

# OK Tubrod 14.12

## All round metal cored wire for shipbuilding

**With exclusive performance in vertical down fillet welding of thinner plate.**

OK Tubrod 14.12 – 1.2mm is a unique metal cored wire with a great versatility for manual welding in shipbuilding. It is a truly all-positional consumable, since its use includes the very productive vertical down welding of fillet welds in thinner plate. It can be welded in CO<sub>2</sub> and Ar/CO<sub>2</sub> (M21) mixed gas and has a high tolerance to primer.

OK Tubrod 14.12 is an all round wire. It is suited for producing (multi-layer) fillet and butt welds in all positions and its use includes the welding of open root runs or, highly productive, the welding of root runs on ceramic weld metal support. It performs very well on both DC+ and DC- polarities in the spray arc mode, but the use of DC- polarity is recommended because of exclusive advantages in the vertical down welding of thin plate. A universal parameter setting can be used for all positions, except vertical up.

### Vertical down fillet welding

Vertical down fillet welding with OK Tubrod 14.12 provides a productive and high-quality solution for the plate thickness range of 5-10 mm, where vertical up welding with, for instance, MMA or FCAW would lead to too much deformation, due to the higher heat input. Outside shipbuilding, in general construction, it out performs solid wire used in vertical down welding in terms of weld penetration, spatter level and speed.

With depths of 1-2 mm, the weld penetration compares to the result obtained in vertical up welding with rutile cored wire, Figure 1. Throat thicknesses  $a = 2.5-4$  mm can be welded in a single layer, while multi-pass welding can be applied for larger sizes. The deep penetration results in lower reject rates and allows the specification of smaller throat thicknesses in the design of components.

The weld profile is nicely concave and the tie-in to the plate material is smooth. Weld deformation is limited, because of the low heat input of 0.4-0.5 kJ/mm.

Additionally, vertical down welding with OK Tubrod 14.12 is an extremely productive method with travel speeds reaching as high as 50-70 cm/min.

### Exclusive performance in vertical down fillet welding

- **Excellent weld penetration**
- **Smooth tie-in**
- **Minimal deformation**
- **High productivity**
- **Lower welding costs**
- **Universal parameter setting for all positions**

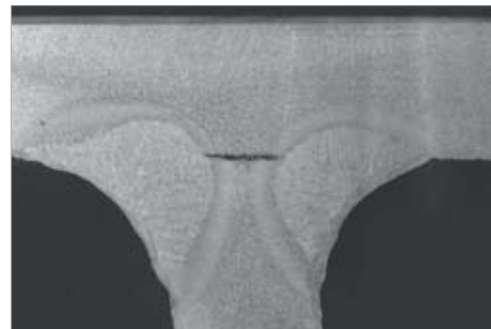


Figure 1. Double-sided single layer fillet weld in PG/3F-down position welded with OK Tubrod 14.12 – 1.2mm. I=210A, U=24V, Travel speed=60 cm/min. Wall thickness: 6mm. Throat thickness:  $a=3$ mm. Shielding gas: CO<sub>2</sub>.

Universally applicable parameters for all welding positions, except vertical up.

Gas	Current	Arc voltage	Travel speed	Wire feed speed
M21	210-240A	24-26V	50-70 cm/min	6.5-8.0 m/min
OK Tubrod 14.12-1.2mm DC- polarity, mixed gas Add 1V arc voltage for CO <sub>2</sub> shielding gas				

Parameters for vertical up welding.

Gas	Current	Arc voltage	Travel Speed	Wire feed speed
M21	160-170A	22-23V	6-7 cm/min	4.5-5.0 m/min
OK Tubrod 14.12-1.2mm DC- polarity, mixed gas				

A major application area for OK Tubrod 14.12 is shipbuilding, especially production in thinner plate material, such as ferries, cruisers, coasters, river boats, fishing boats, light displacement service vessels and yachts. Outside shipbuilding, applications are found in general steel construction, the welding of pipes and the fabrication of vessels.



OK Tubrod 14.12 can be universally applied at one parameter setting.

### Classification

EN	AWS
758: T 42 2 M M 1 H10	A /SFA 5.18: E70C-6M
T 42 2 M C 1 H10	E70C-6C

### Approvals

ABS	BV	CE	DB	DNV	GL	LR	RINA	VdTÜV
3SA,3YSA (M21 & C1)	SA3YM (M21 & C1)	EN 13479	42.039.24 (M21 & C1)	IIIYMS (M21 & C1)	3YS (M21 & C1)	3S,3YS (M21 & C1)	3Y S (M21 & C1)	6649

### Typical weld metal chemical composition(%), DC

	C	Si	Mn	P	S
CO <sub>2</sub>	0.08	0.5	1.35	0.010	0.010
Ar/15-25%CO <sub>2</sub>	0.08	0.6	1.43	0.010	0.010

### Typical weld metal mechanical properties, DC

	Rm (MPa)	ReL (MPa)	A5 (%)	CVN (J)
CO <sub>2</sub>	549	458	28	-20°C: 105
Ar/15-25%CO <sub>2</sub>	586	481	27	-20°C : 96



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