

# 3M™ PPE solutions for metalworking industries.



# 3M™ PPE solutions for metalworking industries

## Brand quality for professional work.

In the metal industry, employees are exposed to a wide variety of hazards that can lead to serious injury and long-term health effects. Consequently, the primary concern is always the health and safety of the employee working in the workplace. All over the world, industries trust the 3M brand and the quality and reliability associated with it.

For a quick and targeted overview, we have put together a selection of Personal Protective Equipment (PPE) solutions for the metal industry, which should help decision-makers find the individual solutions they need.



Connected Safety



Science of Safety

## Workplace hazards.



Airborne  
hazards



Noise



Falling  
objects



Eye/Face  
hazards



Working  
at height



Welding



Hand-Arm  
Vibration (HAV)

### 3M product selection guide:

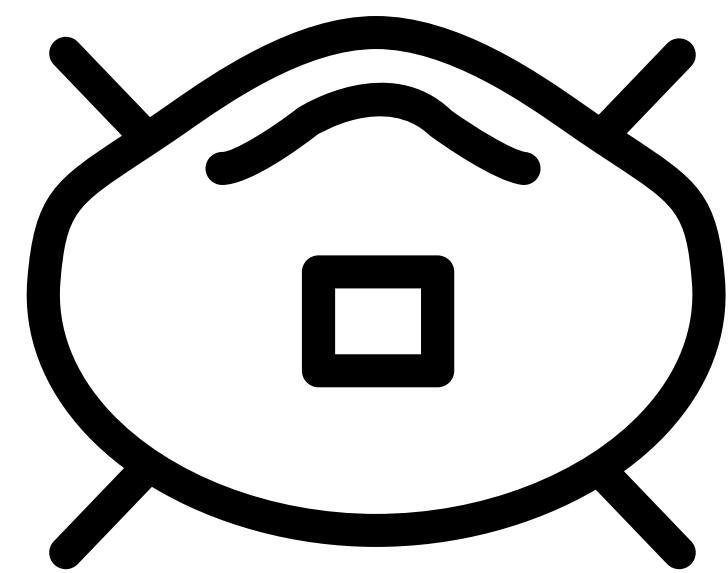
This guide is only an outline. It is designed to help focus on the most appropriate products in the 3M range for various applications and hazards. It should not be used as the only means of selecting a product. It is ultimately the responsibility of the employer to select the most appropriate PPE and level of protection required based on a full risk assessment. Details regarding performance and limitations are set out on the product packaging and data sheets.

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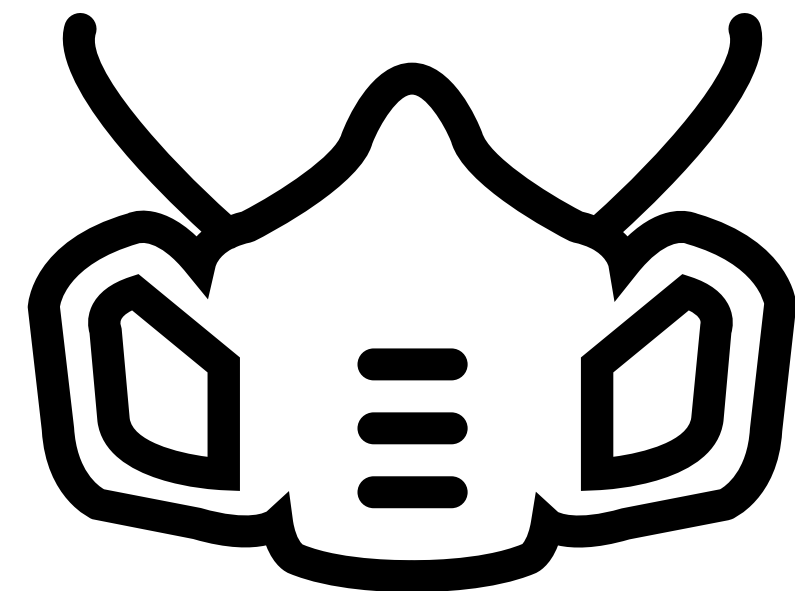
# Airborne hazards

It is important to understand the different levels of exposure to airborne hazards – dust, gases, vapours, smoke and fumes. In particular, it is crucial to determine which hazards workers are exposed to, for how long and in what concentrations.

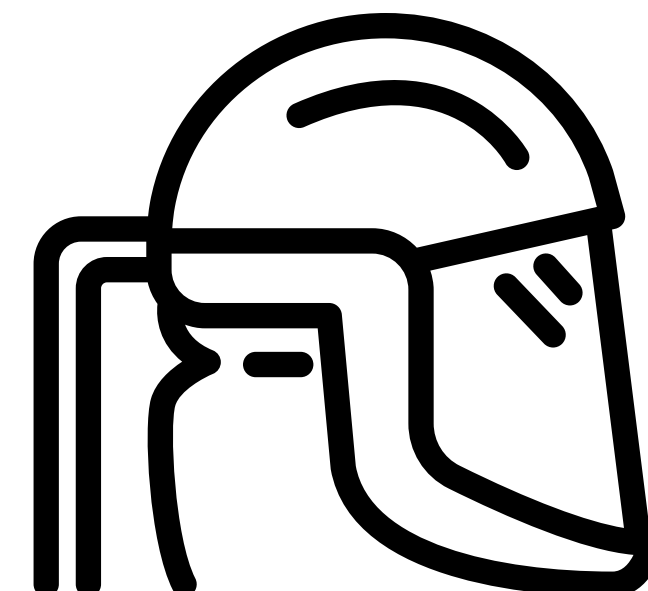
This will determine the types of controls needed - RPE but also ventilation systems or reducing exposure times etc.



Disposable  
Respirators



Reusable  
Respirators



Powered and  
Supplied Air  
Respirators



Welding  
Protection

**click here & learn more ...**

- [Airborne Hazards by metal substrates](#)
- [Link to hazard awareness bulletins](#)
- [RPE Selection Criteria](#)
- [Types & Styles of 3M Respirators](#)
- [Overview of DR, RR and P&SA](#)

## Applications

### Primary Metals

- Raw material handling and preparation
- Anode Production/Repair
- Pyrometallurgy (thermal reduction - Furnaces, Smelting and Refining)
- Casting to semi-finished product
- Rolling mill
- Foundry/Casting

### Metal fabrication

- Forming, Bending/Rolling
- Extruding, Drawing
- Forging
- Cutting
- Machining
- Deburring
- Brazing, Soldering
- Welding, air gouging
- Grinding, Weld refinement, Edge bevelling
- Heat treatment

### Surface Preparation

- Descaling, mechanical, shot-blasting
- Degreasing, chemical cleaning
- Pickling (Alkali, Acid Etching, Surface Prep)

### Metal finishing:

- Polishing (Electroplating, chemical milling, etching, phosphating, metalising, hot dip galvanising)

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# Airborne hazards

## 3M™ Disposable Respirators

Disposable Respirators from 3M combine ergonomic design for comfort with proprietary technologies that help deliver easier breathing and comfortable protection against particulate hazards.



**3M™ Disposable Respirator  
FFP2, Valved, 8825+**

[Link to the website](#)



**3M™ Disposable Respirator  
FFP3, Valved, 8835+**

[Link to the website](#)



**3M™ Aura™ Disposable Respirators  
9300+ Series - FFP1-FFP3**

[Link to the website](#)



**3M™ Speciality Disposable Respirators  
incl. Activated carbon**

[Link to the website](#)



### 3M™ Fit Test Kits

The performance of tight fitting respirators relies on achieving a good seal between the facepiece of the respirator and the wearer's face. A fit test should ideally be conducted during the initial selection of RPE, before an individual wears the respirator in a hazardous environment. A fit test can help the wearer select the right size of facepiece as aid training in correct donning and use. There are a number of different methods of fit testing respirators, including qualitative methods using the 3M FT-10 and FT-30. Hearing protective and eyewear protective equipment can also be fit tested using other methods.

[More information and details about fit testing and the 3M™ FT-10 and FT-30 fit test kits can be found on our website.](#)

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# Airborne hazards

## 3M™ Reusable Respirators

Reusable Half Face and Full Face Respirators can be used for protection against particulate, gas and vapour hazards. There is a range of filter cartridges available to combine with the facepiece according to your hazards.



**3M™ Secure Click™ Half Facepiece  
Reusable Respirator with Speaking  
Diaphragm HF-800**

[Link to the website](#)

### 3M™ Secure Click™ Reusable Respirator Particulate Filter Series



**3M™ Secure Click™ Hard Case  
P3 R Particulate Filter D9035**

[Link to the website](#)



**3M™ Secure Click™ Particulate Filter  
P3 R, D3135**

[Link to the website](#)

### 3M™ Secure Click™ Reusable Respirator Gas & Vapour Filter Series



**3M™ Secure Click™ Cartridge  
A1B1E1K1P3 R D8094, with Dual Flow**

[Link to the website](#)



**3M™ Secure Click™ Cartridge  
A2P3 R D8095, with Dual Flow**

[Link to the website](#)



### 3M™ Select and Service life software

3M have designed software to help you estimate how frequently 3M™ Gas and Vapour Cartridges should be replaced. You can then use this information to establish a cartridge change schedule. The Respirator Selection is designed to help you choose the appropriate 3M Respirator and Cartridge for your work environment. The Service Life Calculation is designed to help you estimate the service life of selected 3M Gas and Vapour Cartridges.

