

**AHRI Guideline N**

**2014 Guideline for  
Assignment of Refrigerant  
Container Colors**



2111 Wilson Boulevard, Suite 500  
Arlington, VA 22201, USA  
[www.ahrinet.org](http://www.ahrinet.org)  
PH 703.524.8800  
FX 703.562.1942

we make life better™

## IMPORTANT

### **SAFETY DISCLAIMER**

AHRI does not set safety standards and does not certify or guarantee the safety of any products, components or systems designed, tested, rated, installed or operated in accordance with this standard/guideline. It is strongly recommended that products be designed, constructed, assembled, installed and operated in accordance with nationally recognized safety standards and code requirements appropriate for products covered by this standard/guideline.

AHRI uses its best efforts to develop standards/guidelines employing state-of-the-art and accepted industry practices. AHRI does not certify or guarantee that any tests conducted under its standards/guidelines will be non-hazardous or free from risk.

Note:

This standard supersedes AHRI Guideline N-2012.

## TABLE OF CONTENTS

SECTION	PAGE
Section 1. Purpose .....	1
Section 2. Scope .....	1
Section 3. Definitions .....	1
Section 4. Basic Considerations for Developing the Color Guideline .....	1
Section 5. Assignment Criteria.....	2

### TABLES

Table 1. Refrigerant Container Color & Class by Refrigerant .....	3
Table 2. Refrigerant Container Color & Class by PMS Number .....	4
Table 3. PMS/RAL Color System .....	5

### APPENDICES

Appendix A. References - Normative .....	6
Appendix B. References - Informative .....	6

# ASSIGNMENT OF REFRIGERANT CONTAINER COLORS

## Section 1. Purpose

**1.1 Purpose.** The purpose of this guideline is to establish assignment of refrigerant container colors; definitions; basic considerations for developing the color guideline; and assignment criteria.

**1.1.1 Intent.** This guideline is intended for the guidance of the industry, including manufacturers, engineers, installers, contractors and users.

**1.1.2 Review and Amendment.** This guideline is subject to review and amendment as technology advances.

## Section 2. Scope

**2.1 Scope.** This guideline provides a means by which colors can be assigned to refrigerant containers for Refrigerants currently in use or newly developed Refrigerants, provided the Refrigerant is used in significant quantities as defined in this guideline. Colors should not be relied upon exclusively to determine the type of Refrigerant in the container.

This guideline also recommends a container color for Refrigerants that are not produced in sufficient quantities to qualify for their own individual color.

**2.2 Exclusions.** This guideline does not cover container colors for recovered and recycled Refrigerants, which are covered in AHRI Guideline K.

## Section 3. Definitions

All terms in this document will follow the standard industry definitions in the *ASHRAE Terminology* website (<https://www.ashrae.org/resources--publications/free-resources/ashrae-terminology>) unless otherwise defined in this section.

**3.1 Refrigerants.** Refrigerants for purposes of this guideline include single component refrigerants, zeotropes and azeotropes.

**3.1.1 Flammable Refrigerants.** Those Refrigerants that receive a flammability rating of 2 or 3 in ANSI/ASHRAE Standard 34, *Designation and Safety Classifications of Refrigerants* with Addenda.

**3.1.2 High Pressure Refrigerants.** Those Refrigerants meeting the definition of a compressed gas. The gas should have a minimum cylinder service pressure exceeding 3447 kPa (gage).

**3.1.3 Liquid Refrigerants.** Those Refrigerants with a normal boiling point greater than 20°C. These products normally are packaged in drums.

**3.1.4 Low Pressure Refrigerants.** Those Refrigerants meeting the definition of a “compressed gas.” The gas should have a minimum cylinder service pressure not exceeding 3447 kPa (gage).

**3.2 "Should."** "Should" is used to indicate provisions which are not mandatory but which are desirable as good practice.

## Section 4. Basic Considerations for Developing the Color Guideline

**4.1** The color guideline is not a substitute for reading cylinder labels and markings.

**4.2** Refrigerants are grouped in four classes in order to create more color opportunities within readily identifiable container styles and to clearly differentiate Flammable Refrigerants.

