

Solid wires for MAG-welding of high-strength quenched and tempered steels



ThyssenKrupp
high strength

N-A-XTRA®

ThyssenKrupp
high strength

XABO®

Steel grade	Manufacturer				
	BÖHLER	ESAB	LINCOLN	OERLIKON	THYSSEN
N-A-XTRA® 550	BÖHLER NiMo 1-IG	(OK AristoRod 13.29)	LNM NiMo1	CARBOFIL NiMo 1	Union MoNi
N-A-XTRA® 620	BÖHLER NiMoCr-IG	OK AristoRod 13.29		CARBOFIL NiMoCr	Union NiMoCr
N-A-XTRA® 700	X 70-IG / NiMoCr-IG			LNM MoNiVa	
N-A-XTRA® 800	BÖHLER X 90-IG	OK AristoRod 13.47	LNM MoNiVa*)	CARBOFIL NiMoCr*)	Union X 85
XABO® 890					Union X 90
XABO® 960	BÖHLER X 90-IG*	OK AristoRod 13.47*	-	-	Union X 96
XABO® 1100					Union X 96*

*) under-matching

Flux-cored wires for MAG-welding of high-strength quenched and tempered steels

ThyssenKrupp
high strength

N-A-XTRA®

ThyssenKrupp
high strength

XABO®



Steel grade	Manufacturer				
	Drahtzug Stein	ESAB	LINCOLN	OERLIKON	THYSSEN
N-A-XTRA® 550	Megafil 940 M	(OK Tubrod 14.06)	Outershield 81K2-H(SR)	Fluxofil 41	(Union MV NiMoCr)
N-A-XTRA® 620	Megafil 742 M	OK Tubrod 14.03	Outershield 690-H(SR)	Fluxofil 42	Union MV NiMoCr
N-A-XTRA® 700				Fluxofil M42	
N-A-XTRA® 800	Megafil 1100 M	<i>OK Tubrod 14.03*</i>	<i>Outershield 690-H(SR)*</i>	Fluxofil 45	<i>Union MV NiMoCr*</i>
XABO® 890				<i>Fluxofil 45*</i>	
XABO® 960		-	-	-	
XABO® 1100	<i>Megafil 1100 M*</i>	-	-	-	-

**) under-matching*

Covered electrodes for manual metal-arc welding of high-strength quenched and tempered steels

ThyssenKrupp
high strength

N-A-XTRA®

ThyssenKrupp
high strength

XABO®



Steel grade	Manufacturer				
	BÖHLER	ESAB	LINCOLN	OERLIKON	THYSSEN
N-A-XTRA® 550	FOX EV 65, EV 75	(OK 75.75)	Conarc 60G	TENACITO 65 R	Phoenix SH Ni 2 K 90
N-A-XTRA® 620	FOX NiMo 100, EV 75	OK 75.75	Conarc 80	TENACITO 75	Phoenix SH Ni 2 K 100
N-A-XTRA® 700	FOX EV 85		Conarc 85 (-150)	TENACITO 80	
N-A-XTRA® 800	FOX EV 100	OK 75.78	<i>Conarc 85*</i>)	TENACITO 100	Phoenix SH Ni 2 K 130
XABO® 890					

**) under-matching*

Wires / fluxes for submerged arc welding of high-strength quenched and tempered steels

ThyssenKrupp
high strength

N-A-XTRA®



Steel grade	Manufacturer				
	BÖHLER	ESAB	LINCOLN	OERLIKON	THYSSEN
N-A-XTRA® 550	3 NiMo 1-UP / BB 24	OK Autrod 13.40 / OK Flux 10.62	LNS 164 / Lincolnweld 8500	OE-S3NiMo1 / OP 121TT	Union S 3 NiMo / UV 421 TT
N-A-XTRA® 620	3 NiCrMo 2,5-UP / BB 24	OK Autrod 13.43 / OK Flux 10.62	LNS 168 / Lincolnweld 8500	OE-SD3 2,5NiCrMo / OP 121TT/W	Union S 3 NiMoCr / UV 421 TT
N-A-XTRA® 700					
N-A-XTRA® 800	3 NiCrMo 2,5-UP* / BB 24	OK Autrod 13.43* / OK Flux 10.62	LNS 168* / Lincolnweld 8500	OE-SD3 2,5NiCrMo* / OP 121TT/W	Union S 3 NiMoCr* / UV 421 TT

*) under-matching

Remarks

- **Other welding filler metals** which have not been listed here can also be used. The selection is not exclusive and should not be taken as any deprecation of the suitability of other filler metals.
- To avoid cold-cracking the welding filler metals have to be protected against any **absorption of moisture**. The basic covered electrodes and welding flux have to be post-dried in accordance with the manufacturer's instructions immediately before use.
- Particularly **root passes and single-pass fillet welds** undergo an alloying through dilution with the parent metal. For these welds lower alloyed welding filler metals are often used than for the filling and capping passes.



