

3M Science.
Applied to Life.™

Your quick guide to 3M Welding PPE

 **Speedglas**™

**As a welder,
you have one
of the most
dangerous jobs
in the world...**

You're right to be protected

Our society is becoming ever more health-conscious as science becomes better able to explain the cause-and-effect of diseases and ailments.

Conditions that used to be considered as acceptable are now being questioned by many welders. Welding supervisors need to seriously review the work environment and ask themselves: "Will my shop attract and keep the best welders?"

And welders need to ask themselves: "How can I protect my health?"

In general it is the responsibility of the employer to identify any hazard that are to be found in the working environment and to provide the workers with adequate protection.

Each welding job is different and this guide is to be seen as a summary of the welding protective equipment from 3M.

Comprehensive information about regulations and legislation, limits etc. is often specific to each country. The choice of protective equipment is often made after consultation between employers and users.

Always contact your safety engineer, company health representative or other experts if there are any doubts or unclear points regarding safety of working environment or choice of product.

Speedglas online

Direct access to knowledge, via your computer, laptop or mobile:

www.3M.com

Access our latest news, learn more about welding safety and explore the online product catalogue:

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new Speedglas product guide

app.speedglas.com

- Product overview
- Sort by feature
- Selection guide, etc.



Choose your 3M™ Speedglas™ Welding Helmet



Welding helmet features	9100	9100-Air	9100-QR	9100 FX	9100 FX-Air		9100 MP	9100 MP-Lite	9002NC	SL	100	100-QR
Eye and Face Protection	EN 175:B, EN 379, EN 166:BT	EN 175:B, EN 379, EN 166:BT	EN 175:B, EN 379, EN 166:BT	EN 175:B, EN 379, EN 166:BT	EN 175:B, EN 379, EN 166:BT		EN 175:B, EN 379, EN 166:BT	EN 175:B, EN 379, EN 166:BT	EN 175:B, EN 379, EN 166:BT	EN 175:F, EN 379, EN 166:FT	EN 175:B, EN 379, EN 166:BT	EN 175:B, EN 379, EN 166:BT
Head protection	N/A	N/A	EN 397*	EN 397**	N/A		EN 397	EN 812	N/A	N/A	N/A	EN 397*
Respiratory protection (further details on page 8-9)	Disposable or reusable respirator	Powered or supplied air	Disposable or reusable respirator	Disposable or reusable respirator	Powered or supplied air		Powered or supplied air	Powered or supplied air	Disposable or reusable respirator	Disposable or reusable respirator	Disposable or reusable respirator	Disposable or reusable respirator
Hearing protection options (further details on page 12)	YES	YES	YES	YES	YES		YES	YES	YES	YES	YES	YES
1 Exhaust vents	YES	N/A	YES	YES	N/A		N/A	N/A	YES	NO	NO	NO
2 Side windows	Optional	YES	YES	YES	YES		YES	YES	NO	NO	NO	NO
3 High-comfort headband	YES	YES	N/A	YES	YES		N/A	N/A	YES	YES	YES	N/A
4 Flip-up with clear visor	NO	NO	NO	YES	YES		YES	YES	NO	NO	NO	NO
Part No additional coverage:												
Flame-retardant head cover	#169005	#169005	NO	#169007	#169007		NO	NO	#164009	NO	#164009	NO
Reflective helmet cover	NO	NO	NO	NO	NO		#169014	#169014	NO	NO	NO	NO
Flame-retardant neck protection	#169010	#169010	NO	#169010	#169010		#169015	#169015	#169001	#169001	#169001	#169001
Flame-retardant hood	#169100	#169100	#169100	#169100	#169100		#169100	#169100	#169100	#169100	#169100	#169100
Ear and neck cover in leather	#164005	#164005	#164005	#164005	#164005		#164005	#164005	#164005	#164005	#164005	#164005
Welding filter options (further details on page 6)	ADF: 9100V, 9100X, 9100XX, 9100XXi Passive	ADF: 9100V, 9100X, 9100XX, 9100XXi Passive	ADF: 9100V, 9100X, 9100XX, 9100XXi Passive	ADF: 9100V, 9100X, 9100XX, 9100XXi Passive	ADF: 9100V, 9100X, 9100XX, 9100XXi Passive		ADF: 9100V, 9100X, 9100XX, 9100XXi Passive	ADF: 9100V, 9100X, 9100XX, 9100XXi Passive	ADF: 9002NC	ADF: SL	ADF: 100S-10, 100S-11, 100-V Passive	ADF: 100S-10, 100S-11, 100-V Passive

* with 3M™ Safety Helmet H-701.
** with 3M™ Safety Helmet G-3001 (adapter #197136 is needed).