Class I: Liquid Refrigerants

Class II: Low Pressure Refrigerants

Class III: High Pressure Refrigerants

Class IV: Flammable Refrigerants

- 4.3 The color guideline should allow for the addition of new Refrigerants in each of the above classes.
- 4.4 Color codes only need to be differentiated within a class. Consideration should be given to the application before assigning colors to the Refrigerant.
- 4.5 Colors should be distinguishable from each other.
- 4.6 The color guideline should be standard industry-wide.
- 4.7 Color option should minimize container painting costs.
- 4.8 A red band on the shoulder or top of the container should designate flammable compounds, or mixtures that could become flammable in the event of a leak.
- 4.9 Refrigerants that are not produced in sufficient quantities to qualify for their own individual color should be painted light green gray (PMS 413).

**Section 5. Assignment Criteria**

- 5.1 The Refrigerant manufacturer should notify AHRI of its intent to use a color not previously assigned for that Refrigerant class to a new Refrigerant they plan to commercialize within six months. The manufacturer requesting a specific PMS color assignment for that new Refrigerant should also provide a corresponding RAL K5 classic number. If the manufacturer does request a specific PMS color and or RAL K5 classic number, AHRI will assign them.
- 5.2 In order to retain assignment of the color, the manufacturer should furnish confirmation to AHRI that:
  - 5.2.1 A Refrigerant number has been published in ANSI/ASHRAE Standard 34.
  - 5.2.2 There have been commercial sales, and there will be continued offering of the Refrigerant within one year of assignment.
  - 5.2.3 There have been commercial sales of at least 45,350 kg per year for Class I and Class II Refrigerants or 900 kg per year for Class III Refrigerants within two years of assignment. Commercial sales of Class IV Refrigerants should be consistent with commercial volumes which would be required if it were a non-flammable Refrigerant.
- 5.3 If the manufacturer who originally requested and obtained the use of a color falls below the levels established in Section 5.2, that manufacturer should notify AHRI. At that point, AHRI will survey all manufacturers to determine whether a composite volume of all the manufacturers supports continued use of the color and meets the criteria in Section 5.2. If not, the color should be provisionally returned to the color pool with a five year period allowed for clearing existing inventories.
- 5.4 In the case where a color has been provisionally returned to the color pool, the manufacturer should package new production in a generic Refrigerant color using a label to indicate the previously assigned color. The Refrigerant container color can be determined using Table 1. The PMS/RAL color system is described in Table 3.
  - 5.4.1 In the event a color is provisionally returned to the color pool, AHRI will notify all AHRI member companies and then disseminate that information to the "trade press" through an AHRI press release and other appropriate measures.
  - 5.4.2 When a color has been provisionally returned to the color pool, notification has been made, and if the total sales volume falls below the criteria established in Section 5.2.3, then the color by vote of AHRI will be returned to the pool of unassigned colors.

**Table 1. Refrigerant Container Color & Class by Refrigerant**

Refrigerant	Color	PMS #	Class
11	Orange	021	I
12	White	None	II
13	Light Blue (Sky)	2975	III
13B1	Pinkish-Red (Coral)	177	III
14	Yellow-Brown (Mustard)	124	III
22	Light Green	352	II
23	Light Blue-Grey	428	III
32	Light Blue-Green	631	IV
113	Dark Purple (Violet)	266	I
114	Dark Blue (Navy)	302	II
116	Dark Grey (Battleship)	424	III
123	Light Blue-Grey	428	I
124	Deep Green (DOT Green)	335	II
125	Medium Brown (Tan)	465	II
134a	Light Blue (Sky)	2975	II
236fa	Dark Grey (Battleship)	424	II
245fa	Maroon	194	II
401A	Pinkish-Red (Coral)	177	II
401B	Yellow-Brown (Mustard)	124	II
401C	Blue-Green (Aqua)	3268	II
402A	Light Brown (Sand)	461	II
402B	Green-Brown (Olive)	385	II
403B	Light Purple (Lavender)	251	II
404A	Orange	021	II
407A	Lime Green	368	II
407B	Cream	156	II
407C	Medium Brown (Brown)	471	II
407D	Dark Brown (Chocolate)	450	II
407F	Green-Yellow-White	373	II
408A	Medium Purple (Purple)	248	II
409A	Medium Brown (Tan)	465	II
410A	Rose	507	II
411A	Dark Purple (Violet)	266	IV
411B	Blue-Green (Teal)	326	IV
413A	Deep Blue	3015	II
414A	Beige	4545	II
414B	Medium Blue (Blue)	2995	II
416A	Yellow-Green (Lime)	381	II
417A	Green	354	II
422A	Yellow-Orange	128	II
422D	Green-Yellow	375	II
423A	Wedge Wood Blue	292	II
424A	Black	None	II
426A	Pastel Orange	804	II
427A	Green-Blue (Jungle Green)	3405	II
428A	Traffic Yellow	803	II
434A	Sulfur Yellow	388	II
437A	Royal Blue	286	II
438A	Blue Jay	2727	II
442A	Night Blue	268	II
500	Yellow	109	II
502	Light Purple (Lavender)	251	II
503	Blue-Green (Aqua)	3268	III
507A	Blue Green (Teal)	326	II
508B	Dark Blue (Navy)	302	III

