

→ Welder's toolkit



Welding gases

Health & safety

Business advice

Gas equipment  
& PPE

Materials

Welding  
processes

Common welding  
issues

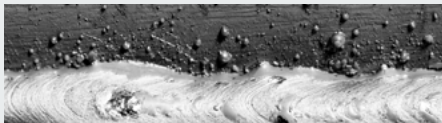


# Tips for a Better Weld

Even the simplest welds are subject to enough variables to demand thorough preparation and careful execution.

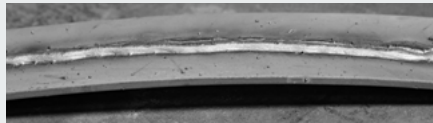
Your operating technique, the shielding gas you use, your choice of filler wire or electrodes and the equipment settings you select – each has an impact, good or bad, on the final result, and all play their part whether you're highly experienced or a relative novice.

So here are some tips to avoid some of the more common problems and achieve a better weld.



## Spatter

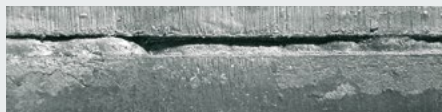
Droplets of metal propelled from the welding arc form spatter around the welded joint which is unsightly and can later start corrosion. It's also time consuming to remove. Spatter is usually caused by an incorrect choice of operating parameters, for example your wire feed rate may be too high for the voltage setting. If you spot spatter, adjust your voltage and wire feed speed settings until you see an improvement.



## Distortion

If the angle or dimensions of your joint are distorted by your weld, try using less weld metal. Over-welding and excessive reinforcement are common causes of this problem.

Also use higher travel speeds and lower heat input to limit heat build up in the plate.



## Lack of fusion

If the weld bead and the parent metal do not fuse or penetrate (melt) well, the capacity of the joint to carry a load is diminished. This is unacceptable for welds subject to loads applied over and over again (fatigue), but also moderate static loads.

Check your operating technique, including your torch angle and arc length. You may also need to increase the current and voltage used.



## Porosity

If you're getting small holes in your final weld, you need to stop bubbles of gas initially forming in the weld pool. This could be from surface contamination with oil, paint or rust.

The weld pool must be 'shielded' from the oxygen in the air by using a specific combination of shielding gases.

## The right shielding gas does make a difference

Shielding gases can significantly improve the quality of your welds and are now available ready-mixed for a wide range of welding applications.

Molten metal is prone to contamination and oxidation from excessive amounts of atmospheric gases such as oxygen and nitrogen. Reducing this significantly can greatly improve the quality of your weld.

But these gases don't just 'shield'. They can also improve deposition rates, fusion,

penetration, corrosion resistance, surface appearance and cosmetic profile.

That's because the right shielding gas can also increase the heat and fluidity of the weld pool, improving arc stability, the all-important transfer of energy from the arc to the weld itself. You can improve the penetration profile, bead shape and size and overall weld integrity.



## Choosing the right shielding gas for your needs

If you've shied away from using anything more than the most basic shielding gases in the past, now might be the time to look again. BOC has developed a wide range of shielding gases for specific uses. A few of our most popular can be seen below.

- MIG and TIG welding across a range of thickness in aluminium and copper. TIG welding of carbon and ferritic/martensitic stainless steel.

**ALUSHIELD® Universal**

(Argon +50% helium)

- MAG welding across a range of thickness in stainless steel

**STAINSHIELD® Universal**

(Argon +55% helium +2% CO<sub>2</sub>)

Excellent for pulsed welding of stainless steel.

- MIG and TIG welding of heavy section (above 6mm) aluminium and copper

**ALUSHIELD Heavy**

(Argon +75% helium)

- TIG welding of austenitic stainless steel

**STAINSHIELD TIG**

(Argon +1.5% hydrogen)

For more on shielding gases,  
download our guide at  
[boconline.co.uk/shieldinggas](http://boconline.co.uk/shieldinggas)

This leaflet is part of the welder's toolkit: whether you need welding tips, gases advice or safety guidance, you'll find it in the toolkit!

For more welding advice, visit  
[boconline.co.uk/welders-toolkit](http://boconline.co.uk/welders-toolkit)

From the welder's toolkit:  
you may also like...

- There's more to shielding gases than just argon
- Shielding gas: the right gas working for you
- Shielding gases: the secret to better welds