[Learn More](#)

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# Airborne hazards

## 3M™ Reusable Respirators

Reusable Half Face and Full Face Respirators can be used for protection against particulate, gas and vapour hazards. There is a range of filter cartridges available to combine with the facepiece according to your hazards.



**3M™ Reusable Half Face Mask,  
Series 6500QL**

[Link to the website](#)



**3M™ Reusable Full Face Mask,  
Series 6000**

[Link to the website](#)

### 3M™ Reusable Respirator Particulate Filters 6000 Series



**3M™ Particulate Filters  
P3 R, 6038**

[Link to the website](#)



**3M™ Gas, Vapour and Particulate  
Filter A2P3 R, 6095**

[Link to the website](#)

### 3M™ Reusable Respirator Filter Series



**3M™ Gas and Vapour Filters,  
ABE1, 6057 + 5935 + 501**

[Link to the website](#)



**3M™ Gas, Vapour and Particulate Filter  
A1B1E1K1P3 R + formaldehyde, 6092**

[Link to the website](#)



### 3M™ Select and Service life software

3M have designed software to help you estimate how frequently 3M™ Gas and Vapour Cartridges should be replaced. You can then use this information to establish a cartridge change schedule. The Respirator Selection is designed to help you choose the appropriate 3M Respirator and Cartridge for your work environment. The Service Life Calculation is designed to help you estimate the service life of selected 3M Gas and Vapour Cartridges.

[mehr Info online](#)

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# Airborne hazards

## 3M™ Versaflo™ Powered and Supplied Air Respirators

Powered and supplied air respirator systems offer comfortable protection against multiple hazards and their ease-of-use helps enable improved productivity. The Powered Respirator or the Supplied Air system delivers filtered air into a variety of headtops and helmets.

to be combined  
with 3M headtops  
see next page

NEW - to be combined  
with 3M tight fitting  
facepiece respirators



**3M™ Versaflo™ Powered Air Starter Kit, TR-315E**

[Link to the website](#)



**3M™ Versaflo™ Powered Air Turbo Starter Kit, TR-619E**

[Link to the website](#)



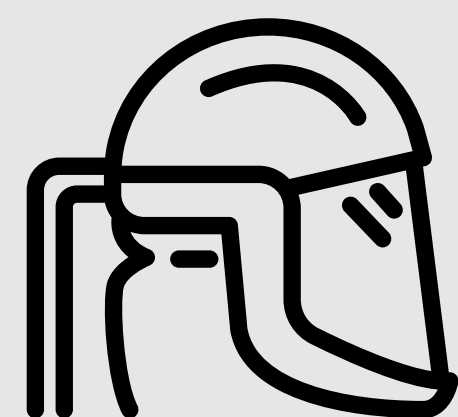
**3M™ Versaflo™ Powered Air Turbo Starter Kit, TR-819E**

[Link to the website](#)



**3M™ Versaflo™ Supplied Air Systems, V Series**

[Link to the website](#)



### Versatility

- Suitable for variable hazards
- Different protection factors
- Options for head, eye, face & hearing protection
- Suitable for a wide range of wearers (incl. those with facial hair)
- Lasts a long time & can be adjusted for each wearer
- Can be combined with comms

### Comfort

- Cooling airflow – constant flow, with V-100E\* option
- Warming airflow – V-200E\* option
- Minimal breathing resistance

\* see 3M™ Versaflo™  
Supplied Air Systems, V Series

### Protection

- Highest levels of air-purifying NPF/APF
- System can incorporate multiple elements of PPE: respiratory, eye, face, head, hearing, radiant heat, molten metal splash
- Versaflo cleaning kit for TR-600 and TR-800 (TR-653) available

### Cost

- Low total cost of ownership
- Medium initial investment

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# Airborne hazards

## 3M™ Versaflo™ Headtops – M-Series

3M™ Versaflo™ M Series Headtops feature lightweight, compact and well-balanced faceshields and helmets that can offer integrated protection from a range of respiratory, head, eye and hearing hazards, with offerings for neck and shoulder coverage. Their versatility makes them suitable for many applications. To be combined with 3M Versaflo Powered Respirators.

to be combined with  
3M™ PELTOR™  
Hearing Protection and  
Communication Headsets.



**3M™ Versaflo™ Faceshield  
with Face Seal M-206/M-207**

[Link to the website](#)



**3M™ Versaflo™ M-Series Helmet  
with Face Seal, M-306/M-307**

[Link to the website](#)



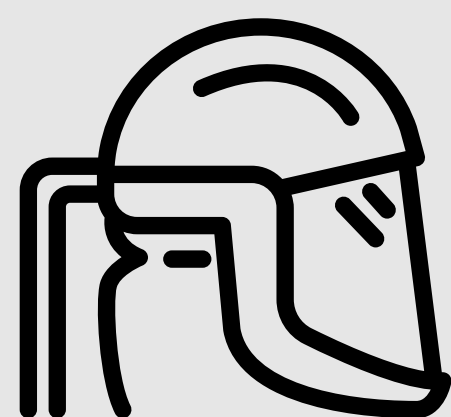
**3M™ Versaflo™ M-Series Helmet with  
highly durable shroud, M-406/M407**

[Link to the website](#)



**3M™ Versaflo™ High Heat  
Helmet Accessories, M-Series**

[Link to the website](#)



### Versatility

- Suitable for variable hazards
- Different protection factors
- Options for head, eye, face & hearing protection
- Suitable for a wide range of wearers, incl. those with facial hair
- Lasts a long time & can be adjusted for each wearer
- Can be combined with 3M™ PELTOR™ communication solutions.

### Comfort

- Minimal breathing resistance

### Protection

- Highest levels of air-purifying NPF/APF
- System can incorporate multiple elements of PPE: respiratory, eye, face, head, hearing, radiant heat, molten metal splash

### Cost

- Low total cost of ownership
- Medium initial investment

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# Airborne Hazards by metal substrates

Grinding, cutting and crushing processes, as well as dust, fumes, mists and vapours all have one hazard in common: inhalation of a substance that can cause adverse health effects to the human body.  
It’s critical to determine the exact type of airborne hazard to select the right filter combination for your RPE.

	Primary Metal	Metal fabrication, Machinery, Transportation
Particulates	<b>Iron &amp; Steel:</b> Ore, coal/coke, mineral dusts, Metal dusts / fume, Polycyclic Aromatic Hydrocarbons (PAHs) / Coal Tar Pitch Volatiles (CPTV) / Man-Made Mineral Fibre (MMMF) <b>Aluminium:</b> Fluoride dusts. Dusts, Metal dusts / fume, PAHs / CPTVs, Silica, MMMFs <b>Other metals:</b> Dusts, Metal dusts / fume, acid mists Oil mists	<b>General:</b> Dusts, Metal dusts / fume, Silica, Mists (painting) <b>Welding:</b> Metal fume, Silica <b>Machining / equipment:</b> Oil mists / Metal working fluids
Gases & Vapours	<b>Iron &amp; Steel:</b> PAHs / CPTVs, CO*, CO <sub>2</sub> *, SO <sub>2</sub> , NH <sub>3</sub> <b>Aluminium:</b> HF, SO <sub>2</sub> , PAHs / CPTVs <b>Other metals:</b> CO, CO <sub>2</sub> , SO <sub>2</sub> , Acid gas, Arsine <b>Metal Casting:</b> Formaldehyde, Isocyanates**, Amines, Furfuryl alcohol, Phenols	<b>Welding:</b> NOx*, Ozone, CO, inert shielding gases, gases and vapours from surface contaminants <b>Surface treatment:</b> Acid gas, Alkali vapours, Chemical splash, HCl, Cyanide, NH <sub>3</sub> <b>Surface preparation:</b> Acid gas, Alkali Vapours, Solvents <b>Paints / Foaming:</b> Isocyanates**, Solvents
Oxygen deficiency	Coal / coke stores, Rusting metal, Displacement by welding gases / inert gases / other gases, Confined Spaces	

\* for occurrence of substances that can’t be filtered - like CO, CO<sub>2</sub>, NOx, please use supplied air respirators or contact your 3M application engineer.  
\*\* for occurrence of Isocyanates, please contact your 3M application engineer

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# Airborne hazards – RPE Selection Criteria

To protect, RPE must be both “Adequate” and “Suitable”...

## ADEQUATE

“Adequate” – Is it right for the hazard, does it have the potential to protect?

Hazard – filter selection for air-purifying  
or atmosphere supplying (SA)

Exposure levels vs. Occupational Exposure Limits (OEL)  
➡ level of protection

Other hazards / PPE requirements

- Helmets
- Radiant heat
- Eye and Face
- Decreasing OELs on PAHs and Metals ➡ higher levels of respiratory protection

## SUITABLE

“Suitable” – Is it right for the wearer, i.e.  
compatible with the individual, environment & task?