1 Exhaust vents - exhaled air is channeled out via side exhaust vents.



2 Side windows - shade 5 filters that widen your field of vision.



3 Adjustable high-comfort headband



4 Big, curved 17 x 10 cm clear protective visor, increasing your peripheral vision.

Select 3M™ Speedglas™ Welding Filter

Before you select welding filter, ask yourself:

- How will I use my welding filter?
- Do I occasionally change welding process/shade no?

There are a few parameters that affects the performance of an auto-darkening filter like type of welding machine, working environments etc. The table below is a general guide to all our various models due to detector function and based solely on welding applications.

	Best*	Better*	Good*	Not Recommended*			
Specification	9100XXi	9100XX	9100X	9100V	SL	100V	9002NC
MMAW (electrode)							
MIG/MAG							
TIG (>20A)							
TIG (1A-20A)							
Plasma (welding and cutting)							
Risk for hidden arc							
Tack welding							
Grinding							
Viewing area	73x107 mm		54x107 mm	45x93 mm	42x93 mm	44x93 mm	55x107 mm
Battery lifetime	1 800 hours	2 000 hours	2 500 hours	2 800 hours	1 500 hours		2 000 hours
Solar cell	No		Yes		No	No	
Classification	1 / 1 / 1				1 / 1 / 1	1 / 2 / 2	1 / 1 / 1
Dark state	Shade 5, 8, 9-13				Shade 8-12		
Light state	Shade 3						
UV/IR Protection	Shade 13 (permanent)				Shade 12 (permanent)		
Auto ON	Yes	No		Yes	No		
Sensitivity of arc switching time, light -dark	0,1 ms (+23° C)						
Memory mode	Yes	No					
Delay switching time, dark-light	40-800 ms	40-1 300 ms			60-250 ms	40-250 ms	60-400 ms
Number of sensors (arc detection)	3				2		
Approval (welding filter)	EN 379						
3M™ Speedglas™ Natural Colour Technology	Yes	No					Yes

* The ratings (good - better - best) above refer to the products listed in this chart and should be seen as general recommendations based on differences in product comfort features and configuration options when using these selected Speedglas welding helmet series.

General guide to respiratory protection

All welding fumes contain gas and/or particles and 3M offers a wide range of personal respiratory protection, providing unequalled comfort and protection in the toughest conditions.

How to use this guide:
The concentration levels of the pollutants are affected by the ventilation conditions in the workplace.

The type of respirator you may need depends partly on **what type of pollution** you are exposed to, and also to **your working environment** and the **welding method** you use.

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

P Particle filtration **A B E** Gas filtration **S** Supplied air regulator

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

* 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.

Select the right respirator!

The choice of respirator and filter type depends on your particular working environment and individual requirements. 3M is available to support you in the correct selection, training and proper usage of these products.

3M offer a wide range of personal respiratory protection, this is a general guide based on typical welding applications. To get the full picture of all 3M respiratory protection please visit www.3M.com/PPEsafety



3M™ Disposable Respirators	9925	9928
Maintenance-free	Yes	Yes
Performance level	Organic vapours, Ozone, Particles	Organic vapours, Ozone, Particles
Nuisance level odours	Below OEL	Below OEL
NPF	10 x OEL	10 x OEL
3M™ Cool Flow Valve	Yes	Yes
Soft inner face seal ring	No	Yes
Approval	EN 149:2001 + A1:2009 FFP2	EN 149:2001 + A1:2009 FFP2

NPF = Nominal Protection Factor. Country Assigned Protection Factor (APF) should be used where available.
OEL = Occupational Exposure Limit (please use local exposure limit).



3M™ Reusable Respirators	4255	4277	6500*	7500*
Maintenance-free	Yes	Yes	No	No
Performance level	Organic Vapour, Particles	Organic Vapour, Inorganic Vapours, Acid Gas, Particles	Particles P2 (Filter 2128) Particles P3 (Filter 2138)	Particles P2 (Filter 2128) Particles P3 (Filter 2138)
Nuisance level odours	10 x OEL or 5000 ppm (whichever is lower)	10 x OEL or 1000 ppm (whichever is lower)	Below OEL	Below OEL
NPF	10 x OEL for Ozone 50 x OEL for Particles	10 x OEL for Ozone 50 x OEL for Particles	10 x OEL for Ozone 12 x OEL for Particles (P2 R) 50 x OEL for Particles (P3 R)	10 x OEL for Ozone 12 x OEL for Particles (P2 R) 50 x OEL for Particles (P3 R)
3M™ Cool Flow Valve	No	No	Yes	Yes
Face piece material	Soft, non-allergic material with textured face seal		Resilient silicone	Soft silicone
Approval	EN 405:2001 + A1:2009 FFA2P3 R D	EN 405:2001 + A1:2009 FFABE1P3 R D	EN 140:1998 (mask) EN 143:2000 + A1:2006 (filter)	EN 140:1998 (mask) EN 143:2000 + A1:2006 (filter)

