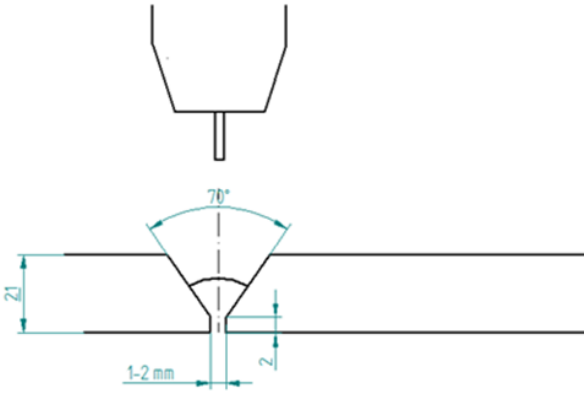
The test weld, that is closest to the selected simulation, is this *Root pass in a V joint in 21 mm plate thickness*

Base material	Thickness mm	Joint	Joint preparation	Welding process	Filler metal	Shielding gas	Backing gas
SDX 2507 EN 1.4410	21	V	Joint angle 70° Face 2 mm Gap 1-2 mm	GMAW (MAG)	25 9 4 NL Ø1.2 mm	MISON 2He*	Ceramic backing

*MISON 2He (Ar+30%He+2%CO_2+0.03%NO)

Joint preparation

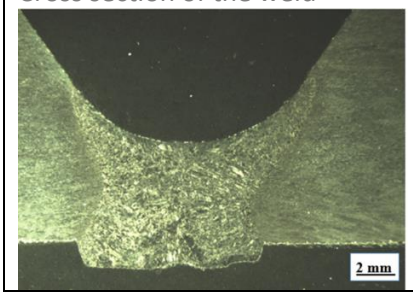


The joint angle was 70° (bevel angles 35°), the root face was 2 mm and the root gap 1-2 mm. Electrode stick-out length was 15-17 mm.

The test weld was the root pass in a multi pass single V-joint.
The weld was performed with pulsed arc. Welding position PA.

Welding current A	Voltage V	Heat input kJ/mm	Wire feed speed m/min	Welding speed cm/min	Number of passes
239	28.1	1.2	~8	27	1

Cross section of the weld



Measured ferrite fraction in the weld (the rest is assumed to be austenite), and the ferrite fraction more in detail in different regions of the weld, are shown in the table below. The fraction is measured using image analysis.

The ferrite fraction is an average value based on several measurements using image analysis in each location and the standard deviation in average values were around 3%.

Heat input kJ/mm	Weld	Top of the weld	Middle of the weld	Bottom of the weld
1.2	53%	53%	54%	52%

Measured ferrite fraction in the HAZ	
Very close to the fusion line	62%
About 0.4 mm from the fusion line	61%

Nitrides precipitated in the middle of ferrite grains and on the ferrite/ferrite grain boundaries to some extent in the weld zone but mainly in the HAZ. There are possibly some traces of sigma phase.