

Refrigerants designated by ASHRAE

September	<i>This list is not intended to be complete or definitive. Please refer to the latest edition of ASHRAE Standard 34 and all published addenda for complete information on refrigerant designations and safety classifications.</i>	<i>see notes on refrigerant type</i>
Number	Refrigerant Composition (Mass %)	Refrigerant Type
Zeotropes		
400	R-12/114 (must be specified) (50.0/50.0) (60.0/40.0)	CFC
401A	R-22/152a/124 (53.0/13.0/34.0)	HCFC
401B	R-22/152a/124 (61.0/11.0/28.0)	HCFC
401C	R-22/152a/124 (33.0/15.0/52.0)	HCFC
402A	R-125/290/22 (60.0/2.0/38.0)	HCFC
402B	R-125/290/22 (38.0/2.0/60.0)	HCFC
403A	R-290/22/218 (5.0/75.0/20.0)	HCFC
403B	R-290/22/218 (5.0/56.0/39.0)	HCFC
404A	R-125/143a/134a (44.0/52.0/4.0)	HFC
405A	R-22/152a/142b/C318 (45.0/7.0/5.5/42.5)	HCFC
406A	R-22/600a/142b (55.0/4.0/41.0)	HCFC
407A	R-32/125/134a (20.0/40.0/40.0)	HFC
407B	R-32/125/134a (10.0/70.0/20.0)	HFC
407C	R-32/125/134a (23.0/25.0/52.0)	HFC
407D	R-32/125/134a (15.0/15.0/70.0)	HFC
407E	R-32/125/134a (25.0/15.0/60.0)	HFC
407F	R-32/125/134a (30.0/30.0/40.0)	HFC
407G	R-32/125/134a (2.5/2.5/95.0)	HFC
407H	R-32/125/134a (32.5/15.0/52.5)	HFC
408A	R-125/143a/22 (7.0/46.0/47.0)	HCFC
409A	R-22/124/142b (60.0/25.0/15.0)	HCFC
409B	R-22/124/142b (65.0/25.0/10.0)	HCFC
410A	R-32/125 (50.0/50.0)	HFC
410B	R-32/125 (45.0/55.0)	HFC
411A	R-1270/22/152a) (1.5/87.5/11.0)	HCFC
411B	R-1270/22/152a (3.0/94.0/3.0)	HCFC
412A	R-22/218/143b (70.0/5.0/25.0)	HCFC
413A	R-218/134a/600a (9.0/88.0/3.0)	PFC/HFC
414A	R-22/124/600a/142b (51.0/28.5/4.0/16.5)	HCFC
414B	R-22/124/600a/142b (50.0/39.0/1.5/9.5)	HCFC
415A	R-22/152a (82.0/18.0)	HCFC
415B	R-22/152a (25.0/75.0)	HCFC
416A	R-134a/124/600 (59.0/39.5/1.5)	HCFC
417A	R-125/134a/600 (46.6/50.0/3.4)	HFC
417B	R-125/134a/600 (79.0/18.3/2.7)	HFC
417C	R-125/134a/600 (19.5/78.8/1.7)	HFC
418A	R-290/22/152a (1.5/96.0/2.5)	HCFC
419A	R-125/134a/E170 (77.0/19.0/4.0)	HFC
419B	R-125/134a/E170 (48.5/48.0/3.5)	HFC
420A	R-134a/142b (88.0/12.0)	HCFC
421A	R-125/134a (58.0/42.0)	HFC

