



Simple Facts

As the industry is transitioning to A2L refrigerants, we feel it is important to provide our representatives, engineers, and end users with a few simple facts and documented sources to confidently overcome any objection to the use of, or allow the use of permanent mechanically attached fittings and H55 Light Drawn temper copper tubing as furnished by RCS to construct your refrigerant piping systems.

Arm yourselves with the knowledge from years of research, development, and testing, backed by approvals from multiple national and international code agencies within the industry to speak clearly with authority and remove any misconception, misunderstanding, or circulated ill informed opinions.

While other copper tubing Standards are commonly referenced, ASTM B280 copper refrigerant tubing is the piping Standard specified by all HVAC/R equipment manufacturers and applies to all A1 and A2L refrigerants. This Standard defines the type of copper, requires the tube to have specific chemical and mechanical properties, outside diameter (OD), wall thickness, provides for various tempers such as H58 (drawn general purpose), H55 (light-drawn), or O60 (soft annealed). Additional requirements include maximum permissible residue limit of 0.038 g/m² of sample interior surface, capped on both ends, eddy current tested, and appropriately marked.

RCS Light-Drawn H55 Tube is manufactured in accordance to ASTM B280 Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service, and ASTM B819 Standard Specification for Seamless Copper Tube for Medical Gas Systems.

ASTM B 75
ASTM B 280
STM B819

H55 temper or Half-Hard copper tubes generally has a minimum elongation value of 30% versus 3% of H58 Hard temper tubes. This property allows cold bending without damaging or degrading the integrity of the tube wall and affect its pressure rating. Other international Standards of Seamless Light Drawn copper tubes for Air Conditioning and Refrigeration also known as 1H/H , or Half-Hard, or R250 are routinely specified within many European and Asian equipment manufacturers' installation manual.

EN 12735
DIN 12735-2
JIS H 3300
BS:EN 13348

Permanent mechanical or press-connect joints that comply with UL 207 for copper or copper alloy pipe joints is approved for use in addition to brazing and other approved methods.

2021 International Mechanical Code (IMC) Chapter 1108.3.2, 1108.6
2024 Uniform Mechanical Code/IAPMO Chapter 1109.2
ANSI/ASHRAE 15-2022 Section 9.11.4.2

RCS Permanent Axial Swage fittings are independently tested and Listed by ETL to UL 207 Standard for rated working pressure of 1500 psig (100 bar) and is compatible for use with all CFC, HCFC, HFC, HFO, CO2 when used within the design pressure, and class A2L mildly flammable refrigerants and refrigeration oils.

ETL Listed 5011885

ASHRAE research report concluded that press-connects were 400 percent tighter than the definition of a hermetically sealed joint per ISO Standard 14903.

ASHRAE Research Project (RP-1808)