Refrigerants, Standing, Suction and Discharge Pressures for Modern HVAC Systems

Site: Mbsmpro

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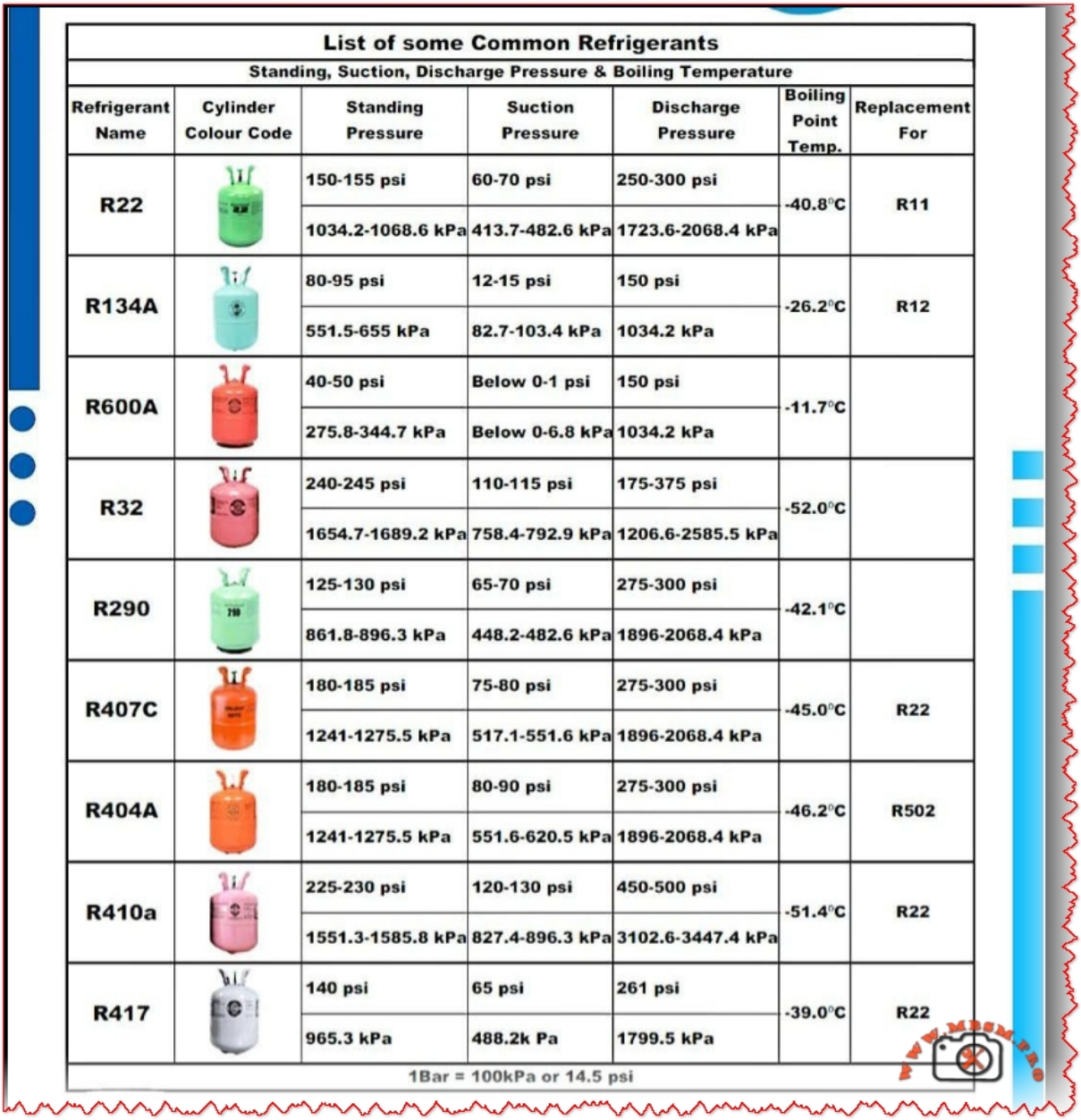