Task

- Duration of wear
- Compatibility with other PPE
- Communication requirements

Environment

- Ambient conditions – heat, humidity, etc.
- Care & Maintenance

Worker

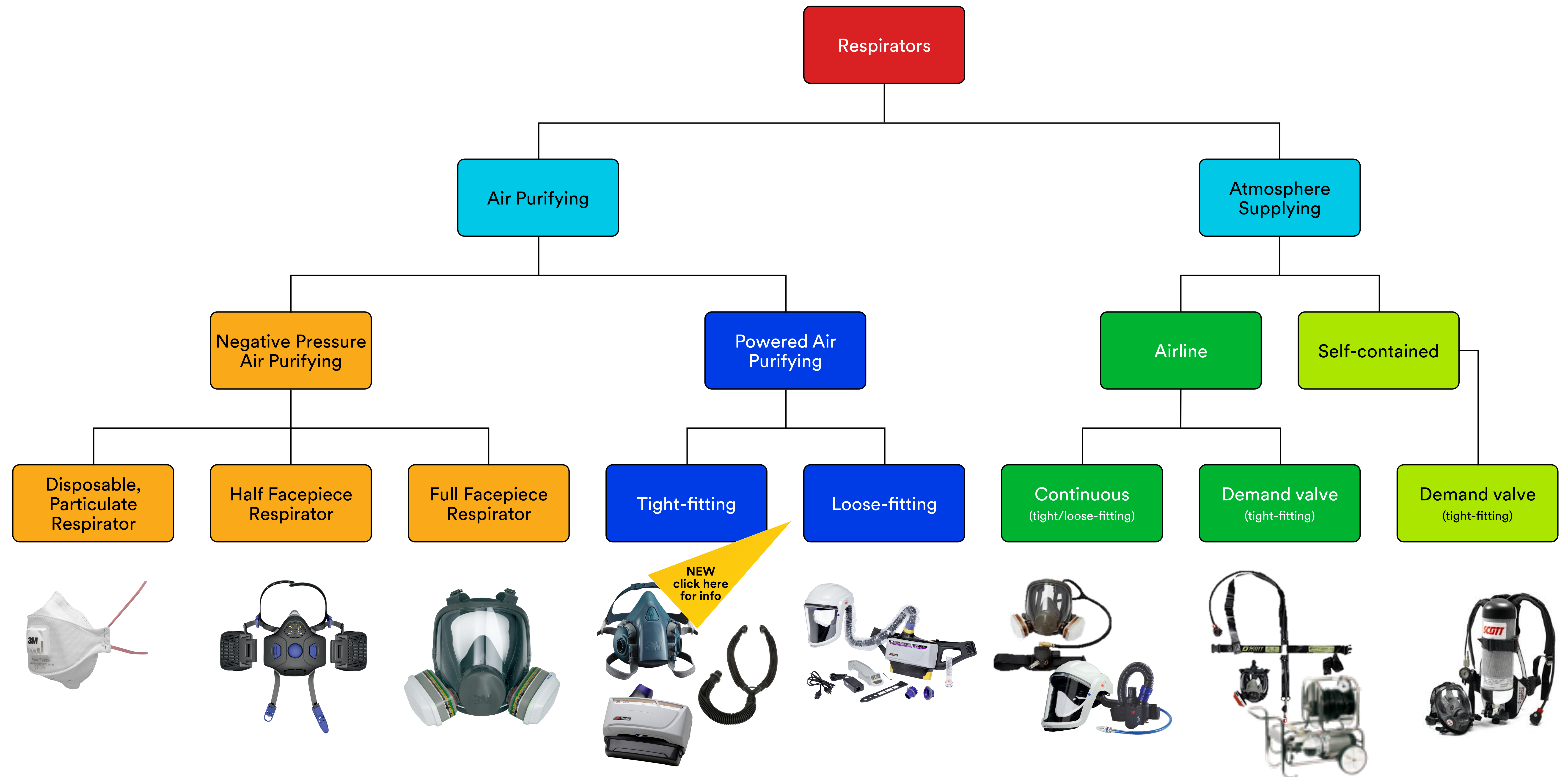
- Fit performance / Size options
- Workers with facial hair / fit testing
- Worker preference (comfort, style, appearance, etc. .)

Other

- Cost: initial cost vs. total cost of ownership
- Availability, spare parts, ease of use, durability, etc.

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# Airborne hazards – Types & Styles of 3M Respirators



## 3M product selection guide:

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# Airborne hazards – Overview of DR, RR and P&SA



## Disposable



## Reusable



## Powered / Supplied Air

### Simplicity

- Peace-of-mind: factory fresh, no ambiguity
- NO storage / cleaning or decontamination / maintenance / spare parts

### Usability

- Minimal complexity
- Flexible protection — gas & vapours/particulate
- Designed to fit a wide range of face shapes & sizes
- Engineered to work well with other PPE
- Cost-effective

### Versatility

- Suitable for variable hazards
- Different protection factors
- Options for head, eye, face & hearing protection
- Suitable for a wide range of wearers - incl. those with facial hair
- Lasts a long time & can be adjusted for each wearer
- Can be combined with comms

### Comfort

- Broad range of shapes
- Lightweight
- Easy to breathe through
- Designed to work well with other PPE

### Comfort

- Pliable silicone face seals on most models
- Multiple sizes
- Well-balanced filters

### Comfort

- Cooling airflow – constant flow, with V-100E\* option
- Warming airflow – V-200E\* option
- Minimal breathing resistance

### Protection

- NPF/APF of FFP3 is equal to many RR and P&SA products
- FFP1/2/3 levels available

### Protection

- Class 1 full face mask option: 3M™ 6000

### Protection

- Highest levels of air-purifying NPF/APF
- Supplied Air options as required for specific hazards / certain situations
- System can incorporate multiple elements of PPE: respiratory, eye, face, head, hearing, radiant heat, molten metal splash

### Cost

- Low initial investment

### Cost

- Low-medium total cost of ownership
- Low-medium initial investment

### Cost

- Low cost of ownership
- Medium initial investment

Simple, convenient, no cleaning & maintenance solution for particulate hazards

For single or multiple respiratory hazards, where a more robust or durable solution is required

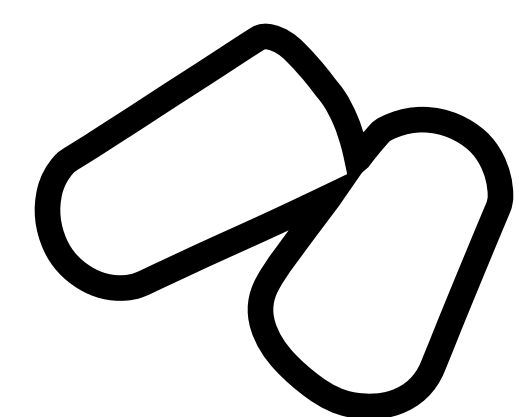
For when multiple respiratory and other hazards and when higher levels of protection and worker comfort are required

\* For V-100E and V-200E please see here: [3M™ Versaflo™ Supplied Air Systems, V Series](#)

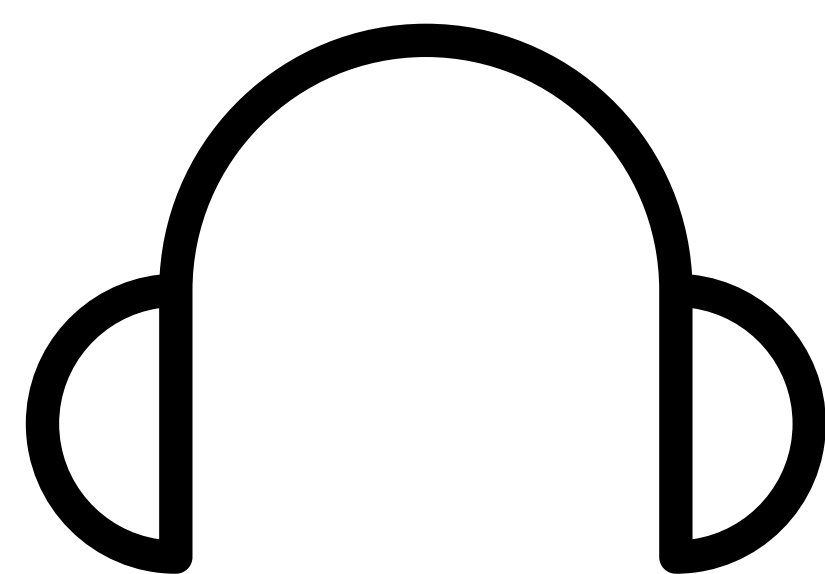
# Noise Hazards

Loud noise from many industrial processes can cause temporary and even permanent hearing loss. Noise-induced hearing loss isn't obvious – it's gradual damage that builds up. Sometimes the need for hearing protection is underestimated – until it's too late.. Metal industry processes often involve hand-held power tools and heavy machinery moving large amounts

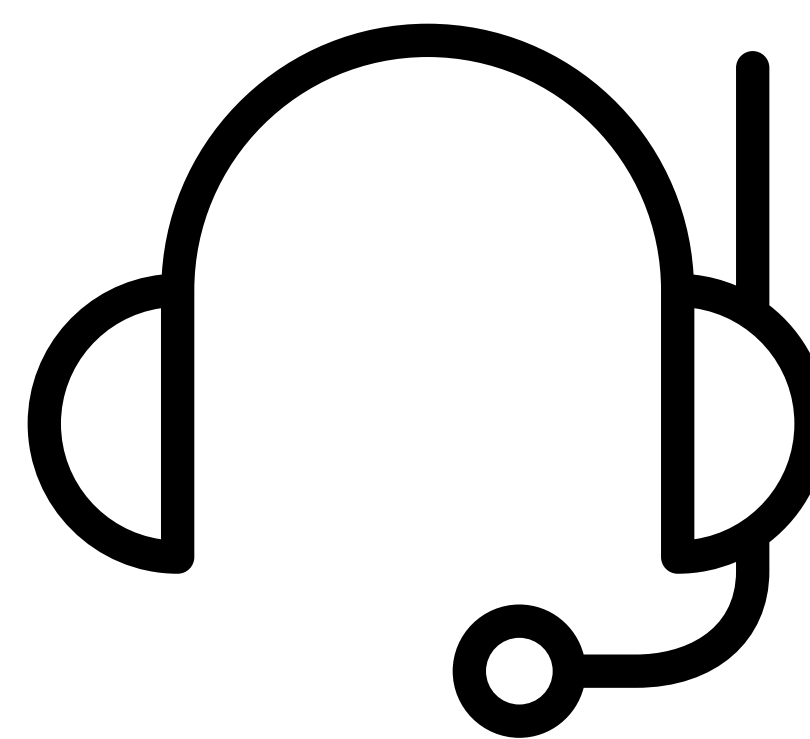
of material in difficult spaces – cranes, forklift trucks and loaders operate continuously. In situations where high attenuating hearing protection is required, isolation of the wearer is a real risk. Combining hearing protection with communication solutions offers the wearer increased situational awareness when required.



