



S355/420/460 MLO toughcore

Fracture mechanic – heat affected zone qualification up to 140 mm plate thickness to assure highest safety for offshore application

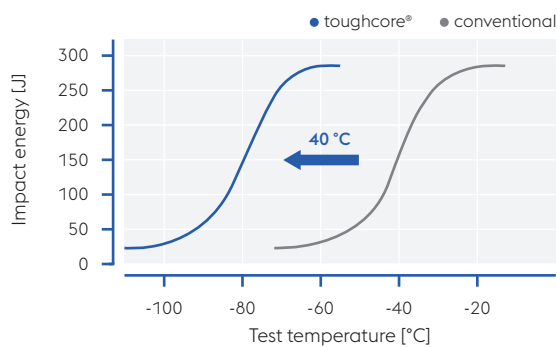
The new generation of thermomechanically rolled (TMCP) steel is manufactured in a completely new and patented process that enables unique combinations of properties with respect to thickness, strength, excellent toughness even at lowest temperatures as well as best weldability.

Charpy V-notch toughness (CVN) of plate*

Conventional vs. toughcore®

values in ½ thickness

S420 MLO, t = 80 mm

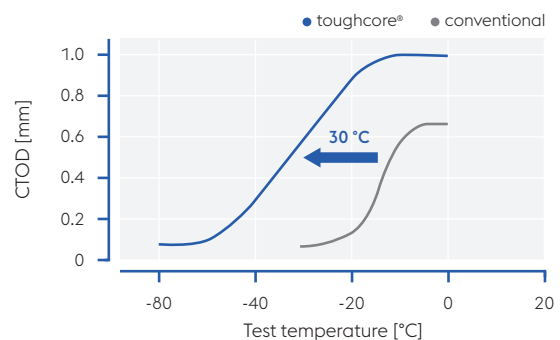


Crack tip opening displacement (CTOD) of plate*

Conventional vs. toughcore®

values in HAZ

S420 MLO, t = 80 mm



*) material properties shown on basis of 80 mm thickness and for reference – values for other thicknesses upon request.

Pre-qualified acc. to EN 10225 and NORSOK

toughcore® heavy plates are pre-qualified acc. to EN 10225 (2019) Annex F (Option 17) and NORSOK. We supply up to S460G2+M / NORSOK MDS Y40 in the delivery condition as well as after simulated post weld heat treatment and fulfill requirements of Arctic Class I to Arctic Class III up to 100 mm.

Furthermore, we are able to deliver up to S460G2+M/ NORSOK MDS Y40 pre-qualified up to 140 mm / CVN @ -40 °C and CTOD @ -10 °C.

Exploration of arctic regions – Johan Castberg FPSO - A Track Record

voestalpine Grobblech, as a worldwide supplier of high-quality niche products in the energy business, successfully supplied toughcore® heavy plates in grade S420G2+M, Norsok M120.

Convincing advantages of toughcore®

Superior toughness to the core	
	Shift of CVN transition temperature down to -80 °C
	CTOD transition temperature of -35 °C
Assuring highest safety levels	
	Homogeneous properties over the entire cross-section enhance the potential for the use of heavy plates for offshore construction for arctic applications.
Enhanced weldability	
	Welding Pre-qualification acc. EN 10225
	Pushing the limits of TMCP up to 140 mm

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Please find further information about toughcore® and downloadable files at www.voestalpine.com/toughcore/en



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