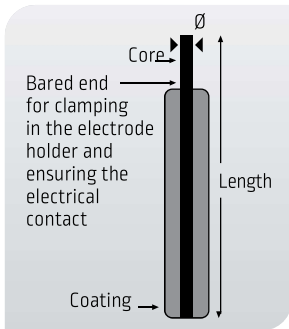


Filler metal: coated electrode

➤ CHARACTERISTICS OF THE COATED ELECTRODE



The coated electrode or welding rod consists of a metallic core centred within a coating.

The diameter and the length of a rod are defined by the dimensions of its core. The rod diameter is between 1.6 and 4 mm. The length is generally between 225 and 450 millimetres.

The coating in the electrode is responsible for protecting the liquid weld pool, it can also provide alloying elements that increase the properties of the weld material.

They help protect against the oxygen in the surrounding air as the weld pool cools, by forming the slag. The discarded, unused part of an electrode is called the stub.



The coated electrode or welding rod serves to create the electric arc.

As it melts, it fully contributes to forming the weld bead. Its coating also protects the weld pool and the weld bead by forming the slag.

➤ COATED ELECTRODE SELECTION

BESTER 6012 – Rutile-Cellulose

Applications: Excellent results with painted or rusty steel

- Can be used where large gaps or misalignment exist.
- Electrode can be welded with a single current setting regardless of the welding position.

BESTER 6013 – Rutile

Applications: metalworking (*ironwork, sheet metalwork, metal fittings, maintenance...*)

- Good bead appearance.
- Very good slag removal.
- Reduced weld spatter.

BESTER 7018 – Basic

Applications: involving metal-on-metal wear.

- Basic electrode ideal for light duty construction work.
- Very good slag removal.
- For experienced welders.

BESTER CAST/ BESTER CAST

Basic electrode for cold welding of cast iron, malleable cast iron and cast iron to steel.

BESTER INOX – Stainless steel

- Rutile-basic coated for welding 304L or equivalent steel.
- Good bead appearance and easy slag removal.
- Highly resistant coating.
- Suitable for novice welders.



Filler metal: coated electrode

Choice of electrode diameter according to the thickness of the parts to be welded:

Thickness to be welded (mm)	Recommended electrode diameter	Average welding current
1.0 to 1.5 mm	1.6 mm	30 A
1.5 to 2.0 mm	2.0 mm	55 A
2.0 to 3.0 mm	2.5 mm	70 A
3.0 to 5.0 mm	3.2 mm	110 A
4.0 to 10.0 mm	4.0 mm	150 A



BESTER offers a wide range of coated electrodes in packaging formats suited to all types of task.

Material Description	Type	Diameter (mm)	Length (mm)	Packaging	Weight of box (kg)	Number of items	Material Number
BESTER 6012	Rutile-Cellulose	2.50	350	Blister	0,5	26	C11041-1
		2.50	350	Half-box	1,9	99	C11041-11
		2.50	350	Box	5	260	C11041-12
		3.20	350	Blister	0,5	17	C11041-2
		3.20	350	Half-box	1,9	65	C11041-21
		3.20	350	Box	5	172	C11041-22
BESTER 6013	Rutile	4.00	350	Half-box	1,9	44	C11041-31
		2,00	300	Blister	0,5	47	C11040-0
		2,50	350	Blister	0,5	25	C11040-1
		2,50	350	Half-box	1,8	93	C11040-11
		2,50	350	Box	5	260	C11040-12
		3,20	350	Blister	0,5	15	C11040-2
		3,20	350	Half-box	1,9	64	C11040-21
		3,20	350	Box	5	165	C11040-22
BESTER 7018	Basic	4,00	350	Half-box	1,9	38	C11040-31
		4,00	350	Box	5	102	C11040-32
		2,50	350	Blister	0,5	22	C11042-1
		2,50	350	Half-box	1,7	75	C11042-11
		2,50	350	Box	4,6	206	C11042-12
		3,20	350	Blister	0,5	14	C11042-2
BESTER CAST	Cast iron	3,20	350	Half-box	1,7	47	C11042-21
		3,20	350	Box	4,5	126	C11042-22
		3,20	350	Blister	0,15	5	C11044-2
BESTER INOX	308L	2,00	300	Blister	0,12	10	C11043
		2,50	350	Blister	0,21	10	C11043-1