In-ear Protective Hearing Devices – 3M™ Earplugs



Over-the ear and other Hearing Protective Devices – 3M™ Earmuffs and banded earplugs



3M™ PELTOR™ Communication Solutions

## click here & learn more ...

- [Noise levels by industries](#)
- [Noise hazards - Hearing Protection Selection Criteria](#)
- [Types & Styles of 3M Hearing Protection](#)
- [Overview Earplugs, Earmuffs and Communication](#)
- [Guide to the PPE Regulation \(EU\) 2016/425](#)
- [3M™ E-A-Rfit™ Dual-Ear Validation System](#)
- [Selection Guidance for Hearing Protection](#)

## Applications

### Primary Metals

- Raw material handling and preparation
- Anode Production / Repair
- Pyrometallurgy (thermal reduction - Furnaces, Smelting, Refining)
- Hydrometallurgy (chemical leaching)
- Foundry / Casting

### Metal fabrication

- Bending, Rolling
- Forging
- Cutting
- Machining
- Deburring
- Welding, Air gouging

### Surface Preparation

- Descaling, mechanical, laser, shot-blasting
- Degreasing, Chemical cleaning

### Metal finishing:

- Polishing (Electro, Chemical milling, etching, phosphating, metalising)

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# Noise Hazards

## In-ear Protective Hearing Devices – 3M™ E-A-R™ Earplugs

3M provides a wide range of earplugs to suit the preference and need of your workforce. Ranging from disposable foam earplugs to push-to-fit and reusable earplugs – all available in a variety of styles and varying levels attenuation.



**3M™ E-A-R™ Classic™  
Earplugs**

[Link to the website](#)



**3M™ E-A-R™ Flexible Fit HA  
Earplugs**

[Link to the website](#)



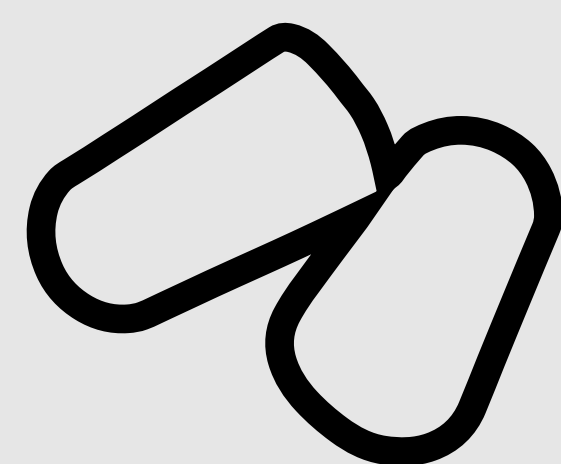
**3M™ E-A-R™ Ultrafit™  
Earplugs Coded**

[Link to the website](#)



**3M™ E-A-R™ Ultrafit™ 20  
Earplugs Coded**

[Link to the website](#)



### Ease of use

- Very light-weight, small and easy to carry
- Roll-down through to push-to-fit, premoulded (re-usable) and banded plug options

### Comfort

- Range of types, shapes, sizes and materials
- More comfortable to wear for extended time period, some products are more suited for use in hot working environments

### Protection

- Wide range of attenuation options from low/moderate to high/very high to meet most of industry needs
- Easy to combine with other PPE
- Good attenuation relies on good fitting each and every time the product is used.
- Compatible with 3M™ Earfit Dual-Ear Validation System

### Hygiene / Care & Maintenance

- Single use disposable through to reusable and cleanable options
- Push-to-fit earplugs ideal for use with unclean hands

### Cost

- Low initial investment

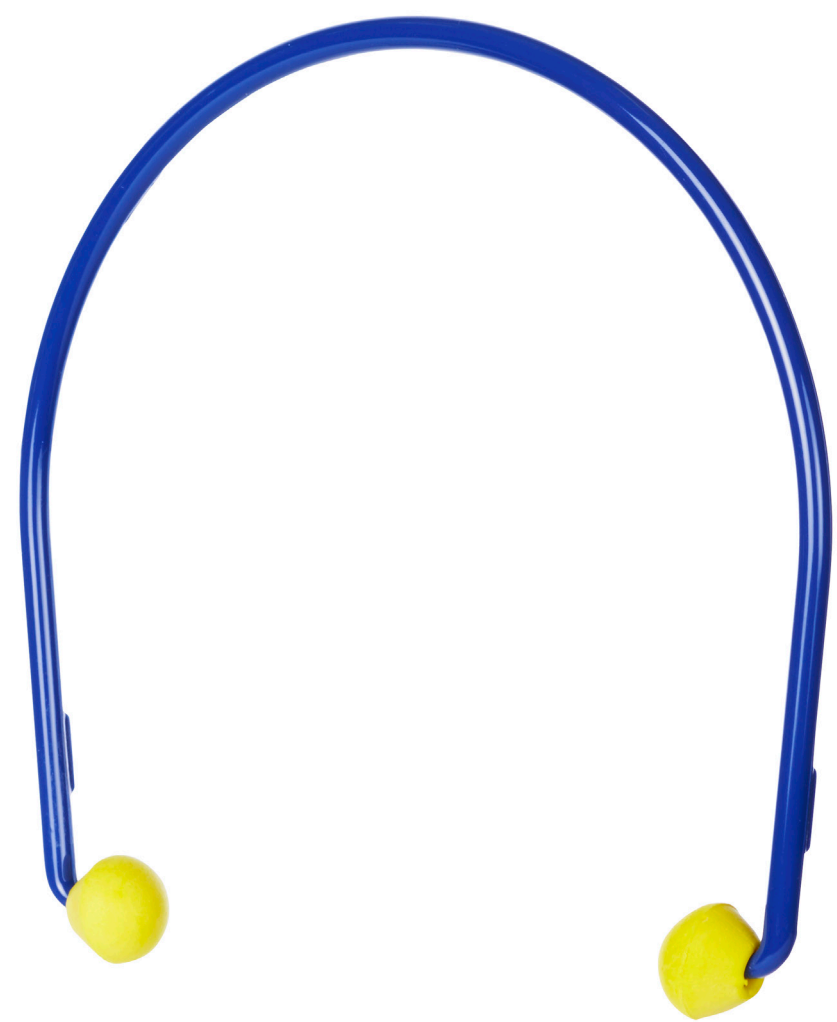
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# Noise Hazards

## Over-the-ear and other Protective Hearing Devices – 3M™ PELTOR™ Earmuffs

Earmuffs are a popular choice in hearing protection due to their ease of use and consistent fit. Available in headband, neckband, helmet attached and folding models, earmuffs help meet hearing protection needs in many common applications.



**3M™ E-A-R™ E-A-Rcaps™**  
Banded Ear Plugs,  
10/Box, EB-01-000

[Link to the website](#)



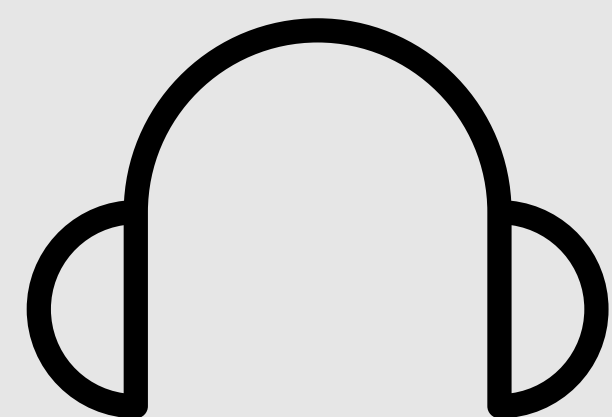
**3M™ PELTOR™ Earmuffs**  
X Series

[Link to the website](#)



**3M™ PELTOR™ Earmuff**  
X Series, Helmet Mounted

[Link to the website](#)



### Ease of use

- Easy to don / fit
- Different versions, Headband, neckband (for greater compatibility with other PPE), foldable (for ease of carry and helmet mounted for attachment to a wide range of helmets)

### Protection

- Consistent and reliable attenuation, but care needs to be taken when worn with other PPE, in particular safety eyewear

### Comfort

- In cooler working environments can be more comfortable to wear, particularly for long durations.
- Distinguished design, easy to adjust and use by majority of wearers, particularly those who do not like in-ear devices.

### Hygiene / Care & Maintenance

- Designed to be cleaned and reused
- Replacement parts available to extend service life and maintain attenuation

### Cost

- Low total cost of ownership

# Noise Hazards

## 3M™ PELTOR™ Active Hearing Protection

3M™ PELTOR™ Active hearing protection solutions will provide reliable hearing protection whilst enabling situational awareness - e. g. moving vehicles, warning signals as well as enabling communication via Bluetooth headsets.