**PMS** = Pantone® Matching System, an international printing, publishing and packaging color language.

**CLASS I LIQUIDS**

Normal boiling point greater than 20°C . These products are normally packaged in drums.

**CLASS II LIQUIDS**

Low Pressure Refrigerants: These Refrigerants meeting the definition of a compressed gas. The gas should have a minimum cylinder service pressure not exceeding 3447 kPa (gage).

**CLASS III LIQUIDS**

High Pressure Refrigerants: These Refrigerants meeting the definition of a compressed gas. The gas should have a minimum cylinder service pressure exceeding 3447 kPa (gage).

**CLASS IV LIQUIDS**

Flammable Refrigerants.

Table 2. Refrigerant Container Color & Class by PMS Number					
PMS	Color	Class I	Class II	Class III	Class IV
None	White		R-12		
None	Black		R-424A		
021	Orange	R-11	R-404A		
109	Yellow		R-500		
124	Yellow-Brown (Mustard)		R-401B	R-14	
128	Yellow-Orange		R-422A		
156	Cream		R-407B		
177	Pinkish-Red (Coral)		R-401A	R-13B1	
185	Red (DOT Red)	FOR FLAMMABLE REFRIGERANT IDENTIFICATION WHEN USED WITH PRIMARY CONTAINER COLOR			
194	Maroon		R-245fa		
248	Medium Purple (Purple)		R-408A		
251	Light Purple (Lavender)		R-502; R-403B		
266	Dark Purple (Violet)	R-113			R-411A
268	Night Blue		R-442A		
286	Royal Blue		R-437A		
292	Wedge Wood Blue		R-423A		
302	Dark Blue (Navy)		R-114	R-508B	
326	Blue-Green (Teal)		R-507A		R-411B
335	Deep Green (DOT Green)		R-124		
352	Light Green		R-22		
354	Green		R-417A		
368	Lime Green		R-407A		
373	Green-Yellow-White		R-407F		
375	Green-Yellow		R-422D		
381	Yellow-Green (Lime)		R-416A		
385	Green-Brown (Olive)		R-402B		
388	Sulfur Yellow		R-434A		
424	Dark Grey (Battleship)		R-236fa	R-116	
428	Light Blue-Grey	R-123		R-23	
461	Light Brown (Sand)		R-402A		
465	Medium Brown (Tan)		R-125; R-409A		
450	Dark Brown (Chocolate)		R-407D		
471	Medium Brown (Brown)		R-407C		
507	Rose		R-410A		
631	Light Blue-Green				R-32
803	Traffic Yellow		R-428A		
804	Pastel Orange		R-426A		
2727	Blue Jay		R-438A		
2975	Light Blue (Sky)		R-134a	R-13	
2995	Medium Blue (Blue)		R-414B		
3015	Deep Blue		R-413A		
3268	Blue-Green (Aqua)		R-401C	R-503	
3405	Green-Blue (Jungle Green)		R-427A		
4545	Beige		R-414A		

PMS = Pantone® Matching System, an international printing, publishing and packaging color language.

**CLASS I LIQUIDS**

Normal boiling point greater than 20°C. These products are normally packaged in drums.

**CLASS II LIQUIDS**

Low Pressure Refrigerants: These Refrigerants meeting the definition of a compressed gas. The gas should have a minimum cylinder service pressure not exceeding 3447 kPa (gage).

**CLASS III LIQUIDS**

High Pressure Refrigerants: These Refrigerants meeting the definition of a compressed gas. The gas should have a minimum cylinder service pressure exceeding 3447 kPa (gage).

**CLASS IV LIQUIDS**

Flammable Refrigerants.