Classification of welding filler metal

Schweißzusätze Welding filler metals		R _{p0,2} ⁵⁾ YS [MPa]	Typische Analyse ⁶⁾ Typical analysis [%]					Europäische Normen European Standards		AWS-Normen AWS Standards		
			C	Si	Mn	Cr	Mo	Ni	Norm / Spec.	Bezeichnung / Classification	Norm / Spec.	Bezeichnung / Classification
MAG/GMAW ¹⁾	Thyssen BA 70 ³⁾	≥ 420	0,06	0,45	1,50	-	-	-	EN 758	T 42 4 B M3 H5/T 42 4 B C3 H	AWS A 5.20	E70T-5/-5M H4
	Thyssen MV 70 ³⁾	≥ 420	0,05	0,45	1,40	-	-	-		T 42 4 M M 2 H 5	AWS A 5.18	E70C-6MH4
	Union K 52	≥ 440	0,08	0,85	1,50	-	-	-	EN 440	G422CG3Si1/G424MG3Si1	AWS A 5.18	ER70S-6
	Union K 56	≥ 480	0,08	1,05	1,65	-	-	-		G462CG3Si1/G464MG4Si1		ER70S-6
	Union K 5 Ni	≥ 490	0,10	0,70	1,40	-	-	1,40	EN 12534	G463CG3Ni1/G505MG3Ni1	AWS A 5.28	ER80S-G
	Union MoNi	≥ 620	0,10	0,65	1,55	-	0,40	1,10		G Mn3Ni1Mo		ER90S-G
	Union NiMoCr	≥ 720	0,08	0,60	1,70	0,20	0,50	1,50		G Mn4Ni1,5CrMo		ER100S-G (≈ -1)
	Union X 90	≥ 890	0,10	0,80	1,80	0,35	0,60	2,30		G Mn4Ni2CrMo		ER120S-G
Union X 96	≥ 930	0,12	0,80	1,90	0,45	0,55	2,35	G Mn4Ni2,5CrMo	ER120S-G			
E/SMAW	Phoenix K 50	≥ 420	0,06	0,50	1,20	-	-	-	EN 499	E 42 4 B 42	AWS A 5.1	E7015
	Phoenix 120 K	≥ 420	0,07	0,35	1,20	-	-	-		E 42 5 B 32 H5	"	E7018-1
	SH V 1	≥ 500	0,07	0,25	1,50	-	-	0,95	EN 757	E 50 6 Mn 1 Ni B 42 H5	AWS A 5.5	E8018-G (≈ -C3)
	SH Ni 2 K 90	≥ 580	0,06	0,25	1,40	-	0,44	1,70		E 55 5 2 NiMo B 42 H5	AWS A 5.5	E10018-M
	SH Ni 2 K 100	≥ 700	0,06	0,20	1,60	0,38	0,40	1,85		E 69 5 Mn 2 NiCrMo B 42 H5		E11018-M
	SH Ni 2 K 130	≥ 880	0,06	0,40	1,30	0,80	0,65	2,20		E 89 4 Mn 2 Ni 1 CrMo B 42 H		E12018-G (≈ -M)
	SH Ni 2 K 150	≥ 1050	0,10	0,40	1,60	1,50	0,80	2,00		E 89 4 Z B 42 H5		E12018-G (≈ -M)
UP/SAW ²⁾	Union S 2	≥ 400	0,10	0,10	1,00	-	-	-	EN 756	S2	AWS A 5.17	EM12
	Union S 3 NiMo	≥ 560	0,08	0,10	1,50	-	0,45	1,50		S3Ni1,5Mo	AWS A 5.23	EG (≈EF1)
	Union S 3 NiMoCr	≥ 690	0,14	0,10	1,70	0,35	0,60	2,10	S0	"	EG (≈EF6)	
	Fluxocord 45 ⁴⁾	≥ 870	0,08	0,35	1,50	0,80	0,40	2,50	-	-	AWS A 5.23	F12A4-EC-G

1) Schutzgas / *shielding gas*: EN 439 - M21 (75 - 95 % Ar / 25 - 5 % CO₂)

2) Schweißpulver / *Welding flux* UV 421 TT: EN 760 - SA FB 1 65 DC H5

3) Fülldraht / *flux-cored wire*

5) 0,2%-Dehngrenze des Schweißgutes / *Yield strength 0.2 % of weld metal*

6) Analyse der Elektrode (Massivdrähte) bzw. des Schweißgutes

Analysis of electrode (solid wires) or weld metal

Lieferant / *Supplier*
Böhler Thyssen Schweißtechnik
No. 4) Oerlikon Schweißtechnik GmbH