List of some Common Refrigerants

Standing, Suction, Discharge Pressure & Boiling Temperature

Refrigerant Name	Cylinder Colour Code	Standing Pressure	Suction Pressure	Discharge Pressure	Boiling Point Temp.	Replacement For
R22		150-155 psi	60-70 psi	250-300 psi	-40.8°C	R11
		1034.2-1068.6 kPa	413.7-482.6 kPa	1723.6-2068.4 kPa		
R134A		80-95 psi	12-15 psi	150 psi	-26.2°C	R12
		551.5-655 kPa	82.7-103.4 kPa	1034.2 kPa		
R600A		40-50 psi	Below 0-1 psi	150 psi	-11.7°C	
		275.8-344.7 kPa	Below 0-6.8 kPa	1034.2 kPa		
R32		240-245 psi	110-115 psi	175-375 psi	-52.0°C	
		1654.7-1689.2 kPa	758.4-792.9 kPa	1206.6-2585.5 kPa		
R290		125-130 psi	65-70 psi	275-300 psi	-42.1°C	
		861.8-896.3 kPa	448.2-482.6 kPa	1896-2068.4 kPa		
R407C		180-185 psi	75-80 psi	275-300 psi	-45.0°C	R22
		1241-1275.5 kPa	517.1-551.6 kPa	1896-2068.4 kPa		
R404A		180-185 psi	80-90 psi	275-300 psi	-46.2°C	R502
		1241-1275.5 kPa	551.6-620.5 kPa	1896-2068.4 kPa		
R410a		225-230 psi	120-130 psi	450-500 psi	-51.4°C	R22
		1551.3-1585.8 kPa	827.4-896.3 kPa	3102.6-3447.4 kPa		
R417		140 psi	65 psi	261 psi	-39.0°C	R22
		965.3 kPa	488.2k Pa	1799.5 kPa		

1Bar = 100kPa or 14.5 psi

Guide to Common Refrigerants: Standing, Suction and Discharge Pressures for Modern HVAC Systems

Refrigeration technicians today work with a mix of legacy and new-generation refrigerants, each with its own safe pressure range and boiling temperature. Understanding these values is essential for accurate diagnostics, safe charging and long compressor life in air-conditioning and commercial refrigeration.

Key role of pressure charts

Pressure–temperature charts and standing/suction/discharge tables give technicians a fast reference for what a system “should” be doing at a given ambient or evaporating temperature.
Using **wrong** reference values can lead to over-charging, overheating, liquid slugging or misdiagnosis of a healthy system as faulty.

Overview of common refrigerants

The image groups the most used refrigerants in residential and light commercial systems: R22, R134a, R600a, R32, R290, R407C, R404A, R410A and R417 (R417A).
Each gas has a typical standing pressure (static pressure at rest), an evaporating suction pressure, a condensing discharge pressure and a characteristic boiling point at atmospheric pressure.

Typical pressure ranges from the chart

The following table summarises the indicative values shown in the chart (all pressures are approximate, for normally loaded systems at typical comfort-cooling conditions).

Indicative pressures and boiling points

Refrigerant	Approx. standing pressure	Approx. suction pressure	Approx. discharge pressure	Boiling point (°C)	Typical replacement for

R22	150–155 psi / 1034–1069 kPa	60–70 psi / 413–483 kPa	250–300 psi / 1724–2069 kPa	−40.8 °C	R11 / legacy R22 AC
R134a	80–95 psi / 552–655 kPa	12–15 psi / 83–103 kPa	~150 psi / 1034 kPa	−26.2 °C	R12 in domestic & auto
R600a	40–50 psi / 276–345 kPa	≈0–1 psi / 0–7 kPa	~150 psi / 1034 kPa	−11.7 °C	Low-charge fridges, R12
R32	240–245 psi / 1655–1689 kPa	110–115 psi / 758–793 kPa	175–375 psi / 1207–2586 kPa	−52.0 °C	High-efficiency R410A/R22
R290	125–130 psi / 862–896 kPa	65–70 psi / 448–483 kPa	275–300 psi / 1896–2069 kPa	−42.1 °C	R22 in some systems
R407C	180–185 psi / 1241–1276 kPa	75–80 psi / 517–552 kPa	275–300 psi / 1896–2069 kPa	−45.0 °C (bubble)	R22 retrofits
R404A	180–185 psi / 1241–1276 kPa	80–90 psi / 552–621 kPa	275–300 psi / 1896–2069 kPa	−46.2 °C	R502 low-temp systems

R410A	225–230 psi / 1551–1586 kPa	120–130 psi / 828–896 kPa	450–500 psi / 3103–3447 kPa	−51.4 °C	Modern R22 AC
R417A	~140 psi / 965 kPa standing	~65 psi / 448 kPa suction	~261 psi / 1796 kPa discharge	−39.0 °C	R22 service blend

These figures are not universal “set-points”, but practical targets that help technicians decide whether a system is under-charged, over-charged or suffering airflow or mechanical problems.

