



Very high strength where you need it most.

Ultra-high strength steel ERW tubing is manufactured using a continuous quench and temper process. VHS[®] (very high strength) tubing is used in situations where impact protection or extra strength is the critical requirement. OneSteel Market Mills currently manufactures tubular side door anti-impact beams for the major vehicle manufacturers in Australia.



VHS[®]

HIGH STRENGTH

onesteel
market mills

OneSteel VHS[®]: Ultra-High Strength Steel Tubing

SPECIFICATIONS: VHS[®] tubing can be produced that conforms to international automotive specifications for ultra-high strength tubing. OneSteel produces its VHS[®] tubing to exceed the minimum requirements of major automotive companies, including General Motors (Holden), Ford, Mitsubishi and Toyota. VHS[®] Tube can be supplied to OneSteel's own specification (TS22) and to US, Japanese or other international specifications as required. The dimensional tolerances used are TS22, ASTM A513, JIS G3445 or other international specifications as required. Currently, readily available sizes are Ø19.1, Ø25.4, Ø31.8 and Ø38.1 mm with wall thicknesses of 1.6, 1.8, 2.0 and 2.3 mm. However, we recommend that you discuss your requirements directly with us before designing for your application as, depending upon volumes, most standard tube diameters and thicknesses can be accommodated.

SIZE RANGE:

DIAMETER	WALL THICKNESS	LENGTH
Ø19.0 mm – Ø101.6 mm	1.6 mm – 5.5 mm	5 mm – 8,000 mm
Ø3/4" – Ø4"	0.063" – 0.217"	0.2" – 315.0"

3D CNC LASER CUTTING:

VHS[®] tubing can be supplied to extremely tight tolerances using volume production 3D CNC laser processing or further processing can be performed on the VHS[®] tube using the laser to add holes, cut-outs or slots to suit your joining requirements. OneSteel Market Mills can also supply VHS[®] tubing in long lengths as produced on the mill.

CHEMISTRY:

Heat-treated tubing typically contains around 0.2% C and the ultra-high strength tubes also contain Boron to further improve strength. We have designed our product to suit high impact situations, but OneSteel can provide alternative heat-treated non-boron grades with lower mechanical properties and decreased cost to suit your particular application. For side impact protection our VHS[®] tube standard chemistry meets the specifications of major automotive manufacturers.

MECHANICAL PROPERTIES:

Tubing can be produced to many ranges of mechanical properties depending upon the chemistry selected and the requirements of the individual customer. Tube containing boron is produced with a typical yield strength of 1300 MPa and typical UTS of 1470 MPa. Elongation is typically 12%. These properties meet or exceed the requirements of the major automotive manufacturers.

WELDABILITY:

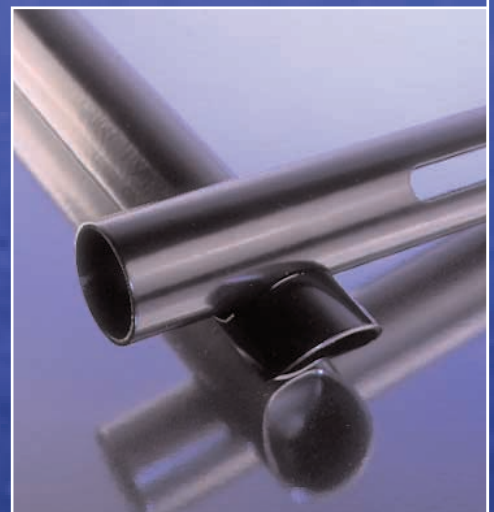
Ultra high strength tubing does not normally require any special tools or processes, but any design should take into account the particular application.

BENDABILITY:

OneSteel does not recommend bending ultra high strength heat-treated tubing. However, the boron grade can be supplied in the normalised (soft) condition, when it will perform adequately in bending. The finished article would then require heat-treating to obtain full strength.

QUALITY:

OneSteel Market Mills is a QS9000 & ISO14001 supplier and holds a Q1 rating from the Ford Motor Company. All tube is chemically and mechanically certified and testing can be conducted to international specifications if required.



FURTHER INFORMATION:

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VHS[®]

HIGH STRENGTH