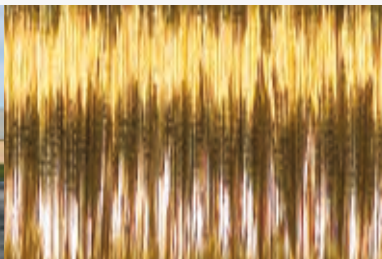




UNILITE™ XHH Tube Designs Address Raw Material Cost

The Luvata UNILITE™ XHH family of tubes are proven effective high performance tubes. UNILITE allows material cost savings due to weight reduction. These unique surfaces are made by Luvata's state-of-the-art "roll-and-weld" process. UNILITE tube can be used with current manufacturing processes and equipment.



About Luvata

Luvata is a world leader in metal fabrication, component manufacturing and related engineering and design services. We are committed to partnering with our customers to help them increase their competitiveness. Our products and services enable our customers to improve operational efficiency, improve products and reduce tied-up capital. Because we focus on our customers' results and are unfailingly reliable, we are the partner on which our customers base their future development.



Development history - enhanced inner tube surfaces.

Luvata's roll and weld technology was started in the 1970's. Luvata began development of enhanced tubes in the 1990's. The roll and weld process allowed us to pursue development of unique enhancements creating highly efficient and lighter weight tubing.

With industry leading technology and IG tooling designs, Luvata is able to continually reduce weight and increase tube performance with new enhancements.

Luvata is committed to working with our customers to provide tubing which allows for higher efficiency air conditioning units and to reduce material costs. We constantly strive to develop tubes with ever increasing heat transfer performance. We are leading the way through continuous development of existing and new enhancements in the inner surface of the tube.

Lite weight tube – reasons for increased demand.

Due to the need to reduce raw material costs, Luvata is continuing to work with our partners to develop new tubing designs. This commitment has led to efficient designs such as the UNILITE tube series and high performance tube such as 2V-XH. These tube designs have resulted in reduced raw material cost over conventional inner grooved ACR tubes. Our continuing research and development work has allowed us to offer our customers tubing specific to their needs while reducing cost.

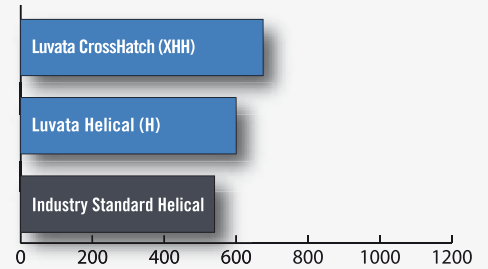
UNILITE – production and availability.

Luvata currently produces tens of millions of pounds of UNILITE annually. It is currently available in sizes 7mm, 5/16", and 3/8". This tube is packaged in Luvata's revolutionary "TUBE IN A CUBE™" (TIAC™) package.

UNILITE – how the enhancement works.

The V shaped grooves are embossed on the inner surface along the longitudinal direction of a tube. The refrigerant liquid layer flowing in channels would converge at the top of a V-channel. The channels created by crosshatch would collect liquid refrigerant and lead it to move forward. The heat transfer enhancement is due to the thin film layer created by the surface tension and continuous disturbance in the thin refrigerant liquid layer by the unique surface structure.

CONDENSATION



HEAT TRANSFER COEFFICIENT (Btu/hr-Ft²-°F)

Luvata has worked internally, and externally in cooperation with a leading 3rd party lab for performance testing. This lab is led by some of the most respected names in heat transfer tubes industry. XHH was found to be at least equal to or slightly more effective than the competitors helical in condensation heat transfer coefficient.