REFRIGERANT CYLINDER COLOURS
WHAT HAS CHANGED?

OzonAction FactSheet

Background

One of the ways in which refrigeration cylinders are quickly identified is by cylinder colour. Although there was never a truly globally-adopted international standard, the guideline from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) although not required by law was used by the vast majority of industry and chemical producers around the world. This guideline was intended to support manufacturers, engineers, installers, contractors and users, and was also widely used by customs and enforcement officers and National Ozone Officers (NOOs) to help identify the contents of cylinders. The AHRI guidance provided a means by which standard colours[1] were assigned to refrigerant containers for refrigerants currently in use or newly developed refrigerants. There was a separate guideline for recovered and recycled refrigerants.

Most are familiar with the AHRI colours, for example, of white for CFC-12, the light green of HCFC-22, the light sky blue of HFC-134a, the bright orange of the HFC blend R-404A or the rose coloured R-410A (see overleaf) as well as many others. The AHRI guidance importantly stated that *"colours should not be relied upon exclusively to determine the type of refrigerant in the container".*

From 2020 onwards, all refrigerant cylinders will now have the same paint colour

New AHRI Guidance on Cylinder Colours

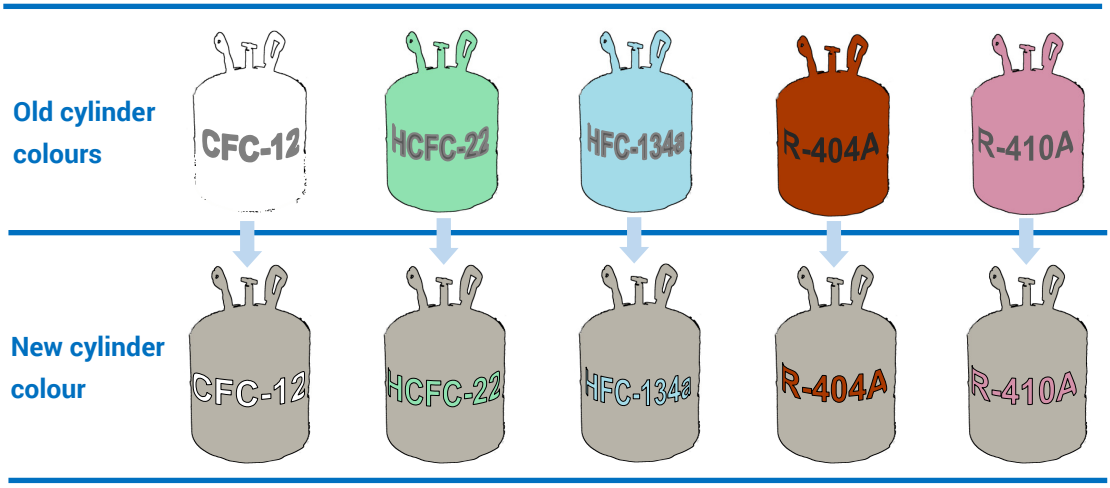
Familiar refrigerant cylinder colours: CFC-12 = white, HCFC-22 = light green , HFC-134a = light sky blue, R-410A = rose

Cylinder colours have historically been a very useful means for preliminary/initial refrigerant identification. In recent years, the number of refrigerants has dramatically increased, particularly as chemical producers continue to develop numerous new refrigerant mixtures for various applications[2]. This fast-rising number of refrigerants created some concern since as more and more colours were used, the potential for misidentification of cylinders of similar colours increased. The majority of refrigerant handlers who responded to an AHRI survey indicated that container colours had caused confusion. Furthermore, incorrect identification of refrigerants can potentially cause damage to equipment as well as serious safety issues.

It was therefore decided by AHRI that for the benefit of the industry the guideline should be updated. This was to ensure continuation of correct identification and safe use of refrigerants based on clear and distinct product markings and labels. The revised guideline[3], first published in 2015, removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards. This colour is a light green/grey, called "silk grey" (RAL 7044[4]). This guideline also provides a means by which colours can be assigned to printed materials, such as printed labels on refrigerant containers; these colours generally follow the familiar AHRI colours previously used for refrigerants.

All refrigerant containers will now have the same paint colour—a light green/grey, called "silk grey" .

The colour assignments will continue for product labels and cartons.



What to do

It is very important that the range of stakeholders in the refrigeration and air-conditioning industry as well as NOOs and customs and enforcement personnel are aware of this change. **Cylinder colours can no longer be relied on as a means to identify the type of refrigerant in a container**. The principal method of cylinder identification now needs to be the container labels and markings. It is important to note that **flammable refrigerants** should include a red band on the top of the cylinder.

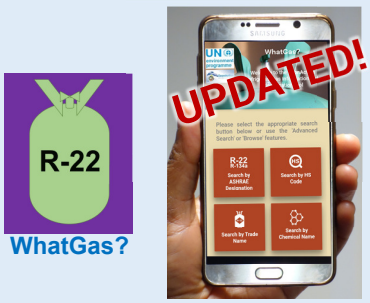
More information can be found in the *AHRI Guideline N, Assignment of Refrigerant Container Colours* document available on the AHRI website:

www.ahrinet.org/App_Content/ahri/files/Guidelines/AHRI_Guideline_N_2017.pdf

This guideline does not cover container colours for recovered and recycled refrigerants; this is available in a separate guideline (AHRI Guideline K)[5].

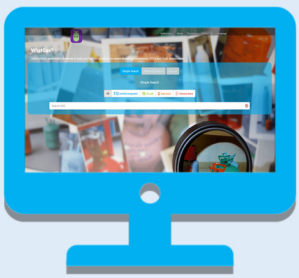
NOOs and technicians should be aware of this change and inform national stakeholders, as well as familiarising themselves with relevant container labels and markings for refrigerants. It will be important to inform and train customs officers of this change as colour codes have always been a helpful way to identify refrigerants. Given the possibility of mis-labelled or counterfeit refrigerants in cases of doubt/ suspicion, it is recommended to verify the type of refrigerant using refrigerant identifier (See the UNEP OzonAction refrigerant identifier smartphone application for guidance[6]).

The recently updated UNEP OzonAction smartphone application "WhatGas?" can also provide useful information in this regard. Just search for "WhatGas?" in the Google and Apple stores or use the QR code below – free to download!



WhatGas? is also available online at:

www.unenvironment.org/ozonaction/resources/whatgas/whatgas



References

1 Pantone® Colour Matching System

2 See the ASHRAE–UNEP factsheet *New Refrigerants Designations and Safety Classifications*: https://wedocs.unep.org/bitstream/handle/20.500.11822/29025/NEWRefr.pdf?sequence=1&isAllowed=y

3 AHRI Guideline N, *Assignment of Refrigerant Container Colours:* http://www.ahrinet.org/App_Content/ahri/files/Guidelines/AHRI_Guideline_N_2017.pdf

4 RAL is a European colour matching system which defines colours for paint, coatings and plastics (**R**eichs-**A**usschuß für **L**ieferbedingungen und Gütesicherung)

5 AHRI Guideline K: http://www.ahrinet.org/App_Content/ahri/files/Guidelines/AHRI_Guideline_K_2015.pdf

6 https://wedocs.unep.org/bitstream/handle/20.500.11822/27134/8016Smartapp1.pdf?sequence=1&isAllowed=y

Prepared by: Ezra Clark

OzonAction
UN Environment Programme
Law Division

1 Rue Miollis, Building VII
Paris 75015, France
+33 1 44 37 14 50
www.unenvironment.org/ozonaction