

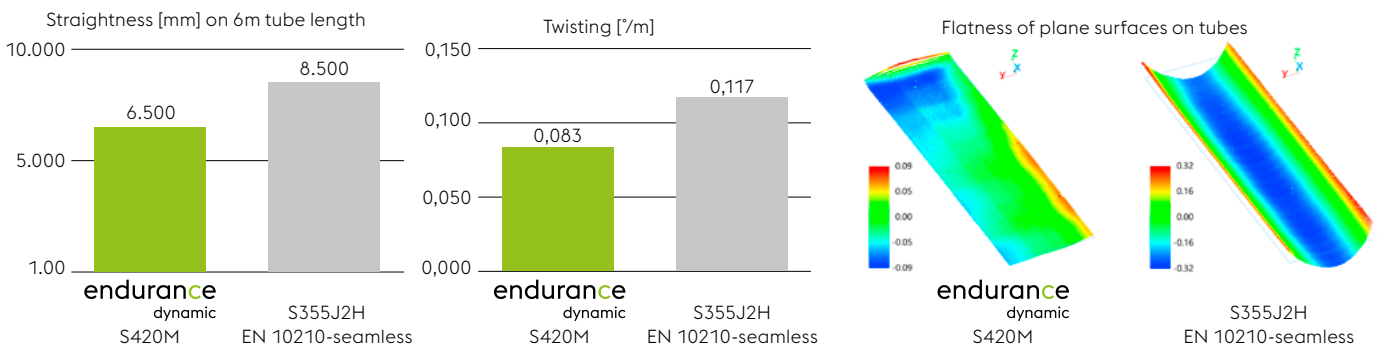
PROCESSABILITY & MECHANICAL CHARACTERISTICS

EXCELLENT PROCESSABILITY

The very good degree of purity and the specially adjusted homogeneous microstructure of the steel grades used result in improved formability. In combination with adapted tube manufacturing, this offers advantages when expanding and bending the tubes. In addition, narrow chamfer dimensions can be realized.

- » Compared to EN10219, narrower chamfer dimensions are made possible - up to $1.25 \times T$
- » Dimensional tolerances from EN10219 can be limited

endurance dynamic is known for its high quality in straightness, twisting and flatness of plane surfaces. Especially in the automated processing of hollow sections there are advantages in manipulation. In addition, fewer imperfections occur, which in turn leads to a reduction in instability under compressive loads.



WELDING PROCESSING RECOMMENDATIONS

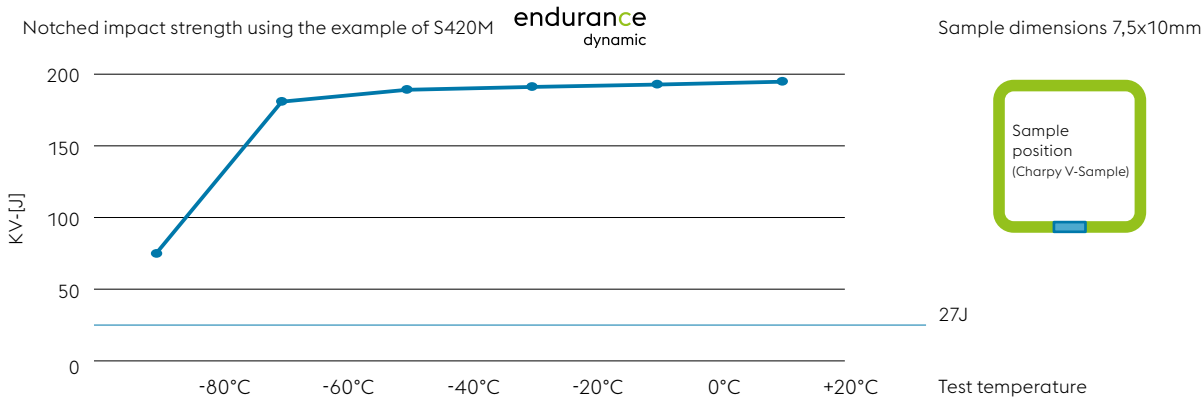
Material	Process	Filler material solid wire (135)	Filler material cored wire (136)	Shielding gas	Preheating [°C]	Interpass temperatures [°C]	$t_{8/5}$ -Range ⁴⁾ [s]
S355M	GMAW	e.g. BÖHLER EMK 6, UNION K 52, ... ER70S-6 (nach AWS A5.18)	e.g. BÖHLER HL 46-MC, BÖHLER TI 52-FD, ... E70T15, E71T1 (nach AWS A5.36)	M21 (z.B. CORGON 18, ...)	--- ^{1), 2)}	--- ³⁾	5 - 25
S420M S460M S500M S550M	GMAW	e.g. BÖHLER NiMo 1-IG, UNION MoNi, ... ER90S-G (nach AWS A5.28)	e.g. BÖHLER HL 53T-MC, BÖHLER Ti 60T-FD, ... E80T15, E81T1 (nach AWS A5.36)	M21 (z.B. CORGON 18, ...)	--- ^{1), 2)}	--- ³⁾	5 - 25

1) Depending on the atmospheric conditions (temperature below dew point, condensation of humidity), edge drying is recommended at least 80 °C immediately before welding.
2) In complex welded construction (e.g. out of position welding, accumulation of welds, ...) preheating according to EN 1011-2 is recommended.
3) It is recommended that the interpass temperature is adjusted in such a manner, that the maximum measured $t_{8/5}$ time is not exceeded.
4) Cooling time between 800°C and 500°C, measured according to EN 1011-2 (Appendix D.8)

MECHANICAL CHARACTERISTICS

endurance dynamic meets all material requirements of EN10149-2. The very good degree of purity and the specially adjusted homogeneous microstructure also improve formability and notched impact strength.

» verified notched impact values of 27J at -40°C on request



DIRECT FORMING INSTEAD OF ROUND TUBE FORMING

Compared to round tube forming, direct forming offers the possibility of tight radii and chamfer dimensions, lower residual stresses in the tube and tighter tolerances for weld seam center and at the tube ends.

Dimensional range for direct forming

Square tube in [mm]

MIN	MAX	Thickness [mm]
30x30	60x60	2-3
50x50	120x120	2-8

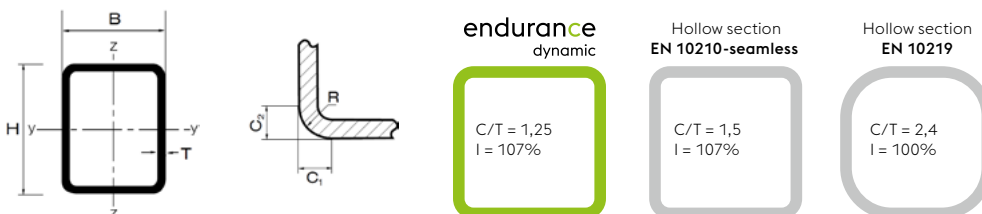
Rechteckrohr in [mm]

Height MIN	Height MAX	Width MIN	Width MAX	Thickness [mm]
25	80	30	60	2-3
50	152	40	120	2-8

Compared to round tube forming, the elongation values on the finished tube are increased by 3 to 10%.

INCREASED STIFFNESS

A smaller chamfer dimension does not only offer advantages in welding, it also increases the cross-sectional area and the area moment of inertia I for the same external dimensions. Consequently, endurance dynamic is more resistant to mechanical stress than a hollow section according to EN10219 with the same external dimensions.



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