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Welding recommendations for OM GT100™ thin walled cold drawn tubing

General

OM GT1000™ is an aerospace quality 15CDV6 designed to reach, in hardened and tempered conditions, high mechanical properties such as Rm = 1000/1200 MPa, $Rp_{0,2\%}$ > 790 MPa, … It's an auto hardening material with a quench temperature of 975-1050°C and a tempering temperature of 630°C.

Welding Methods

TIG

This is the preferred method for wall thickness > 1 mm with added material = 15CDV6.

"Weldo-brazing"

Recommended for wall thickness < 1 mm. Contact us for information about brazing medium.

Brazing

Without any problem with any brazing medium.

MIG

Can be used on wall thickness > 3 mm.

Laser

Giving good results as well as TIG, this method is recommended too and useful with any kind of wall thickness. But the speed needs to be controlled to reduce hardening risks.

Electron Beam

No problems.

Friction Stir Welding

No problems.

Oxy-acetylene welding

Not recommended.

Notes

15CDV6, and so OM GT1000™, welding presents a high risk of gas bubble within the weld in case of excessive speed or bad prepared edges.

Heat Treatment after welding is, usually, not necessary for tubes with wall thickness < 5 mm.

Nevertheless and for tubes with WT > 2mm, a reduction of 10-20 % in fatigue strength may happen in the heat affected zone (HAZ) but can be reduced by tempering. For tubing with WT < 2 mm, there is no real effect in the HAZ. Whatever, the fatigue strength will be influenced by the weld shape.

Any weld material containing cadmium must be avoided.