

Oefening 1

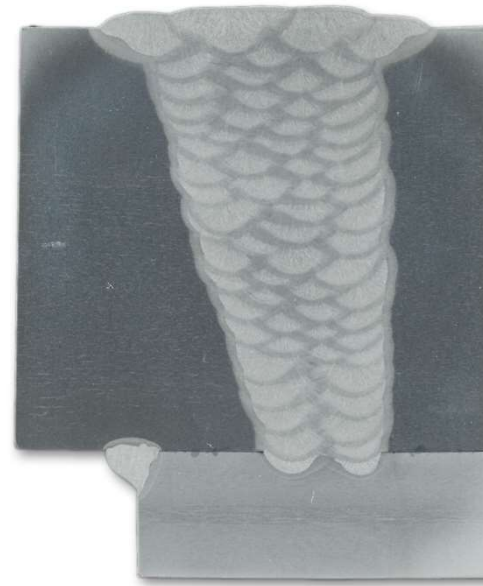


▶ Algemene informatie

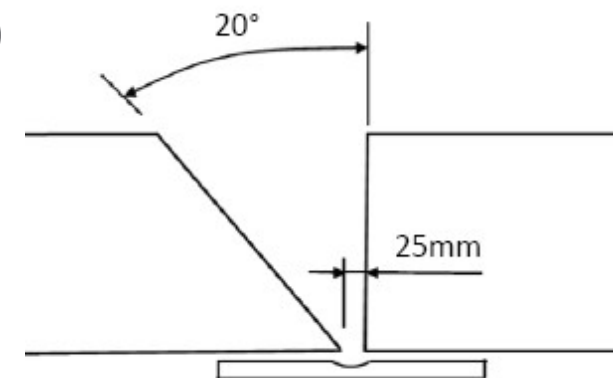
- ▶ Fabrikant: OEFENING 1
- ▶ pWPS nummer: pWPS-001
- ▶ WPQR-nummer: WPQR-001
- ▶ Lasoperator:

▶ Lasgegevens:

- ▶ Lasproces: OP-lassen (DC+)
- ▶ Basismateriaal: S355G7+N (1.2)
- ▶ Materiaal nummer: 1.8808+M
- ▶ Plaatdikte: 100 mm
- ▶ Toevoegmateriaal: Voestalpine (Böhler Subarc T55HP)
- ▶ Flux: Voestalpine Böhler UV 421 TT
- ▶ Diameter toevoegmateriaal: 2,4 mm
- ▶ Laspositie: PA
- ▶ Handeling: Automatisch



- ▶ Lasnaadvoorbereiding: meerdere lagen
- ▶ Backing: Steel backing (30 mm)



▶ Overige lasproefgegevens:

- ▶ 1^{ste} laspas:
 - ▶ Spanning: 35 V
 - ▶ Stroom: 900 A
 - ▶ Draadsnelheid: 5,5 m/min
 - ▶ Voortloopsnelheid: 800 mm/min

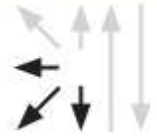
- ▶ 2^{de} laspas en vullagen:
 - ▶ Spanning: 40 V
 - ▶ Stroom: 995 A
 - ▶ Draadsnelheid: 5,5 m/min
 - ▶ Voortloopsnelheid: 700 mm/min

▶ Warmtebehandeling:

- ▶ Voorwarmen: ja (100°C)
- ▶ Tussenlaagtemperatuur: 220°C
- ▶ Waterstofarm gloeien: niet toegepast
- ▶ Warmtebehandeling na het lassen: niet toegepast

Classifications cored wire / flux combination					Classifications fluxes		
	EN ISO		AWS			EN ISO	
BÖHLER SUBARC T55 HP / UV 421 TT	14171-A	S 46 6 FB T3 H5	A5.17	F7A8-EC1/F7P8-EC1	UV 421 TT	14174	SA FB 1 55 AC H5
BÖHLER SUBARC T55 HP / UV 400	14171-A	S 50 6 AB T3 H5	A5.18	F7A8-ECG	UV 400	14174	SA AB 1 67 AC H5
BÖHLER SUBARC T55 HP / UV 306	14171-A	S 50 4 AR T3 H5	A5.18	F7A5-ECG	UV 306	14174	SA AR 1 77 AC H5

Typical chemical composition (wt %)			
	C	Si	Mn
BÖHLER SUBARC T55 HP / UV 421 TT	0.07	0.3	1.6
BÖHLER SUBARC T55 HP / UV 400	0.07	0.5	1.9
BÖHLER SUBARC T55 HP / UV 306	0.07	0.7	1.9

Operating data	
Welding positions	Polarity
	DC+ / AC

Mechanical properties, all weld metal (single values typical)							
Shielding gas	Condition	Yield strength $R_{p0.2\%}$ MPa	Tensile strength R_m MPa	Elongation A_5 %	CVN Impact toughness ISO-V / J		
					-40 °C	-46 °C	-60 °C
BÖHLER SUBARC T55 HP / UV 421 TT	as welded 1 hr, 620 °C	490 (≥ 460)	580 (530 - 680)	27 (≥ 22)	150		140 (≥ 47)
		460 (≥ 420)	630 (490 - 660)	28 (≥ 22)	150		140 (≥ 47)
BÖHLER SUBARC T55 HP / UV 400	as welded	570 (≥ 500)	640 (480 - 650)	23 (≥ 20)	140 (≥ 100)	55 (≥ 27)	120 (≥ 47)
BÖHLER SUBARC T55 HP / UV 306		570 (≥ 500)	640 (480 - 650)	23 (≥ 20)	70 (≥ 47)	70 (≥ 47)	

Oefening 1 - Vragen



- ▶ Slaag het bestand lokaal op als een “*secured excel file*”
- ▶ Sluit de Excel tool
- ▶ Open de Excel tool (via de .exe toepassing file)
- ▶ Laad de opgeslagen “secured excel file” in.

