



HVAC-R and CO₂ Refrigeration Fittings

What's the difference?

Materials

While refrigeration copper fittings typically are made of C12200 copper, CO₂ refrigeration copper fittings are made out of C19400 alloy, which offers superior properties when high pressure systems are considered.

C12200 Copper

%	ELEMENTS	
	Cu	P
Minimum	99.9%	0.015%
Maximum	-	0.040%

C19400 Copper

%	ELEMENTS				
	Cu	Pb	Zn	Fe	P
Minimum	97.0%	-	0.05%	2.1%	0.015%
Maximum	-	0.03%	0.20%	2.6%	0.15%

Pressure Ratings

Refrigeration copper fittings have varying pressure limits contingent on size, whereas CO₂ fittings consistently withstand pressures up to 130 BAR, reflecting the heightened demands of CO₂ Refrigeration systems.

SIZE (IN)	NDL ACR COPPER FITTINGS		NDL CO ₂ COPPER FITTINGS	
	PSI	BAR	PSI	BAR
1/4"	1000	68.9	1885	130
3/8"	1000	68.9	1885	130
1/2"	1000	68.9	1885	130
5/8"	1000	68.9	1885	130
3/4"	1000	68.9	1885	130
7/8"	900	62	1885	130
1-1/8"	700	48.2	1885	130
1-3/8"	700	48.2	1885	130
1-5/8"	700	48.2	1885	130
2-1/8"	700	48.2	1885	130
2-5/8"	700	48.2	-	-
2-5/8"+	Above 2-5/8" according to ASME B16.22		-	-

Size Range

Refrigeration copper fittings are available in larger diameters, catering to applications exceeding 4 inches, whereas CO₂ copper fittings are typically limited to sizes up to 2-1/8 inches, aligning with the CO₂ refrigeration tubes.

Brazing Process

The brazing process for both ACR copper fittings and CO₂ refrigeration copper fittings is the same. It is recommended for the brazing alloy to contain at least 2% silver. When brazing either of the copper alloys to brass, a silver content above 44% is recommended.