

# It is important to select the right type of respirator!

The type of welding respirator needed depends on what type of pollution you are exposed to, your working environment and the welding method. 3M offers you a wide range of disposable, reusable, powered and supplied air respirators for protection against gases, vapours and particulates allowing you to choose the level and type of protection, comfort, style and maintenance requirements you need to work safely, comfortably and effectively.



## Disposable respirators

Disposable respirators are perfect for use under a welding helmet. They can provide lightweight and comfortable respiratory protection to moderate levels of fine dust particles up to nominal protection factor (NPF) of 10.



## Reusable respirators

Reusable respirators fit under some welding helmets (eg. 3M™ Speedglas™ Welding Helmet Series 9100). They can provide protection against solid and liquid particles as well as ozone up to nominal protection factor (NPF) of 50.



## Powered air respirator

With its smart, compact design, the award-winning 3M™ Adflo™ Powered Air Respirator is specially designed to meet your welding needs. Its continuous airflow (170 or 200 litres per minute) provides filtered air that takes much of the heat and sweat out of welding. As a system with Speedglas welding helmet it offers a nominal protection factor (NPF) of 50.



## Supplied air regulator

The Versaflo™ Supplied Air Regulator V-500E is a lightweight, belt mounted regulator that allows you to adjust the airflow from 170 litres per minute to 305 litres per minute. As a systems with Speedglas welding system it offers a nominal protection factor (NPF) of 200.

# A general guide to respiratory protection

3M offer a wide range of personal respiratory protection, this is a general filter guide for typical welding applications. To get the full picture of all 3M respiratory protection please visit [www.3M.com/workerhealth](http://www.3M.com/workerhealth)

## How to use this guide:

Identify the material to be welded and the process to be used.  
The concentration levels of the pollutants are affected by the ventilation conditions in your workplace.

Choose the appropriate description of the working situation to determine the most suitable type of respiratory protection.\*

- P Particle filtration
- ABE Gas filtration
- S Supplied air regulator



| Material to be welded   | Welding method               | Ventilation conditions of your working environment              |   |   |   |
|---|------------------------------|---|---|---|---|
|   |                              | Good environment, with forced ventilation                       | Limited ventilation   | Restricted space  | Classified as IDLH  |
| Aluminium   | MIG                          | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">P</span> + <span style="border: 1px solid black; padding: 0 2px;">A</span> <span style="border: 1px solid black; padding: 0 2px;">B</span> <span style="border: 1px solid black; padding: 0 2px;">E</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span> | Powered and supplied air respirators must never be used in atmospheres Immediately Dangerous to Life or Health (IDLH). Always consult your Safety Engineer. |
|   | TIG                          | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">P</span> + <span style="border: 1px solid black; padding: 0 2px;">A</span> <span style="border: 1px solid black; padding: 0 2px;">B</span> <span style="border: 1px solid black; padding: 0 2px;">E</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | STICK WELDING                | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">P</span> + <span style="border: 1px solid black; padding: 0 2px;">A</span> <span style="border: 1px solid black; padding: 0 2px;">B</span> <span style="border: 1px solid black; padding: 0 2px;">E</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
| Stainless steel   | MIG                          | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">P</span> + <span style="border: 1px solid black; padding: 0 2px;">A</span> <span style="border: 1px solid black; padding: 0 2px;">B</span> <span style="border: 1px solid black; padding: 0 2px;">E</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | TIG                          | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">P</span> + <span style="border: 1px solid black; padding: 0 2px;">A</span> <span style="border: 1px solid black; padding: 0 2px;">B</span> <span style="border: 1px solid black; padding: 0 2px;">E</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | STICK WELDING                | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">P</span> + <span style="border: 1px solid black; padding: 0 2px;">A</span> <span style="border: 1px solid black; padding: 0 2px;">B</span> <span style="border: 1px solid black; padding: 0 2px;">E</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | PLASMA (Welding and Cutting) | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> + <span style="border: 1px solid black; padding: 0 2px;">A</span> <span style="border: 1px solid black; padding: 0 2px;">B</span> <span style="border: 1px solid black; padding: 0 2px;">E</span> / <span style="border: 1px solid black; padding: 0 2px;">S</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
| Steel not coated or painted   | MIG/MAG                      | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | STICK WELDING                | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | PLASMA (Welding and Cutting) | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
| Steel painted (lead based paints)   | MIG/MAG                      | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | STICK WELDING                | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | PLASMA (Welding and Cutting) | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
| Steel galvanised  | MIG/MAG                      | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | STICK WELDING                | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | PLASMA (Welding and Cutting) | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> / <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
| Steel coated with 2-component paints or insulated with 2-part polyurethanes (risk of isocyanates) | MIG/MAG                      | <span style="border: 1px solid black; padding: 0 2px;">S</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | STICK WELDING                | <span style="border: 1px solid black; padding: 0 2px;">S</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | PLASMA (Welding and Cutting) | <span style="border: 1px solid black; padding: 0 2px;">S</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
| Material cleaned with trichloroethylene   | MIG                          | <span style="border: 1px solid black; padding: 0 2px;">S</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | TIG                          | <span style="border: 1px solid black; padding: 0 2px;">S</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | STICK WELDING                | <span style="border: 1px solid black; padding: 0 2px;">S</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |
|   | PLASMA (Welding and Cutting) | <span style="border: 1px solid black; padding: 0 2px;">S</span> | <span style="border: 1px solid black; padding: 0 2px;">S</span>   | <span style="border: 1px solid black; padding: 0 2px;">S</span> |   |