421B	R-125/134a (85.0/15.0)	HFC
422A	R-125/134a/600a (85.1/11.5/3.4)	HFC
422B	R-125/134a/600a (55.0/42.0/3.0)	HFC
422C	R-125/134a/600a (82.0/15.0/3.0)	HFC
422D	R-125/134a/600a (65.1/31.5/3.4)	HFC
422E	R-125/134a/600a (58.0/39.3/2.7)	HFC
423A	R-134a/227ea (52.5/47.5)	HFC
424A	R-125/134a/600a/600/601a (50.5/47.0/0.9/1.0/0.6)	HFC
425A	R-32/134a/227ea (18.5/69.5/12)	HFC
426A	R-125/134a/600/601a (5.1/93.0/1.3/0.6)	HFC
427A	R-32/125/143a/134a (15.0/25.0/10.0/50.0)	HFC
428A	R-125/143a/290/600a (77.5/20.0/0.6/1.9)	HFC
429A	R-E170/152a/600a (60.0/10.0/30.0)	HC/HFC
430A	R-152a/600a (76.0/24.0)	HC/HFC
431A	R-290/152a (71.0/29.0)	HC/HFC
432A	R-1270/E170 (80.0/20.0)	HC
433A	R-1270/290 (30.0/70.0)	HC
433B	R-1270/290 (5.0/95.0)	HC
433C	R-1270/290 (25.0/75.0)	HC
434A	R-125/143a/134a/600a	HFC
435A	R-E170/152a (80.0/20.0)	HC/HFC
436A	R-290/600a (56.0/44.0)	HC
436B	R-290/600a (52.0/48.0)	HC
437A	R-125/134a/600/601 (19.5/78.5/1.4/0.6)	HFC
438A	R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6)	HFC
439A	R-32/125/600a (50.0/47.0/3.0)	HFC
440A	R-290/134a/152a (0.6/1.6/97.8)	HFC
441A	R-170/290/600a/600 (3.1/54.8/6.0/36.1)	HC
442A	R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0)	HFC
443A	R-1270/290/600a (55.0/40.0/5.0)	HC
444A	R-32/152a/1234ze(E) (12.0/5.0/83.0)	HFC/HFO
444B	R-32/152a/1234ze(E) (41.5/10.0/48.5)	HFC/HFO
445A	R-744/134a/1234ze(E) (6.0/9.0/85.0)	HFC/HFO
446A	R-32/1234ze(E)/600 (68.0/29.0/3.0)	HFC/HFO
447A	R-32/125/1234ze(E) (68.0/3.5/28.5)	HFC/HFO
447B	R-32/125/1234ze (E) (68.0/8.0/24.0)	HFC/HFO
448A	R-32/125/1234yf/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)	HFC/HFO
449A	R-32 /125 /1234yf /134a (24.3/24.7/25.3/25.7)	HFC/HFO
449B	R-32/125/1234yf/134a (25.2/24.3/23.2/27.3)	HFC/HFO
449C	R-32/125/1234yf/134a (20.0/20.0/31.0/29.0)	HFC/HFO
450A	R-134a/1234ze(E) (42.0/58.0)	HFC/HFO
451A	R-1234yf/134a (89.8/10.2)	HFC/HFO
451B	R-1234yf/134a (88.8/11.2)	HFC/HFO
452A	R-32/125/1234yf (11.0/59.0/30.0)	HFC/HFO
452B	R-32/125/1234yf (67.0/7.0/26.0)	HFC/HFO
452C	R-32/125/1234yf (12.5/61.0/26.5)	HFC/HFO
453A	R-32/125/134a/227ea/600/601a (20.0/20.0/53.8/5.0/0.6/0.6)	HFC
454A	R-32/1234yf (35.0/65.0)	HFC/HFO

454B	R-32/1234yf (68.9/31.1)	HFC/HFO
454C	R-32/1234yf (21.5/78.5)	HFC/HFO
455A	R-744/32/1234yf (3.0/21.5/75.5)	HFC/HFO
456A	R-32/134a/1234ze(E) (6.0/45.0/49.0)	HFC/HFO
457A	R-32/1234yf/152a (18.0/70.0/12.0)	HFC/HFO
458A	R-32/125/134a/227ea/236fa (20.5/4.0/61.4/13.5/0.6)	HFC
459A	R-32/1234yf/1234ze(E) (68.0/26.0/6.0)	HFC/HFO
459B	R-32/1234yf/1234ze(E) (21.0/69.0/10.0)	HFC/HFO
460A	R-32/125/134a/1234ze(E) (12.0/52.0/14.0/22.0)	HFC/HFO
460B	R-32/125/134a/1234ze(E) (28.0/25.0/20.0/27.0)	HFC/HFO
460C	R-32/125/134a/1234ze(E) (2.5 2.5/46.0 49.0)	HFC/HFO
461A	R-125/143a/134a/227ea/600a (55.0/5.0/32.0/5.0/3.0)	HFC
462A	R-32/125/143a/134a/600 (9.0/42.0/2.0/44.0/3.0)	HFC
463A	R-744/32/125/1234yf/134a (6/36/30/14/14)	HFC/HFO
464A	R-32/125/1234ze(E)/227ea (27/27/40/6)	HFC/HFO
465A	R-32/290/1234yf (21.0/7.9/71.1)	HFC/HFO

Azeotropes		
500	R-12/152a (73.8/26.2)	CFC
501	R-22/12 (75.0/25.0)	CFC
502	R-22/115 (48.8/51.2)	CFC
503	R-23/13 (40.1/59.9)	CFC
504	R-32/115 (48.2/51.8)	CFC
505	R-12/31 (78.0/22.0)	CFC
506	R-31/114 (55.1/44.9)	CFC
507A	R-125/143a (50.0/50.0)	HFC
508A	R-23/116 (39.0/61.0)	PFC/HFC
508B	R-23/116 (46.0/54.0)	PFC/HFC
509A	R-22/218 (44.0/56.0)	HCFC
510A	R-E170/600a (88.0/12.0)	HC
511A	R-290/E170 (95.0/5.0)	HC
512A	R-134a/152a (5.0/95.0)	HFC
513A	R-1234yf/134a (56.0/44.0)	HFC/HFO
513B	R-1234yf/134a (58.5/41.5)	HFC/HFO
514A	R-1336mzz(Z)/1130(E) (74.7/25.3)	HFO
515A	R-1234ze (E)/227ea (88.0/12.0)	HFC/HFO
516A	R-1234yf/134a/152a (77.5/8.5/14.0)	HFC/HFO

Notes on refrigerant type: Any refrigerant containing CFC is categorised as a CFC. Similarly for HCFCs. All refrigerants (highlighted in orange) containing ozone depleting substances are banned in the EU. Refrigerants categorised as HCs contain HCs and/or HC ethers. The safety properties(flammability) of refrigerants categorised as HC/HFC are determined by the HCs. Some refrigerants contain only small quantities of HCs and are not categorised as HCs in this table. All HFC, HC/HFC, PFC/HFC and HFC/HFO refrigerants (highlighted in yellow) are subject to