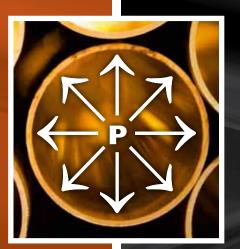
## MEETING THE DEMANDS OF CHANGING TIMES

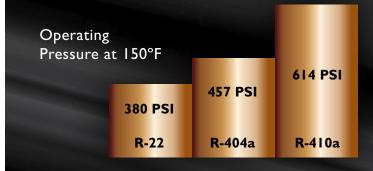
The HVAC/R industry has seen some big changes in technology & refrigerant systems in recent years. The gradual phase-out of R-22 refrigerant has ushered in newer, environmentally friendly replacements, which operate at higher pressures & temperatures. Mueller Industries is leading the copper industry to support contractors' needs in this changing environment.

Our engineers are re-writing the book on the thresholds for copper piping systems by factoring in the uniquely intense strain-hardening properties of copper. Efforts are currently underway to educate the leading authorities through organizations including ASME, ASTM, ASHRAE, & more. Other producers, industry leaders, & respected academia are also involved.

Manufacturing changes have been implemented to ensure Mueller produces the highest quality tube & fittings available to meet these high demand applications. First, only quality DuraGrain<sup>™</sup> copper is used in the production of ACR & dehydrated tube & fittings. Secondly, manufacturing process changes have been dialed in to provide optimum material properties with improved grain characteristics. Lastly, wall thickness & concentricity are being controlled using Mueller's patented TrueCenter<sup>™</sup> laser alignment process, when only the best will do.

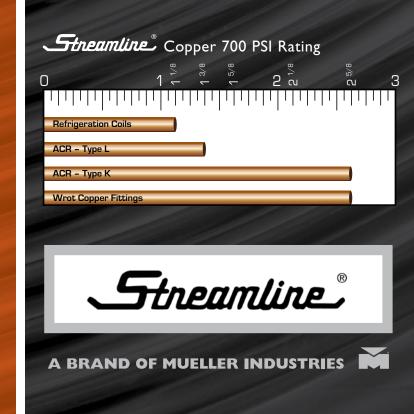
The engineering team has gone beyond typical burst tests to incorporate linear & axial stress/ strain testing as well as cyclic fatigue & accelerated life tests. No one else has done the extensive testing that Mueller has to ensure their products are, in fact, suitable in these high pressure applications. And no one else can provide copper tube & fittings made by Americans here in America. Did we mention that no one else has the legendary Mueller Streamline name that has served this industry for over 75 years?





## **DID YOU KNOW?**

In high pressure applications, the critical forces contained in the refrigerant piping act upon the entire circumference of the tube & fittings [hoop stress]. Under extreme pressure the circumference grows by tiny amounts, thus reorienting the copper molecules & creating a stronger product. This process is known as work hardening, & copper has an amazing ability to leverage this phenomenon in field conditions.



Mueller Streamline Co. I-800-348-8464 • www.muellerindustries.com