Table 3. PMS/RAL Color System			
Refrigerant Color	PMS #	Possible RAL K5 Classic #	RAL Color Description
White	None		
Black	None	5004	Black Blue
Orange	21	2004	Pure Orange
Yellow	109	1018	Zinc Yellow
Yellow-Brown (Mustard)	124	1003	Signal Yellow
Yellow-Orange	128	1021	Rape Yellow
Cream	156	1034	Pastel Yellow
Pinkish-Red (Coral)	177	3017	Rose
Red (DOT Red)	185	3020	Traffic Red
Maroon	194	4002	Red Violet
Medium Purple (Purple)	248	4006	Traffic Purple
Light Purple (Lavender)	251	4009	Pastel Violet
Dark Purple (Violet)	266	4007	Purple Violet
Night Blue	268	5022	Night Blue
Royal Blue	286	5005	Signal Blue
Wedge Wood Blue	292	5012	Light Blue
Dark Blue (Navy)	302	5019	Capri Blue
Blue-Green (Teal)	326	5018	Turquoise Blue
Deep Green (DOT Green)	335	6032	Signal Green
Light Green	352	6019	Pastel Green
Green	354	6001	Emerald Green
Lime Green	368	Note <sup>1</sup>	Note <sup>1</sup>
Green-Yellow-White	373	No match available	No match available
Green-Yellow	375	No match available	No match available
Yellow-Green (Lime)	381	No match available	No match available
Green-Brown (Olive)	385	6003	Olive Green
Sulfur Yellow	388	1016	Sulfur Yellow
Dark Grey (Battleship)	424	7023	Concrete Grey
Light Blue-Grey	428	7035	Light Grey
Light Brown (Sand)	461	1002	Sand Yellow
Medium Brown (Tan)	465	1001	Beige
Dark Brown (Chocolate)	450	6014	Yellow Olive
Medium Brown (Brown)	471	8023	Orange Brown
Rose	507	3015	Heather Violet
Light Blue-Green	631	6027	Light Green
Traffic Yellow	803	1023	Traffic Yellow
Pastel Orange	804	2003	Pastel Orange
Blue Jay	2727	5014	Pigeon Blue
Light Blue (Sky)	2975	5012	Light Blue
Medium Blue (Blue)	2995	5015	Sky Blue
Deep Blue	3015	5017	Traffic Blue
Blue-Green (Aqua)	3268	5021	Water Blue
Green-Blue (Jungle Green)	3405	6024	Traffic Green
Beige	4545	8024	Beige Brown

Note 1: No match provided due to conflict with the European Cylinder Gas Identification Standard EN 1089-3.  
 RAL = *Reichsausschuß für Lieferbedingungen und Gütesicherung* = State Commission for Delivery Terms and Quality Assurance

## APPENDIX A. REFERENCES – NORMATIVE

None.

## APPENDIX B. REFERENCES – INFORMATIVE

**B1** Listed here are standards, handbooks and other publications which may provide useful information and background, but are not considered essential. References in this appendix are not considered part of the guideline.

**B1.1** AHRI Guideline K-2009, *Containers for Fluorocarbon Refrigerants*, 2009, Air-Conditioning, Heating and Refrigeration Institute, 2111 Wilson Blvd., Ste. 500, Arlington, VA 22201, U.S.A.

**B1.2** ANSI/ASHRAE Standard 34-2013, *Designation and Safety Classifications of Refrigerants*, 2013, with Addenda, American Society of Heating, Refrigerating and Air-Conditioning, Inc., 1791 Tullie Circle, N.E., Atlanta, GA 30329, U.S.A.

**A1.3** ASHRAE, *Terminology*, <https://www.ashrae.org/resources--publications/free-resources/ashrae-terminology>, 2014, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1791 Tullie Circle, N.E., Atlanta, GA 30329, U.S.A.

**B1.4** Pantone Color Matching System, Pantone Inc., 590 Commerce Boulevard, Carlstadt, New Jersey 07072-3098, U.S.A.

**B1.5** RAL Colours, <http://www.ral-farben.de/en/home/>, 2014, RAL gmbH, Siegenburgerstrasse 39, D-53757 Sankt Augustin, Germany.

**B1.6** Title 49 CFR, Code of Federal Regulations, Office of the Federal Register, National Archives and Records Administration, 800 North Capitol Street, NW, Washington, DC 20402, U.S.A.