

**(This foreword is not part of the standard but is included for information only.)**

## **FOREWORD**

*The purpose of addendum 34m-97 is to add R-414B designation, safety classification and tolerances to Table 2. The revised Table 2 incorporates prior changes implemented by Addenda 34a, 34b, 34c, 34f and 34l, as well as, changes effected by the above addendum.*

### **Addenda 34m to ANSI/ASHRAE Standard 34-1997**

Revise Table 2 as shown to add refrigerant R-414B and footnote s.

**TABLE 2**  
**Data and Safety Classification for Refrigerant Blends**

Refrigerant Number	Composition (Weight %)	Temperature		Azeotropic Molecular Mass <sup>a</sup>	Normal Boiling Point <sup>a</sup>		Safety Group
		(°C)	(°F)		(°C)	(°F)	
	<b><i>Zeotropes</i></b>						
400	R-12/114 (must be specified)	none	none				A1/A1
401A	R-22/152a/124 (53/13/34) <sup>e</sup>						A1/A1
401B	R-22/152a/124 (61/11/28) <sup>e</sup>						A1/A1
401C	R-22/152a/124 (33/15/52) <sup>e</sup>						A1/A1
402A	R-125/290/22 (60/2/38) <sup>f</sup>						A1/A1
402B	R-125/290/22 (38/2/60) <sup>f</sup>						A1/A1
403A	R-290/22/218 (5/75/20) <sup>g</sup>						A1/A1
403B	R-290/22/218 (5/56/39) <sup>g</sup>						A1/A1
404A	R-125/143a/134a (44/52/4) <sup>f</sup>						A1/A1
405A	R-22/152a/142b/C318 (45/7/5.5/42.5) <sup>h</sup>						
406A	R-22/600a/142b (55/4/41) <sup>i</sup>						A1/A2
407A	R-32/125/134a (20/40/40) <sup>o</sup>						A1/A1
407B	R-32/125/134a (10/70/20) <sup>o</sup>						A1/A1
407C	R-32/125/134a (23/25/52) <sup>o</sup>						A1/A1
407D	R-32/125/134a (15/15/70) <sup>o</sup>						A1/A1
407E	R-32/125/134a (25/15/60) <sup>r</sup>						A1/A1
408A	R-125/143a/22 (7/46/47) <sup>f</sup>						A1/A1
409A	R-22/124/142b (60/25/15) <sup>k</sup>						A1/A1
409B	R-22/124/142b (65/25/10) <sup>k</sup>						A1/A1
410A	R-32/125 (50/50) <sup>l</sup>						A1/A1
410B	R-32/125 (45/55) <sup>n</sup>						A1/A1
411A	R-1270/22/152a (1.5/87.5/11.0) <sup>m</sup>						A1/A2
411B	R-1270/22/152a (3/94/3) <sup>m</sup>						A1/A2
412A	R-22/218/142b (70/5/25) <sup>k</sup>						A1/A2
413A	R-218/134a/600a (9/88/3) <sup>q</sup>						A1/A2
414A	R-22/124/600a/142b (51.0/28.5/4.0/16.5) <sup>s</sup> Pending other action						A1
414B	R-22/124/600a/142b (50.0/39.0/1.5/9.5) <sup>s</sup>						A1
	<b><i>Azeotropes<sup>b</sup></i></b>						
500	R-12/152a (73.8/26.2)	0	32	99.3	-33	-27	A1
501	R-22/12 (75.0/25.0) <sup>c</sup>	-41	-42	93.1	-41	-42	A1
502	R-22/115 (48.8/51.2)	19	66	112.0	-45	-49	A1
503	R-23/13 (40.1/59.9)	88	126	87.5	-88	-126	
504	R-32/115 (48.2/51.8)	17	63	79.2	-57	-71	
505	R-12/31 (78.0/22.0) <sup>c</sup>	115	239	103.5	-30	-22	
506	R-31/114 (55.1/44.9)	18	64	93.7	-12	10	
507A <sup>p</sup>	R-125/143a (50/50)	-40	-40	98.9	-46.7	-52.1	A1
508A <sup>p</sup>	R-23/116 (39/61)	-86	-122	100.1	-86	-122	A1
508B	R-23/116 (46/54)	-45.6	-50.1	95.4	-88.3	-126.9	A1/A1
509A <sup>p</sup>	R-22/218 (44/56)	0	32	124.0	-47	-53	A1

<sup>a</sup> The molecular mass and normal boiling point are not part of this standard.

<sup>b</sup> Azeotropic refrigerants exhibit some segregation of components at conditions of temperature and pressure other than those at which they were formulated. The extent of segregation depends on the particular azeotrope and hardware system configuration.

<sup>c</sup> The exact composition of this azeotrope is in question and additional experimental studies are needed.

<sup>d</sup> Held open for future use, formerly used as an indicator of the provisional status of safety classifications.

<sup>e</sup> Composition tolerances are (±2/+0.5, -1.5/±1).

<sup>f</sup> Composition tolerances are (±2/±1/±2).

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<sup>g</sup> Composition tolerances are (+0.2,-2.0/±2/±2).

<sup>h</sup> Composition tolerances for the individual components are (±2/±1/±1/±2) and for the sum of R-152a and R-142b are (+0,-2).

<sup>i</sup> Composition tolerances are (±2/±1/±1).

<sup>k</sup> Composition tolerances are (±2/±2/±1).

<sup>l</sup> Composition tolerances are (+0.5,-1.5/+1.5,-0.5).

<sup>m</sup> Composition tolerances are (+0,-1/+2,-0/+0,-1).

<sup>n</sup> Composition tolerances are (±1/±1).

<sup>o</sup> Composition tolerances are (±2/±2/±2).

<sup>p</sup> R-507, R-508, and R-509 are allowed alternative designations for R-507A, R-508A, and R-509A due to a change in designations after assignment of R-500 through R-509. Corresponding changes were not made for R-500 through R-506.

<sup>q</sup> Composition tolerances are (±1/±2/+0,-1).

<sup>r</sup> Composition tolerances are (±2/±2/±2).

<sup>s</sup> Composition tolerances are (±2.0/±2.0/±0.5/+0.5,-1.0).