



# HVAC-R and CO<sub>2</sub> Refrigeration Fittings

What's the difference?

## Materials

While refrigeration copper fittings typically are made of C12200 copper, CO<sub>2</sub> refrigeration copper fittings are made out of C19400 alloy, which offers superior properties when high pressure systems are considered.

### C1220 Copper

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

### C19400 Copper

% ELEMENTS	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 CO<sub>2</sub> fittings consistently withstand pressures up to 130 BAR, reflecting the heightened demands of CO<sub>2</sub> Refrigeration systems.

SIZE (IN)	NDL PAC COPPER FITTINGS		NDL ACR COPPER FITTINGS		NDL CO <sub>2</sub> COPPER FITTINGS	
	PSI	BAR	PSI	BAR	PSI	BAR
1/4"	725	50.2	1000	68.9	1885	130
3/8"	725	50.2	1000	68.9	1885	130
1/2"	620	42.9	1000	68.9	1885	130
5/8"	575	39.8	1000	68.9	1885	130
3/4"	505	34.8	1000	68.9	1885	130
7/8"	465	32.1	900	62	1885	130
1-1/8"	395	27.2	700	48.2	1885	130
1-3/8"	350	24.2	700	48.2	1885	130
1-5/8"	325	22.5	700	48.2	1885	130
2-1/8"	290	20	700	48.2	1885	130
2-5/8"	265	18.5	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 CO<sub>2</sub> copper fittings are typically limited to sizes up to 2-1/8 inches, aligning with the CO<sub>2</sub> refrigeration tubes.

## Brazing Process

The brazing process for both ACR copper fittings and CO<sub>2</sub> 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.



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