**3M™ PELTOR™ EEP-100 EU  
Electronic Earplugs**

[Link to the website](#)



**3M™ PELTOR™ ProTac III  
Headsets**

[Link to the website](#)



**3M™ PELTOR™ LiteCom  
Headsets**

[Link to the website](#)



**3M™ PELTOR™ WS™ LiteCom Plus  
Headsets**

[Link to the website](#)



### Ease of use

- Easy to don / fit
- Headband option for use on their own, plus convenience of neckband and helmet mounted options \*

### Protection

- Consistent and reliable attenuation, but care needs to be taken when worn with other PPE, in particularly safety eyewear

### Comfort

- In cooler and cold working environments can be more comfortable to wear, particularly for long durations.
- Easy to adjust and can be worn by most workers, including those with ear conditions, or ear canals that make earplugs difficult to use \*

\* Not relevant to EEP-100EU

### Hygiene / Care & Maintenance

- Designed to be cleaned and reused
- Replacement parts available to extend service life and maintain attenuation

### Cost

- Low total cost of ownership

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# Noise Hazards by industry

Primary Metal	dB(A)
Background	85 – 90
Coke grinding	100
Crust breakers	100
Sintering	84 – 115
Blast furnace	82 – 108
Steel making	80 – 102
Rolling mill	84 – 120
Foundry - Shake out, Abrasive blasting	90 – 100
Foundry - Fettling, Cleaning	100 – 120

Sources:

<https://www.hse.gov.uk/pUbns/priced/hsg129.pdf>[https://www.hse.gov.uk/foi/internalops/sims/manuf/3\\_01\\_14.htm](https://www.hse.gov.uk/foi/internalops/sims/manuf/3_01_14.htm)<http://www.hse.gov.uk/welding/noise-vibration.htm><https://www.ijcmas.com/vol-4-1/S.B.Parameswarappa%20and%20J.%20Narayana.pdf>

Fab Metal, Machinery, Transportation	dB(A)
Background	85 – 95
Forging / Stamping	>100
Welding / TIG	<75
Welding / MMA	85 – 95
Welding / MIG	95 – 102
Plasma arc cutting	98 – 105
Flame cutting	<100
Arc air gouging	104 – 125
Grinding	85 – 109
Hammering, saw cutting, guillotine, turning	90 – 105
Pressing (blanking and punch)	95 – 120
Riveting	100 – 110
Deslagging, Chipping	>105
Needle guns	103
Abrasive blasting	95 – 135
Water jetting	108 – 111

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# Noise Hazards – Hearing Protection Selection Criteria

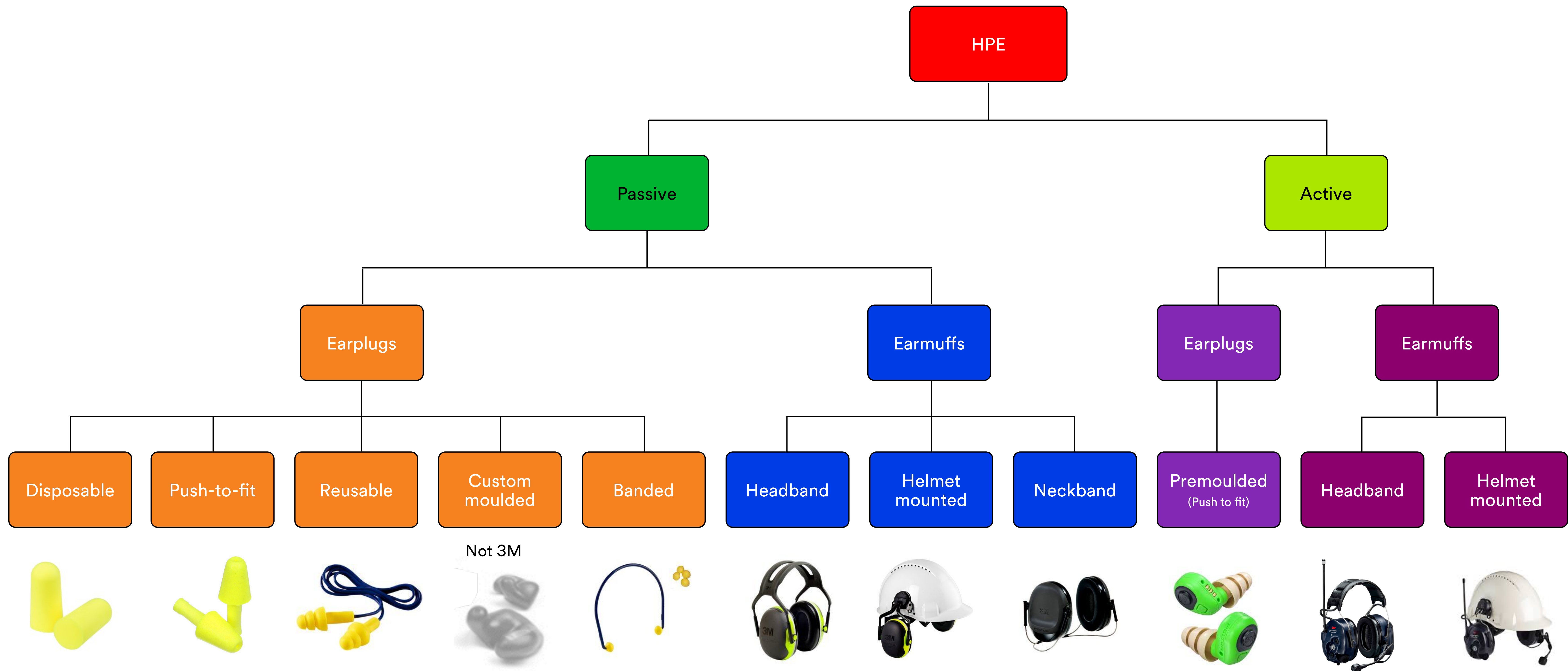
To protect, hearing Protection must be both “Adequate” and “Suitable”...

<b>ADEQUATE</b> “Adequate” – Is it right for the hazard, does it have the potential to reduce noise levels by right amount?
<b>Excessive exposure at ear type: time or peak</b>
<b>Exposure levels vs . lower and upper exposure action Values &amp; Limit Value</b>
<b>Attenuation required</b>
<b>Derating value (see local regulations)</b>

<b>SUITABLE</b> “Suitable” – Is it right for the wearer, i.e. compatible with the individual, environment & task?
<b>Task</b> <ul style="list-style-type: none"><li>• Duration of wear</li><li>• Compatibility with other PPE</li><li>• Communication requirements</li></ul>
<b>Environment</b> <ul style="list-style-type: none"><li>• Ambient conditions – heat , humidity , etc .</li><li>• Care &amp; Maintenance</li><li>• Situational awareness requirements</li></ul>
<b>Wearer</b> <ul style="list-style-type: none"><li>• Fit performance / Size options</li><li>• Worker preference (comfort, style, appearance, etc..)</li></ul>
<b>Other</b> <ul style="list-style-type: none"><li>• Cost: initial cost vs. total cost of ownership</li><li>• Availability, spare parts, ease of use, durability, etc.</li></ul>

3M™ PPE solutions for metalworking industries

# Noise Hazards – Types & Styles of 3M Hearing Protection



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# Noise Hazards – Overview of Earplugs, Banded Plugs and Earmuffs



## Earplugs and Banded Plugs



## Earmuffs



## Communication solutions

### Ease of use

- Very light, small and easy to carry
- Roll-down earplugs - soft foam is rolled into a tiny cylinder then inserted into the ear
- Push-to-fit earplugs - soft foam tips with a flexible stem
- reusable earplugs - washable earplugs with flexible, elastic flanges attached to a stem
- Banded plugs: Convenient, easy to use, ideal for intermittent use

### Comfort

- In hot working environments can be more comfortable
- to wear, particularly for long durations
- Earplugs: range of types, shapes, sizes and materials to suit most ear canals and the needs of most wearers
- Banded earplugs: Lightweight, low pressure on ear and head, can be worn under the chin, behind the head and over the head (model dependent)

### Protection

- Very wide range of attenuation options – can provide the highest levels of attenuation
- Good compatibility with other PPE
- Effective attenuation relies on achieving consistently good fit on each use

### Hygiene / Care & Maintenance

- Single use disposable through to reusable and wipe clean options
- Push-to-fit earplugs for use with unclean hands
- Banded earplugs have a reusable band with replacement ear tips

### Cost

- Low initial cost

Simple, small, lightweight and convenient – wide range of attenuation options

### Ease of use

- Easy to don / fit. Most people learn to properly use them with little difficulty
- Different versions; Headband, neckband, foldable (for ease of carry) and helmet mounted for attachment to a wide range of helmets

### Comfort

- In cooler and cold working environments can be more comfortable to wear, particularly for long durations
- Distinguished design, easy to adjust and use by majority of wearers, particularly those who do not like in-ear devices

### Protection

- Consistent and reliable attenuation, but care needs to be taken when worn with other PPE, in particular safety eyewear
- Quickly put on and take off hearing protection as needed

### Hygiene / Care & Maintenance

- Removable and cleanable soft foam ear cushions
- Hygiene kits available for more comfortable, protected and longer use

### Cost

- Long lasting product

Durable and reliable protection that is easy to use. Compatible with other PPE

### Ease of use

- Different versions: level-dependent for ambient hearing or hearing protection with integrated radio
- Noise-cancelling microphone options
- Different versions; Headband, neckband, foldable (for ease of carry) and helmet mounted for attachment to a wide range of helmets