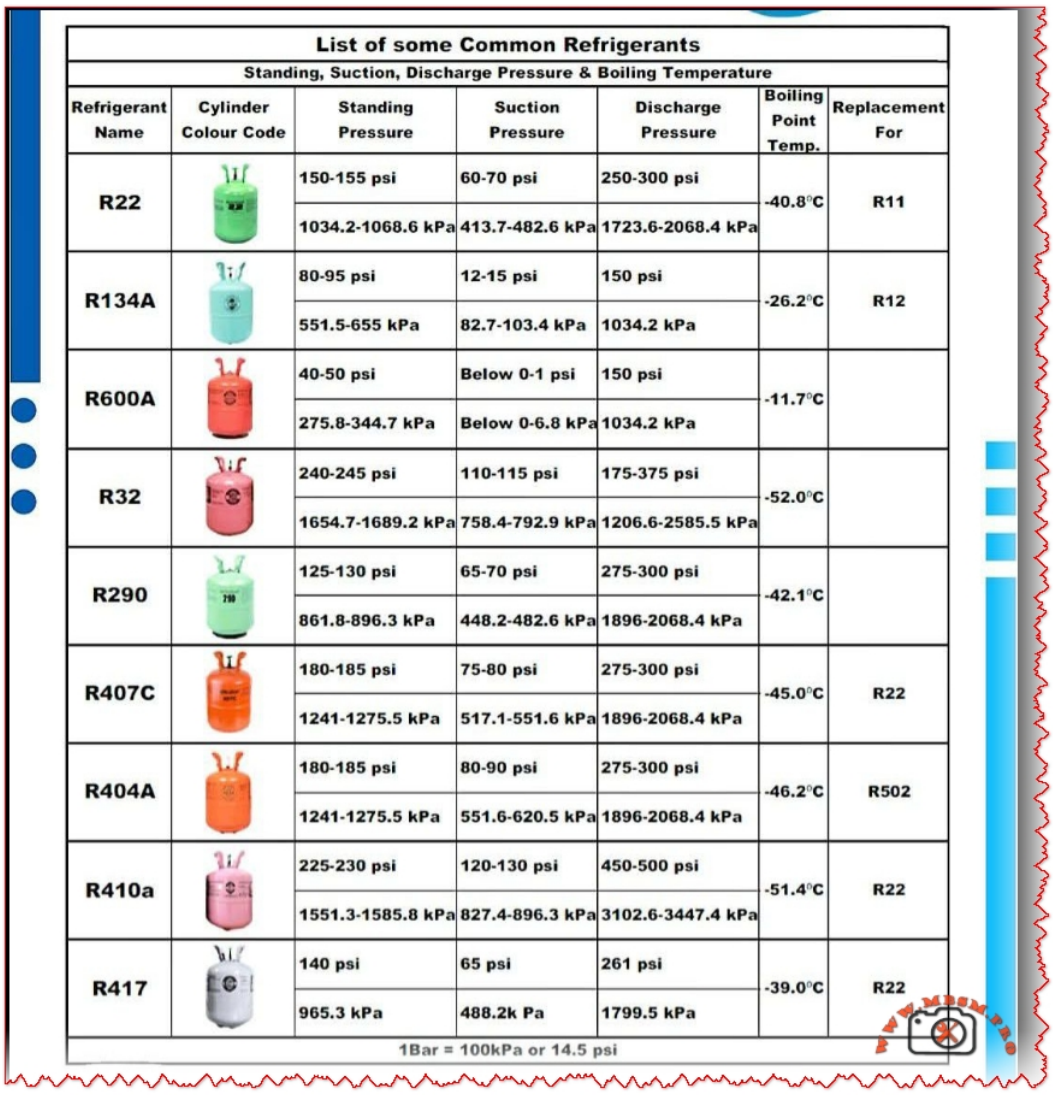
Safety, cylinder colours and replacements

Many countries use conventional cylinder colour codes to identify refrigerants quickly on site, although some regions are migrating to neutral colours with clear labelling.
Hydrocarbons such as **R290** and R600a are flammable, so working pressures must always be combined with strict leak-prevention, ventilation and ignition-control procedures.

When phasing out ozone-depleting R22, blends like R407C or R417A are often used in retrofit projects, while new high-efficiency equipment typically relies on R410A or R32 with different design pressures.
Comparing the standing and operating pressures during commissioning helps ensure that a replacement refrigerant is compatible with existing components such as compressors, valves and heat-exchangers.

Practical use for technicians and trainers

- Technicians can laminate similar tables and keep them in the toolbox or on the workshop wall as a quick-reference during charging and troubleshooting.
- Training centres and HVAC content creators like Mbsmgroup and Mbsm.pro can turn these values into interactive quizzes, infographics or mobile-friendly charts for students and new technicians.



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