NPF = Nominal Protection Factor. Country Assigned Protection Factor (APF) should be used where available.
OEL = Occupational Exposure Limit (please use local exposure limit).
ppm = parts per million
* Filter option shown here is for particle filtration. The mask can be combined to many other types of filters for both gases and vapours, please visit www.3M.eu/PPEsafety to find other filter options.



3M™ Air Delivery Systems for Welding Safety	Adflo Powered Air Respirator	Adflo High Altitude Powered Air Respirator	Versaflo Supplied Air Respirator V-500E
3M™ Speedglas™ Welding Helmet 9100 Air	EN 12941 (TH2) / NPF 50		EN 14594 (3B) / NPF 200
3M™ Speedglas™ Welding Helmet 9100 FX Air	EN 12941 (TH3) / NPF 500		EN 14594 (3B) / NPF 200
3M™ Speedglas™ Welding Helmet 9100 MP / 9100 MP-Lite	EN 12941 (TH3) / NPF 500		EN 14594 (3B) / NPF 200
3M™ Protective Visor DIN 5	EN 12941 (TH2) / NPF 50		N/A
3M™ Versaflo™ Faceshield M-107	EN 12941 (TH2) / NPF 50		EN 14594 (3B) / NPF 50
3M™ Versaflo™ Faceshield M-307	EN 12941 (TH2) / NPF 50		EN 14594 (3B) / NPF 200
3M™ Versaflo™ Faceshield M-407	EN 12941 (TH2) / NPF 50		EN 14594 (3B) / NPF 200
High altitude compensation	N/A	0-3000 meters above sea level*	N/A
Particle filter**	#837010 P SL** #836010 Prefilter***		N/A
Gas filter	#837242 - A1B1E1**** #837542 - A2****		N/A
Odour filter	#837110	#837242 - A1B1E1**** #837542 - A2****	N/A
Breathing tubes	#834008 with silencer**** #834016 self-adjusting (standard) #834017 heavy-duty rubber		#834016 self-adjusting (standard) #834017 heavy-duty rubber
Batteries****	#837630 Li-ion (standard) #837631 Li-ion heavy-duty		N/A
Filtration units	N/A	N/A	ACU-03 (wall mounted) ACU-04 (stand alone)

* 0-1500 meters above sea level with gas filter.
** Particle filter installed as standard and should always be installed, even when gas or odour filter is used.
*** The prefilter is standard to extend service life of the particle filter.
**** When using the A2 or A1B1E1 gas filter we recommend using the heavy-duty battery (#837631) and in some configurations also a breathing tube with silencer (#834008), see reference leaflet for further details.

Care and maintenance

Every day welding sparks, heat, fumes, and normal wear-and-tear grind away at your protection equipment. Therefore, we designed all 3M™ Speedglas™ Personal Protective Equipment with ease of maintenance in mind. All replacement parts can be installed by hand, without tools.



For maximum safety and comfort, make it a regular habit to check and change the following items at the intervals recommended below.

System	Component	Typically replaced	Notes
Welding Filters	Outer Protection Plate	Once a week	Replace anytime the plate becomes deeply pitted, scratched or too dirty to clean with soft cloth or lens paper.
Welding Filters	Inner Cover Plate	Once a month	Regularly clean with a soft cloth and replace if any pits or scratches occur.
Welding Helmets	Visor Plate	Every two weeks	Replace more often if visibility is reduced.
Welding Helmets	Sweatband	Once a month	Replace more often if sweatband becomes unhygienic.
Respirators	Prefilter	Once a week	Regular replacement of the prefilter extends the life of the particle filter, saving money while also helping the battery run-time.
Respirators	Particle Filter	At least every month	For Adflo respirator, replace when particle filter indicator becomes red. Otherwise, replace whenever the battery operating time becomes too short, or when "fully loaded" filter triggers low airflow alarm.
Respirators	Gas Filter	As needed	Replace the gas filter according to your work place requirements. It is not recommended to wait until you can sense odours or smells.
Respirators	Odour filter	Any time you smell unpleasant odours	Odour filter is not required if gas filter is used.
Respirators	Spark arrestor	As needed	Replace if deformed and no longer fitting well.
Respirators	Breathing Tube	If damaged, deformed or leaking any air	To extend the life of the breathing tube, use a tube cover or a heavy-duty rubber breathing tube.
Welding Helmets with Respirators	Face Seal	At least every 2 months	Replace earlier in really dirty environments or whenever the seal becomes unhygienic.