- ▶ Om de productie snelheid te verhogen zal gebruik gemaakt worden van een TWIN wire systeem.
 - ▶ Is de WPQR geldig voor deze wijziging?
 - ▶ Zo niet, pas de WPQR aan zodat een geldige WPQR wordt bekomen.


- ▶ Wijzig en specificeer een eigen basismateriaal:
 - ▶ Basismateriaal: S420G1+M (2.1)
 - ▶ Materiaal nummer: 1.8830+M

- ▶ Slaag het bestand op onder een nieuwe naam



BÖHLER SUBARC T55 HP

Seamless basic cored wire with interesting potential to increase submerged arc welding productivity

Features	User benefits	
Higher wire melt-off rate due to flux-cored wire design	» Up to 35 % higher weld metal deposition rate	
Better welding characteristics (arc stability, wider & smoother arc)	» Allows substantially higher welding currents with butt welds » Allows substantially higher travel speeds with fillet welds » Reduces number of beads in butt welds » Up to 30 % lower flux consumption in butt welds	
Better side wall fusion, bead appearance and slag detachability	» Low defect rate and related downtime for repair	
Greater reserve in strength and toughness due to basic formulation	» Allows more productive welding procedures in terms of higher deposition rate, higher heat input and higher interpass temperature	
Somewhat softer (seamless copper-coated) wire	» Easier to feed through curved liners » Lower contact tip wear	
Seamless cored wire design	» No moisture absorption / low weld metal hydrogen » Reliable feedability	
Total product performance versus solid wire	» Great potential to reduce total welding costs and project lead times	

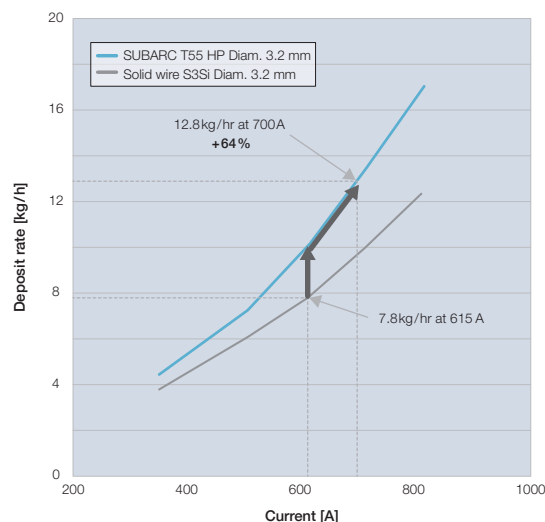
BÖHLER SUBARC T55 HP is a seamless, copper-coated cored wire developed for the submerged arc welding of unalloyed and fine-grained structural steels up to a yield strength of 460 MPa. In combination with three different fluxes – UV 421 TT, UV 400 and UV 306 – it forms cored wire / flux combinations for a variety of applications. It has a series of advantages over solid wire which, together, represent a great potential for a drastic reduction of total SAW welding costs and project lead times.

Applicability and obtainable savings, however, strongly depend on the SAW application and a thorough analysis is needed to assess feasibility, in which Böhler Welding specialists can support interested fabricators.

BÖHLER SUBARC T55 HP is a basic cored wire which is specially formulated to fully benefit from the increased deposition rate brought along by the cored wire design. It allows substantially higher welding currents in butt welding and higher travel speeds in fillet welding in situations where a higher heat input is acceptable. Alternatively users can opt for a lower heat input at the same deposition rate / travel speed or any other desired balance. The basic flux formulation brings reserve in terms of strength and CVN impact toughness to compensate for the bigger weld beads and fewer layers that come along with the increased deposition rates.

Increased welding productivity and lower total welding costs are further promoted by important side-effects such as dependable weld penetration and tie-in, easier slag release and lower flux consumption, lower defect rates and lower contact tip wear. The SUBARC T 55 wire / flux combinations can be applied in single wire, tandem wire and twin wire SAW systems.

BÖHLER SUBARC T55 HP application selector			
	UV 421 TT	UV 400	UV 306
Single pass	+	+++	+++
Multi pass	+++	++	+
2 run	++	+++	++
Plate thickness (butt welds)	Unlimited	Moderate	Thin
High current	+++	+++	++/+
High welding speed	++	+++	+++
CVN impact toughness	+++	++	+
Strength	++	(+++)	(+++)
Diffusible hydrogen	H5	H5	H5



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Approvals	
BÖHLER SUBARC T55 HP / UV 421 TT	LRS (5Y46 H5), DNV-GL (V Y46MH5), ABS (5Y460M H5); TÜV (S 46 6 FB T3 H5)

Overview spool types				
Wire	Nett weight	Available diameters	Flux	Nett weight
K415 basket spools	25 kg	2.4 mm / 3.2 mm / 4.0 mm (3/32", 1/8", 5/32")	PE bag DRY SYSTEM bag	25 kg (55 lb) 25 kg (55 lb)
Drums (CL)	250 kg	2.4 mm / 3.2 mm / 4.0 mm (3/32", 1/8", 5/32")	PE bigbag DRY SYSTEM bigbag	1000 kg (2204 lb) 1000 kg (2204 lb)