



Making our world more productive

F-gas regulations. Gas checklist.

Product information

Refrigerants	Other common names	Environmental Impact		EU F-gas regulation 517/2014			Leak Detection ³ Refrigerant Charge (kg)		
		GWP	GWP Band	Refrigeration Maintenance Ban			5T CO ₂ e	50T CO ₂ e	500T CO ₂ e
				Impacted? ¹	40T CO ₂ e (kg)	Potential Retrofit Alternatives ²			
R23		14800	High	Yes	2,7	None available	0,3	3,4	34
R32		675	Medium	No	-	-	7,4	74,1	741
R134a		1430	Medium	No	-	XP10, HFO blends	3,5	35,0	350
R404A		3922	High	Yes	10,2	R407A/F, R442A, R449A	1,3	12,7	127
R407A		2107	Medium	No	-	R449A, HFO blends	2,4	23,7	237
R407C		1774	Medium	No	-	R449A, HFO blends	2,8	28,2	282
R407F	Performax™ LT	1825	Medium	No	-	R449A, HFO blends	2,7	27,4	274
R410A		2088	Medium	No	-	HFO blends	2,4	24,0	240
R417A	ISCEON® M059	2346	Medium	No	-	-	2,1	21,3	213
R422A	ISCEON® M079	3143	High	Yes	12,7	R427A, R438A	1,6	15,9	159
R422D	ISCEON® M029	2729	High	Yes	14,7	R424A, R427A, R438A	1,8	18,3	183
R423A	ISCEON® 39TC	2280	Medium	No	-	-	2,2	21,9	219
R424A	RS-44	2440	Medium	No	-	-	2,0	20,5	205
R426A	RS-24	1508	Medium	No	-	-	3,3	33,1	331
R428A	RS-52	3607	High	Yes	11,1	R427A, R438A	1,4	13,9	139
R434A	RS-45	3245	High	Yes	12,3	Under development	1,5	15,4	154
R437A	ISCEON® M049Plus	1805	Medium	No	-	-	2,8	27,7	277
R438A	ISCEON® M099	2265	Medium	No	-	-	2,2	22,1	221
R442A	RS-50	1888	Medium	No	-	R449A, HFO blends	2,6	26,5	265
R448A	Solstice	1387	Medium	No	-	-	3,6	36,05	360
R449A	Opteon® XP-40	1397	Medium	No	-	-	3,6	35,8	358
R450A	Solstice N13	605	Medium	No	-	-	8,26	82,64	826
R452A	Opteon® XP-44	2141	Medium	No	18,7	-	2,3	23,4	234
R507A	R507	3985	High	Yes	10,0	R407A, R407F, R442A	1,3	12,5	125
R508B	SUVA® 95	13396	High	Yes	3,0	None available	0,4	3,7	37
R513A	Opteon® XP-10	631	Medium	No	63,4	-	7,9	79,2	792
M089		3805	High	Yes	10,5	None available	1,3	13,1	131

¹ Service and maintenance ban impacts the use of gases with GWP 2500+ in Refrigeration equipment from 2020. Some exemptions apply. See f-gas regulations documents for more information.

² Suitability of potential retrofit replacements will depend on system design & cooling requirements. Not all systems will be suited to the retrofit gases. See retrofit guides for more details.

³ These gases often operate at temperatures below -50C. In these cases they will be suitable for an exemption from the service & maintenance ban.

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Linde Gas

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