

Understanding your business



Ask the expert

Air Products explains why controlling gas flow rates matters and how it can help to achieve a quality weld.

- Why is it important to control the gas flow rate?
- How do you choose the right gas flow rate?
- What can you do to ensure the flow rate is being controlled properly?
- How can you find out what is the right flow rate for the application?
- Is there any new technology available that can help me to control the gas flow rate?
- Ask the expert

Why is it important to control the gas flow rate?

A uniform flow of gas is needed to shield the molten metal by blanketing it properly to avoid atmospheric contamination, which can lead to increased levels of oxidation or even porosity of the finished weld. Of course, flow rates can vary and it is important to select the right flow rate for each application as this can improve efficiency and ensure a quality weld.

How do you choose the right gas flow rate?

There's more to choosing the right gas flow rate than you might think. Most MIG/MAG and TIG welding applications use argon-based shielding gases – a gas which is heavier than air – and these typically need lower flow rates than helium-based mixtures, as helium is much lighter than air. The thickness of the material should also be considered. For example, for thinner materials of 1–3 mm thick, a lower flow rate of around 8–12 litres per minute is usually preferred and this can increase to a flow rate of around 15-20 litres per minute for thicker materials. Where mixtures containing helium gas are used, flow rates can go even higher. Finally, flow rates can also vary according to the type of application – for example, manual welding typically requires a lower flow rate than mechanised or automated welding systems.

What can you do to ensure the flow rate is being controlled properly?

Once you have selected the right flow rate for the welding application at the regulator or flow meter, you can double-check that the gas control equipment is working accurately by using a simple gas flow tube which provides a reasonably accurate reading of the flow rate at the point of use. In addition, for businesses operating 10 or more welding machines, a Gastrak® survey can be carried out to monitor flow rates in use at each welding station. With Air Products' Gastrak® gas management system, flow rates can be accurately set and locked according to the specific application.

How can you find out what is the right flow rate for the application?

Traditional welding apprenticeships obviously cover this in some detail. However, in some instances welders may be unaware of the recommended flow rate for a specific application and they should seek advice from their gas supplier.

Is there any new technology available that can help me to control the gas flow rate?

Air Products has developed the award-winning Integra® cylinder and Maxx® range of shielding gases. Each cylinder has a built in regulator with a quick connect outlet connection. It is also possible to order quick connectors with pre-set outlet flows so that the welder can select the connector with the exact flow for the relevant welding application. Using this kind of feature will help the welder to achieve a quality weld, first time every time.

Ask the expert

If you would like to Ask the Expert a specific question or for further advice on quality standards, please email apukinfo@airproducts.com.