R-448A (1387, A1) R-449A (1397, A1)	R-454A (239, A2L)	R-454C (148, A2L) R-455A (148, A2L)
	Blast Freezer	R-448A (1387, A1) R-449A (1397, A1) R-452A (2140, A1)	R-454A (239, A2L)	R-454C (148, A2L) R-455A (148, A2L)
	Chiller / Condensing unit / DX System	R-448A (1387, A1) R-449A (1397, A1)	R-454A (239, A2L)	R-454C (148, A2L) R-455A (148, A2L) CO <sub>2</sub> (R-744) (1, A1)
		R-134a (1430, A1)	R-513A (631, A1) R-515B (293, A1)	R-1234ze (7, A2L) R-1234yf (4, A2L) R-471A (148, A1) MT Only
		R-410A (2088, A1)		R-1234ze (7, A2L)
	Flooded system	R-134a (1430, A1)	R-513A (631, A1) R-515B (293, A1)	R-1234ze (7, A2L) R-1234yf (4, A2L)
		R-717 Ammonia (0, B2L) R-507A (3985, A1)		R-717 Ammonia (0, B2L) R-1234ze (7, A2L) MT only
	Air Conditioning	R-134a (1430, A1) R-456A (687, A1)		R-1234yf (4) (A2L)
	Small	R-134a (1430, A1)	R-513A (631, A1)	R-1234yf (4, A2L)
	Large	R-452A (2140, A1)	R-454A (239, A2L)	R-454C (148, A2L) R-455A (148, A2L)
		Existing and New equipment lowest GWP available		
	Medical Storage Freeze Dryers Test Chambers	R-23 (14800, A1) R-508B (13396, A1)		R-473A (1831, A1)

\* heat pump air/water  
GWP: IPCC4 values / A1 = non flammable / A2L = mildly flammable / A3 = high flammable