\* 3M accepts no liability for the incorrect choice of respiratory protective equipment. This chart is only an outline. It is designed to help focus on the most appropriate respirators in the 3M range for particular applications. It should not be used as the only means of selecting a respirator. Details regarding performance and limitations are set out on the respirator packaging and user instructions.

# Respiratory filter guide

| Code | Type of filter                      |
|------|-------------------------------------|
| E    | Acid gases.                         |
| A    | Organic gases, boiling point >65°C. |
| AX   | Organic gases, boiling point <65°C. |
| P    | Particle filter.                    |
| B    | Inorganic gases.                    |

## Remarks

|     |  |
|-----|--|
| H = | The chemical can be absorbed through the skin. |
| K = | The chemical can be cancer-inducing.           |
| S = | The chemical can be a sensitizer.              |

1. Argon and helium are inert gases which are not generally absorbed by canister type filters. These gases are not in themselves hazardous but can displace oxygen from the air when present in confined spaces.
2. Ozone cannot be filtered from the atmosphere but relies on being converted back to oxygen. Activated carbon of any sort is effective at decomposing ozone. Using gas filter together with particle filter will decompose ozone efficiently. For further information please contact 3M Technical Service at your local 3M office.
3. Chemical constituents of a welding fume with very low Occupational Exposure Limits can pose special hazards and are sometimes best protected against by using a Supplied Air Regulator System. If in doubt, always seek professional advice from your Safety Engineer.

Occupational Exposure Limits (OELs) are given in each individual country's national safety requirements.

Get information for the UK on [www.hse.gov.uk](http://www.hse.gov.uk)



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| Chemical            | Suggested Filter Type |     |              | Remarks |
|---------------------|-----------------------|-----|--------------|---------|
|                     | Particle              | Gas | Supplied Air |         |
| Aluminium           | P                     |     |              |         |
| Argon               |                       |     | Supplied Air | 1       |
| Beryllium           | P                     |     | Supplied Air | K, S 3  |
| Bromine             |                       | B   |              |         |
| Cadmium             | P                     |     |              | K       |
| Carbon Dioxide      |                       |     | Supplied Air |         |
| Carbon Monoxide     |                       |     | Supplied Air |         |
| Chlorine            |                       | B   |              | H       |
| Chlorine Dioxide    |                       | B   |              |         |
| Chromium Hexavalent | P                     |     |              | K       |
| Chromium Trivalent  | P                     |     |              |         |
| Copper              | P                     |     |              |         |
| Fluorides           | P                     |     |              |         |
| Fluorine            |                       |     | Supplied Air |         |
| Helium              |                       |     | Supplied Air | 1       |
| Isocyanates         |                       |     | Supplied Air | S       |
| Hydrogen Chloride   |                       | B   | Supplied Air | 3       |
| Hydrogen Cyanide    |                       | B   | Supplied Air | H3      |
| Hydrogen Fluoride   |                       | B   | Supplied Air | 3       |
| Hydrogen Sulphide   |                       | B   |              |         |
| Iron Oxide          | P                     |     |              |         |
| Lead                | P                     |     |              |         |
| Magnesium           | P                     |     |              |         |
| Manganese           | P                     |     |              |         |
| Nickel              | P                     |     |              | S       |
| Nitrogen Dioxide    |                       |     | Supplied Air |         |
| Nitric Oxide        |                       |     | Supplied Air |         |
| Ozone               | P                     | ABE | Supplied Air | 2,      |
| Phosgene            |                       |     | Supplied Air | 3       |
| Phosphine           |                       |     | Supplied Air |         |
| Silicon Dioxide     | P                     |     |              |         |
| Sulphur Dioxide     |                       | E   |              |         |
| Trichloroethylene   |                       | A   |              | K       |
| Vanadium Oxide      | P                     |     |              |         |
| White Spirit        |                       | A   |              |         |
| Zinc                | P                     |     |              |         |
| Zinc Chloride       | P                     |     |              |         |
| Zinc Oxide          | P                     |     |              |         |