### Comfort

- First-class communication and hearing protection in one
- Different models for different situations
- In built radio, connection to external radio and Bluetooth® options

### Protection

- Constant and reliable attenuation with communication
- Different levels of attenuation
- In-ear solutions & over the ear solutions
- Optimized protection through ambient hearing (hearing protection does not have to be removed)

### Hygiene / Care & Maintenance

- Removable and cleanable soft foam ear cushions
- Hygiene kits available for more comfortable, protected and longer use
- Wind & waterproof microphone protection

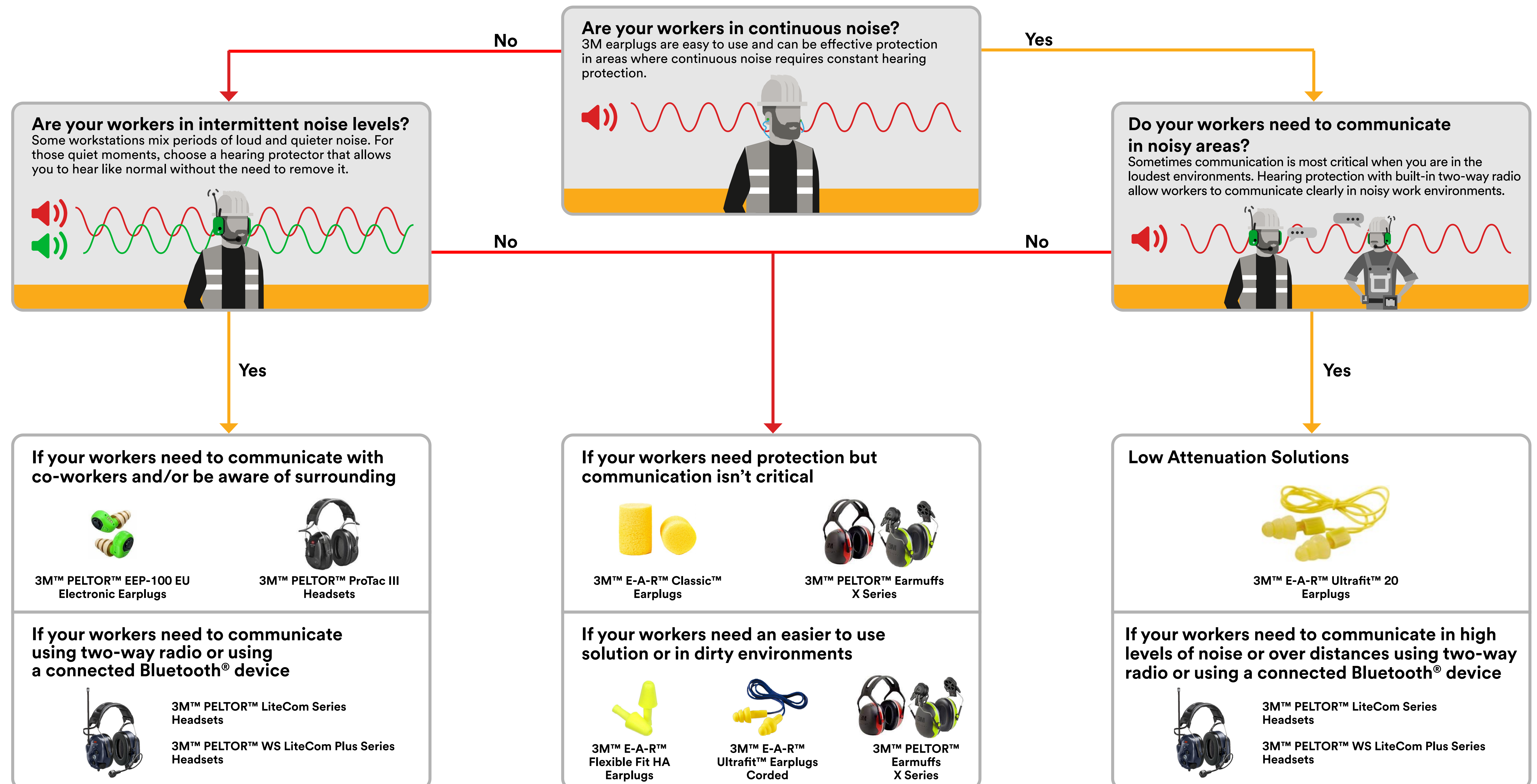
### Cost

- Investment pays for itself after a short time through increased productivity (ROI tool available)

Hearing protection with precise communication even in noisy areas thanks to functionality, comfort and modern design.

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# Noise Hazards – Types & Styles of 3M Hearing Protection



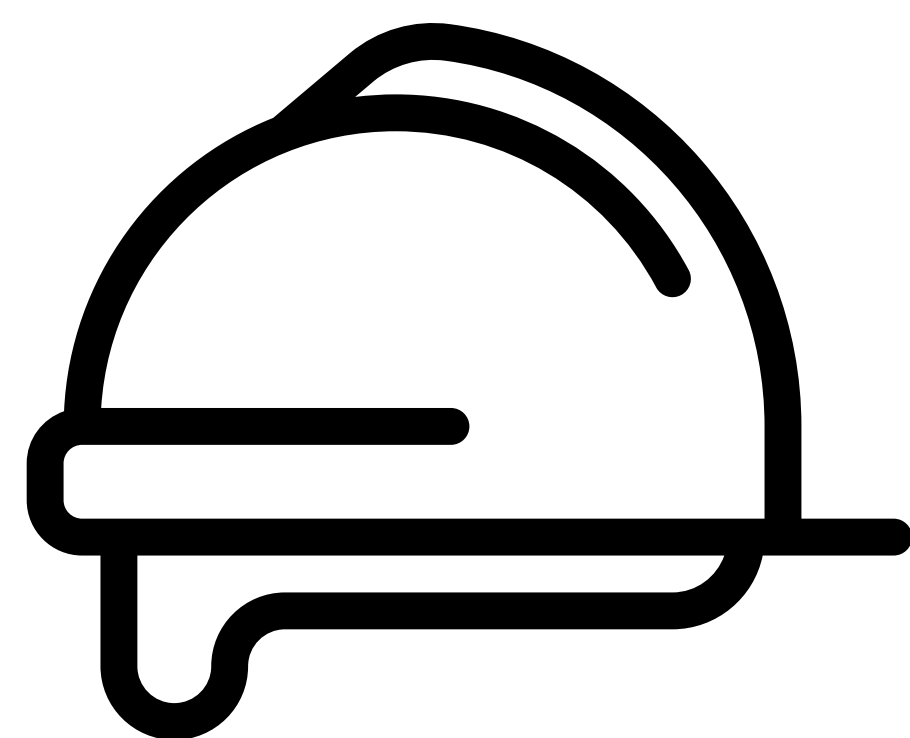
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# Falling objects and bump protection

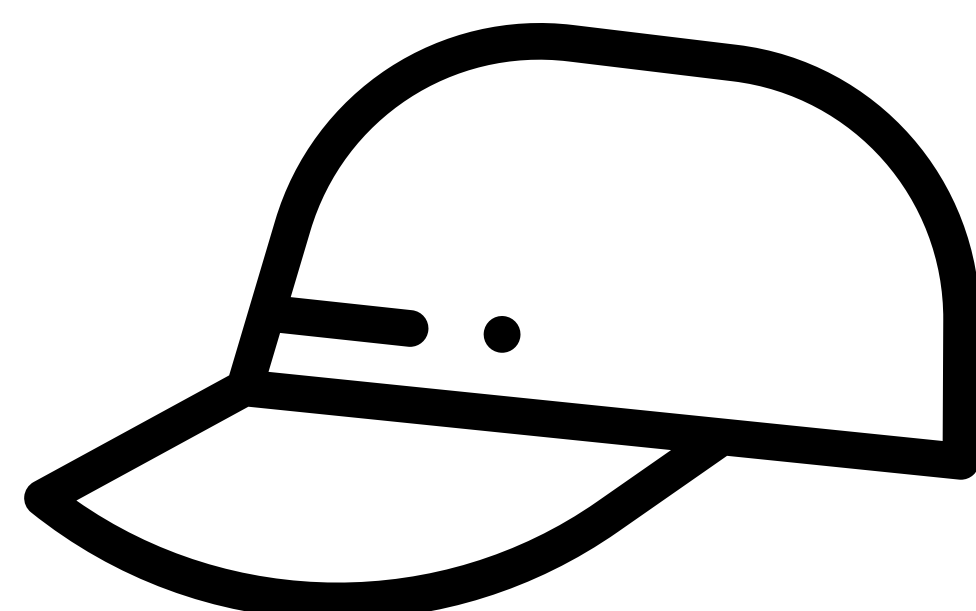
Falling or flying objects on a worksite can expose workers to relatively minor injuries, such as cuts and abrasions, as well as more serious injuries, such as concussions or blindness. Working beneath scaffolds or other areas where overhead work is being performed puts workers at risk from falling objects.

3M offers a complete range of solutions for head protection – such as safety helmets as well as bump caps.

Components can be combined to accommodate the needs of your application or environment. Our head products help deliver protection, comfort and performance.