Important information. Note that higher-than-normal levels of pollutants, heat, and sparks will require more frequent replacement of components. Chart assumes minimum 4 hours usage per day. Ordering information for each series of welding helmet can be found in the Parts Directory.

Learn more about product maintenance from Speedglas YouTube channel! Scan the QR code or visit youtube.com/3MSpeedglas.



Outer protection plates

3M™ Speedglas™ Welding Filter	9100V	9100X	9100XX 9100XXi	9100 Passive	SL	100V 100S	9002V	9002NC 9002X
#52 60 00 standard	•	•	•	•				
#52 70 00 scratch	•	•	•	•				
#52 70 01 scratch+	•	•	•	•				
#52 70 70 heat+	•	•	•	•				
#72 60 00 standard					•			
#72 70 00 scratch					•			
#77 60 00 standard						•		
#77 70 00 scratch						•		
#77 70 70 heat+						•		
#42 60 00 standard							•	•
#42 70 00 scratch							•	•
#42 70 71 heat+							•	•

Inner cover plates

3M™ Speedglas™ Welding Filter	9100V	9100X	9100XX 9100XXi	9100 Passive	SL	100V 100S	9002V	9002NC 9002X
#52 80 05	•							
#52 80 15		•						
#52 80 25			•					
#42 80 00					•	•	•	
#42 80 10								•
#12 60 00				•				

Sweatband

3M™ Speedglas™ Welding Helmet	9100 Series	SL	100 Series	9000 9002NC	DIN 5 Visor	Versaflo M-Series
#16 80 15	•					
#16 75 20 (towelling)		•	•	•		
#16 80 00 (leather)		•	•	•		
#16 80 10 (fleecy cotton)		•	•	•		•
#16 80 12 (fleecy cotton, short)		•	•	•	•	

Visor plates

3M™ Speedglas™ Welding Helmet	9100 FX	9100 FX-Air	9100 MP 9100 MP-Lite	9000 FlexView
#52 30 00 standard		•	•	
#52 30 01 anti-fog	•	•	•	
#42 30 00				•



3M™ Peltor™ Hearing Protection for welding helmets*

PELTOR™



Description/ Recommendation	H505B	X1 Earmuffs	X2 Earmuffs	X3 Earmuffs	X4 Earmuffs	X5 Earmuffs	LEP-100 EU
Design	Neckband	Helmet mounted	Helmet mounted	Helmet mounted	Slim, fluorescent, helmet mounted	Helmet mounted	Level dependent ear plug
SNR	24dB	26dB	30dB	32dB	32dB	36dB	32dB / 38dB
Part No	#H505B	#X1P3	#X2P3	#X3P3	#X4P3	#X5P3	#LEP-100
With 3M™ Welding Helmet							
Speedglas 9100	•						•
Speedglas 9100 Air	•						•
Speedglas 9100-QR		•	•	•	•	•	•
Speedglas 9100 FX	•						•
Speedglas 9100 FX-Air							•
Speedglas 9100 MP/ MP-Lite**		•	•	•	•	•	•
Speedglas 100	•						•
Speedglas 100-QR							•
Versaflo M-series **	•	•	•	•	•	•	•

* These recommendations are general based on individual tests and might differ to personal preferences. The selection of 3M™ Peltor™ Hearing Protection is related to usage with 3M™ Welding Helmets, for a complete product overview please visit www.3M.eu/PPEsafety.

** Please add assembly parts #Z3AF/2 when ordering X-series ear muffs for the headtops 9100MP/MP-Lite and Versaflo M-Series.

A selection of 3M™ Ear Plugs**



Description	E-A-R Classic	3M 1100	E-A-R Pulsar	E-A-R Ultrafit	3M NoTouch	E-A-R Ultrafit X
Design	Disposable roll-down earplug (small/large sizes)	Disposable roll-down earplug (high attenuation)	Ergonomic, wear Behind-the-Head	Reusable pre molded earplug with cord	Soft foam earplugs with cord and stem (easy and hygienic)	Corded, pre molded earplugs
SNR	28dB	37dB	23dB	32dB	32dB	35dB
Part No	#PP-01-002	#1100F	#PN-01-010A	#UF-01-100	#PN-01-004	UF-01-014

** The selected 3M™ E-A-R™ Hearing Protection are based for usage in typical welding environment. The table only shows a selection of 3M™ Hearing Protection, for a complete product overview please visit www.3M.eu/PPEsafety.



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