Filler metal: coated electrode

► TIPS

Before welding

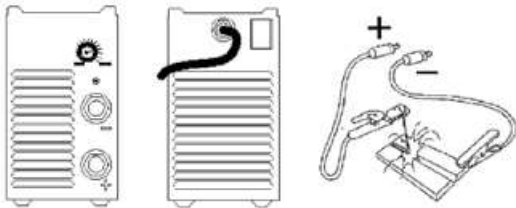
Workpiece preparation is an important and essential step that determines the final result.

The workpieces must be cleaned with a wire brush to remove traces of rust, paint and/or grease present within the area of the joint.

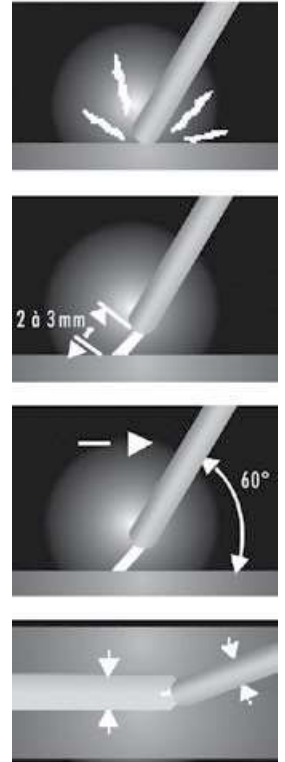
Place the workpieces edge-to-edge, in a horizontal plane if possible and hold them in place with a magnetic welding holder to prevent them moving during the welding operation.

Welding

- Plug the welding machine to the mains supply.
- Attach the ground clamp and the electrode holder to the welding machine terminals as indicated on the packaging of the welding rod used.
- Place the bared length of the rod in the electrode holder.



- Set the welding current based on the electrode diameter.
- Switch on the machine.
- Protect your face and eyes by means of a welding helmet.
- Wear gloves and protective clothing (welding apron, jacket).
- Rub the tip of the electrode on the workpiece where the weld is to be formed. This will generate sparks and the arc will be struck.
- Once the arc is lit, pull the electrode back 2 or 3 mm from the workpiece and weld. The arc length (distance between the electrode and the workpiece) must be constant and approximately equal to the electrode diameter.
- Weld by pulling the electrode towards you, at an angle of 60°. Maintain a constant speed and arc length. Lower the hand as the electrode wears down to compensate for melting.
- Adjust the speed of travel to give a bead width (S) equal to 1.5 to 2 times the electrode diameter (E).
- Allow the workpiece to cool.
- The cooled, solidified slag must be removed by tapping with a hammer and brushing.
- Wear protective goggles.



► ELECTRODE WELDING TERMS AND DEFINITIONS

The establishment and the maintenance of an electric arc depend on the following factors:

- the type of welding current: alternating (AC) or direct (DC),
- the no-load voltage of the welding machine (in particular in AC welding),
- the intensity of the current supplied by the welding machine during the welding operation,
- the specific ignition voltage of the electrode (in particular in AC welding),
- the polarity of the electrode in DC welding.

“Alternating current”

More often delivered by static transformer type welding machines.

Alternating current can be used for almost all electrodes, on condition that the no-load voltage at the welding machine terminals is greater than the electrode ignition voltage.

“Direct current”

Delivered by new generation welding machines incorporating power electronics called “inverter welding machines”.

This current melts all types of electrode.

“Generator no-load voltage”

The no-load voltage is the voltage measured at the welding machine output when it is not delivering any current. It ensures the ignition and the stability of the electric arc.

“Electrode ignition voltage”

In AC welding, this voltage can vary from 40-45 volts for rutile electrodes to 70-80 volts for basic or special electrodes.

“Welding current”

The intensity of the current which passes through the arc (in Amps) and provides the heat necessary for melting the metal.

“Average welding current”

Electrode diameter	Welding current for steel
1,6 mm	30 - 40 A
2,0 mm	45 - 65 A
2,5 mm	65 - 80 A
3,2 mm	100 - 115 A
4,0 mm	150 - 170 A