Safety Helmets



Bump Caps

**click here & learn more ...**

- [Head Protection Selection Criteria](#)
- [Types & Styles of 3M Head Protection](#)
- [Overview of Head Protection](#)
- [Download High Heat Brochure](#)

## Applications

### Primary Metals

- Raw material handling
- Pyrometallurgy
- Casting
- Rolling Mill
- Foundry / Casting

### Metal fabrication

- Most applications

### Surface Preparation

- Most applications

### Metal finishing:

- Most applications

# Falling objects

## 3M™ Safety Helmets

Heavy industry means your workplaces are complex with people working on multiple levels and around heavy machinery such as cranes. Risks associated with falling objects are commonplace and can lead to serious injuries and death. Engineering solutions such as covered walkways and kickboards are a potential solution and administrative controls on access and movement around machinery can help.

For risks associated with small falling objects, industrial hard hats can offer a level of protection. High heat, molten metal, and high speed particles may require head protection that is integrated with other PPE and can withstand high radiant heat and metal splash.



**3M™ Hard hat  
Series G3000**

[Link to the website](#)



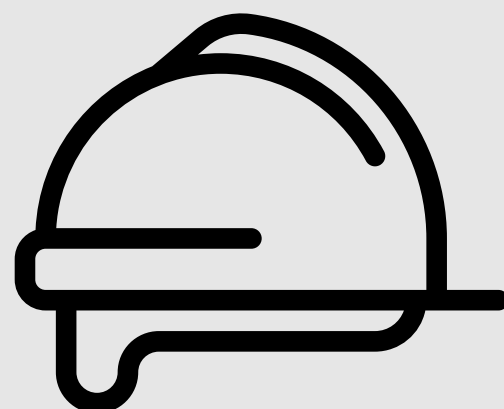
**3M™ High Heat Hard hats  
Series G3501**

[Link to the website](#)



**3M™ SecureFit™ Safety and  
Climbing Helmet X5000 Series**

[Link to the website](#)



### Ease of use

- Range of options:
  - Vented / non-vented
  - Ratchet / pin-lock adjustment
- 3M™ Uvicator™ options
- Wide range of earmuff, comms, eyewear and faceshields options and accessories
- Multiple colours and reflective material options available
- Logo customisation area

### Protection

- EN 397 tested
- Impact and penetration of falling objects
- Low and high temperature, molten metal splash and electrical insulating options (EN 397, EN 50365) available

### Comfort

- Ratchet allows easy adjustment
- Harness can be adjusted to suit the wearer
- Leather Sweatband

### Cost

- Low initial investment

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# Bump protection

## 3M™ Bump Caps

Regardless of your industry, protecting your head at work is essential. Bump caps are most often used in environments without any hazard of falling objects. If your risk analysis identifies bumping your head on stationary objects as a potential hazard, a bump cap might be the right choice for you.

Often, bump caps are styled in the shape of a baseball cap and provide protection against bumps, lacerations and scrapes from hard, stationary objects above you that you may come into contact with. This can include low ceilings, overhead piping and hanging items. They are becoming a more popular part of worker uniforms because they come in many styles and materials, and people in all types of industries find them to be a comfortable option.



**3M™ First Base™ +  
Bump Cap**

[Link to the website](#)



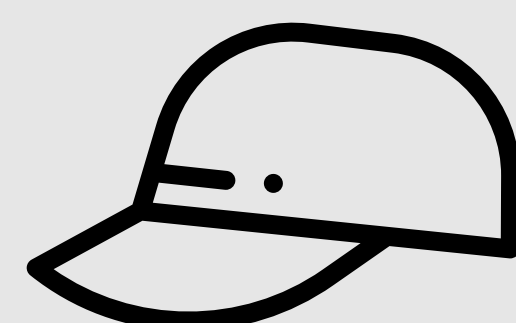
**3M™ First Base™ 3  
Bump Cap Classic**

[Link to the website](#)



**3M™ First Base™ 3  
Bump Cap Flame Resistant**

[Link to the website](#)



### Ease of use

- Single point size adjustment
- Logo customisation area

### Protection

- EN 812 tested – light-duty head protection
- Flame Resistant option

### Comfort

- Lightweight
- Peak length options: standard, reduced and micro
- Ventilation and towelling sweatband

### Cost

- Very low total cost of ownership

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# Head Protection Selection Criteria

To protect, Head Protection must be both “Adequate” and “Suitable”...

## ADEQUATE

“Adequate” – Is it right for the hazard, does it have the potential to protect?

What type of hazards?

Being struck by falling object / Working at height / striking head on an object

Molten metal splash?

Extremes of temperature?

Electrical insulation

## SUITABLE

“Suitable” – Is it right for the wearer, i.e. compatible with the individual, environment & task?

Task

- Duration of wear
- Compatibility or integration with other PPE – earmuffs, helmets
- Colour

Environment

- Ambient conditions – heat, humidity, etc.
- Care & Maintenance
- Other hazards – molten metal, electric arc, etc.
- Customised logo

Wearer

- Worker preference (comfort, style, appearance, etc..)

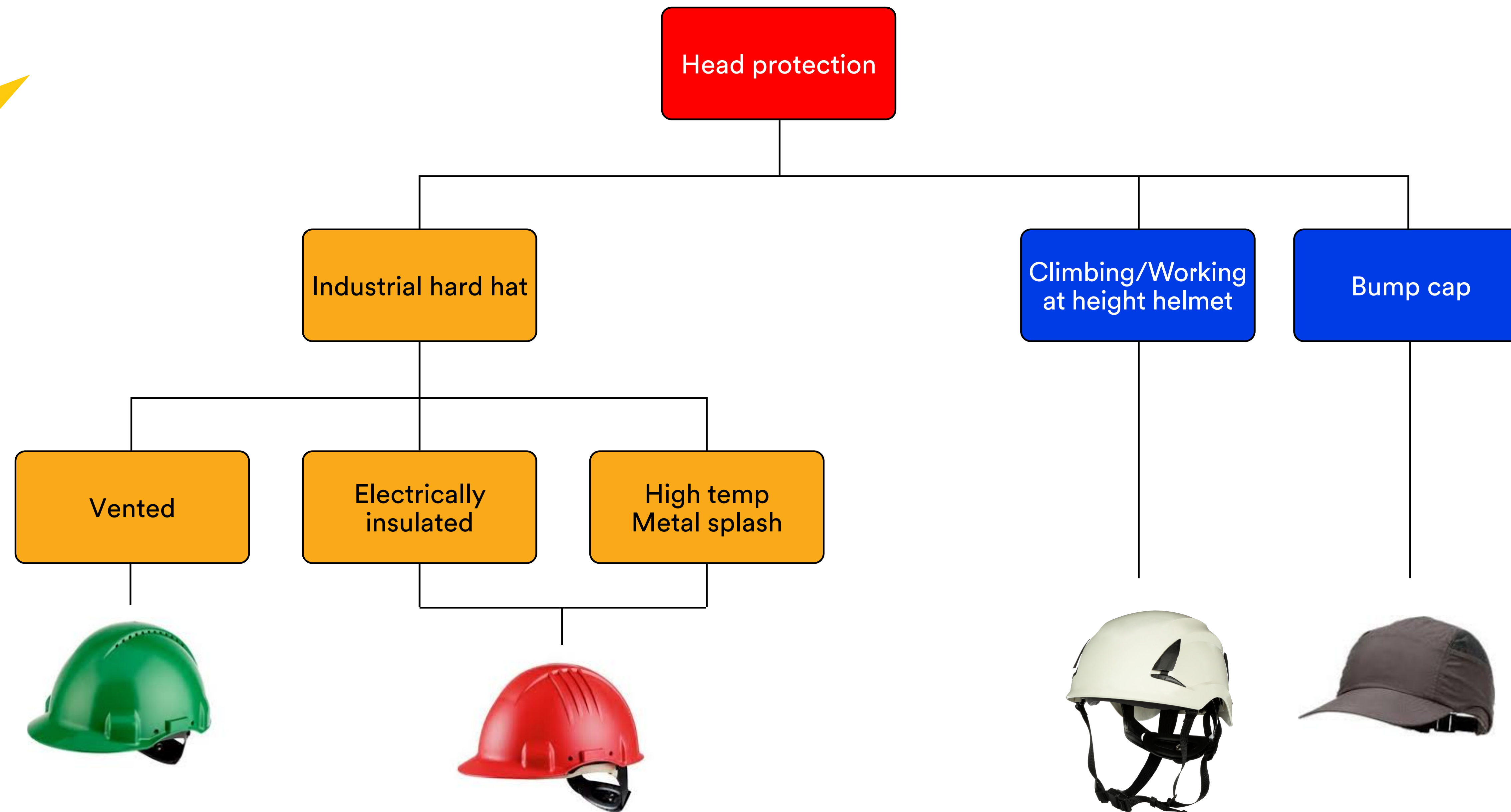
Other

- Cost: initial cost vs. total cost of ownership
- Availability, spare parts, ease of use, durability, etc.

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# Falling objects – Types & Styles of 3M Head Protection

may be combined  
with 3M Faceshields  
and other accessories



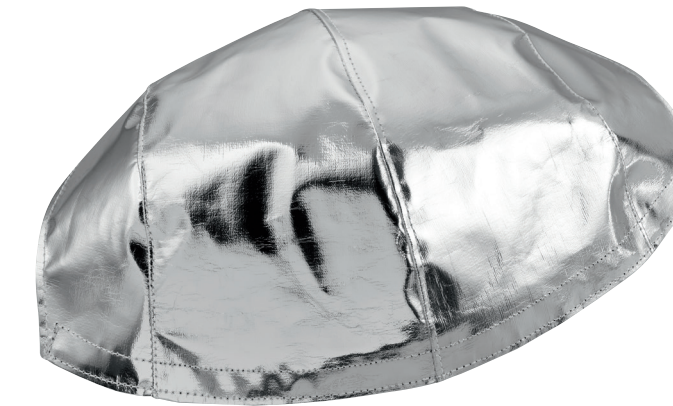
## 3M™ Splash and Heat Covers



3M™ Elevated Temperature  
Front Cover, Cotton/Para  
Aramide, Grey, FC1-GR



3M™ Elevated Temperature  
Neck Cover, Cotton/Para  
Aramide, NC1-GR



Front Cover  
FC1-AL



Neck Cover  
NC1-AL

3M™ PPE solutions for metalworking industries

# Falling objects – Overview of Head Protection



## Industrial Safety Helmet

### Ease of use

- Range of options:
  - Vented / non-vented
  - Ratchet / pin-lock adjustment
- 3M™ Uvicator™ options
- Wide range of earmuff, comms, eyewear and faceshield options and accessories
- Multiple colours and reflective material options available
- Logo customisation area

### Comfort

- Ratchet allows easy adjustment
- Harness can be adjusted in height to suit the wearer

### Protection

- Low and high temperature, molten metal splash and electrical insulating options (EN 397, EN 50365) available

Simple, convenient but adjustable comfortable industrial safety helmets through to helmets with proven performance in temperature extremes, where there is a risk of molten metal splash or a need for the helmet to be electrically insulating



## Climbing Helmet

### Ease of use

- Brimless design for a clear upward view
- Options to change between industrial safety and climbing approvals
- Multiple colours and reflective material options available
- Logo customisation area
- Range of options:
  - Vented / non-vented
  - Ratchet / pin-lock adjustment
  - 3M™ Uvicator™ options
  - Wide range of earmuff, comms, eyewear and faceshield options and accessories

### Comfort

- 6 point ratchet suspension
- Harness adjustment in height: vertical position and size

### Protection

- Meets performance requirements of either EN 12492 or EN 397 depending upon chin strap selector position
- EN 50365 1000 V option

For when a helmet is required for working at height – with option to switch to standard industrial performance

Or, for workers who want the look or need the low-profile shape of a climbing style helmet.



## Bump Cap

### Ease of use

- Single point size adjustment
- Logo customisation area

### Comfort

- Lightweight
- Peak length options: standard, reduced and micro
- Ventilation and towelling sweatband

### Protection

- EN 812 tested – light-duty head protection
- Flame Resistant option

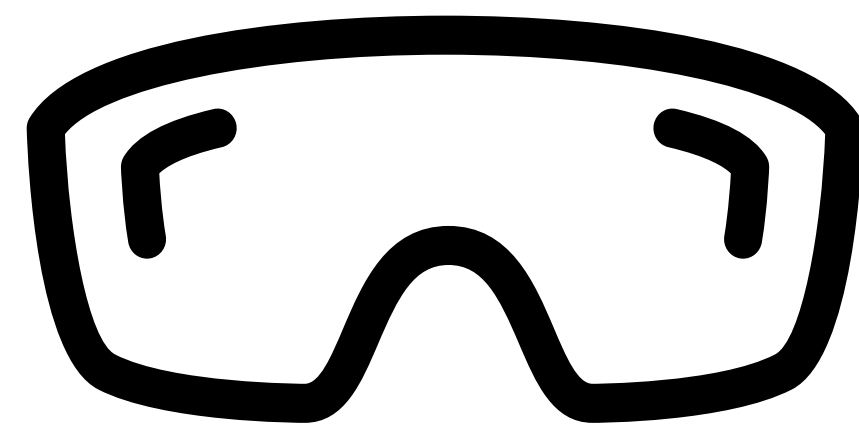
Bump protection for workers in automotive, aerospace, food processing or transport and logistics industries.

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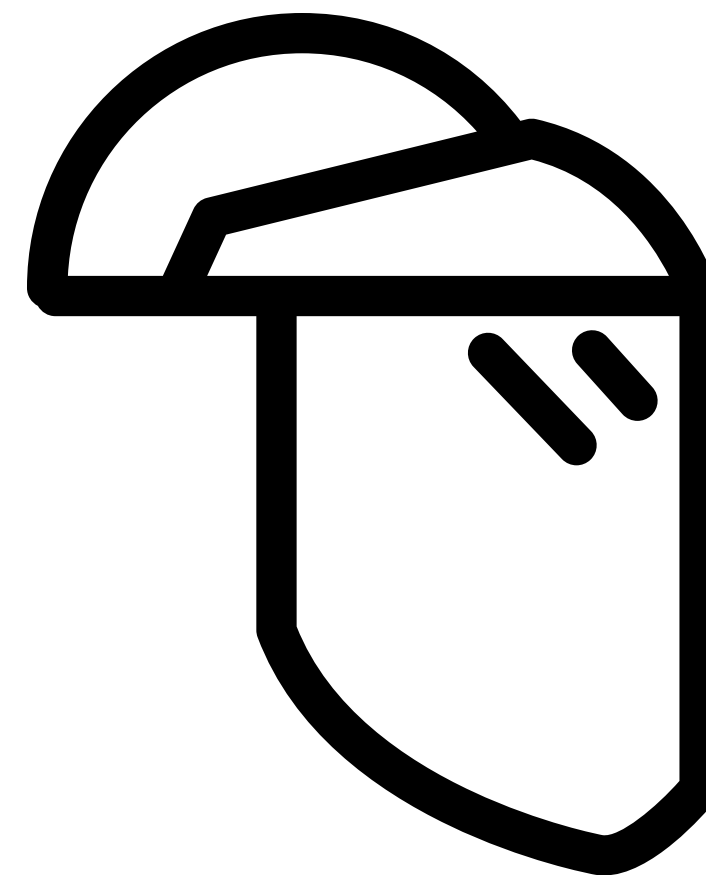
# Eye & Face Hazards

Welding, cutting, tapping, melting and pouring operations may generate high levels of ultraviolet, infrared and visible light requiring appropriate protective equipment to minimise exposure for the worker. High levels of exposure to optical radiation may lead to a range of eye and skin problems such as conjunctivitis, cataracts and retinal damage. Flying particles from processes such as cutting, grinding, scarfing or stamping are a potential cause of eye and face injury.

Appropriate guarding or the use of eye and face protection can help minimise exposure for your workers. Contact with harmful chemicals or accidental splashes can lead to serious injuries or severe irritation and dermatitis after long term exposure. Chemicals are used widely in many heavy industrial settings and appropriate skin, eye and face protection can help to reduce the risk of exposure to splashes.



[Protective Eyewear](#)



[Faceshields](#)



[Welding Protection](#)

**click here & learn more ...**

- [Eye & Face Hazards by industry](#)
- [Eye & Face Selection Criteria](#)
- [Types & Styles of 3M Eye and Face Protection](#)
- [Overview of non-welding eye and face PPE](#)
- [Eyewear selector](#)

## Applications

### Primary Metals

- Raw material handling and preparation
- Anode Production / Repair
- Pyrometallurgy (thermal reduction – Furnaces, Smelting and Refining)
- Rolling mill
- Foundry / Casting

### Fabricated Metals

- Forming, Bending, Rolling, Drawing
- Cutting, Machining, Deburring, Add. Manufacturing
- Heat Treatment
- Extruding
- Forging

### Brazing & Soldering, Arc welding / Arc air gouging

- Grinding
- Abrasive machining
- Weld refinement
- Edge bevelling

# Eye & Face Hazards

## 3M™ Protective Eyewear

Our safety glasses and safety goggles are designed to work with other personal protective equipment. 3M offers a wide range of models with a variety of Anti-Fog and Anti-Scratch coatings, frame colours and lens tints. Some come with an optional removable foam gasket and strap to allow you to configure the eyewear according to your needs.



3M™ Solus™  
Safety Glasses 1000 Series

[Link to the website](#)



3M™ Solus™  
Safety Glasses 2000 Series

[Link to the website](#)



3M™ SecureFit™  
Protective Eyewear Series

[Link to the website](#)



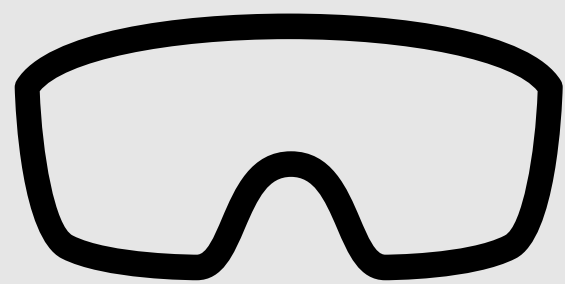
3M™ Goggle Gear Safety  
Goggles 500 Series

[Link to the website](#)



3M™ GoggleGear™ Safety  
Goggles 6000 Series

[Link to the website](#)



### Safety Spectacles

#### Ease of use

- Simple, lightweight and easy to use
- Different features and styles to suit all tastes
- 3M™ Scotchgard™ Anti-Fog/Anti-Scratch coatings available on certain models for premium coating performance
- Optional gaskets and/or headbands for certain models

#### Comfort

- Range of designs and shapes to suit most wearers
- Range of different lens shades for comfort and different working environments
- 3M™ SecureFit™ Safety Glasses 400 Series and 3M™ Solus Safety Glasses 2000 Series also available incl. +1.5, +2.0, +2.5 reading diopter

#### Protection

- Low energy (F) eye impact protection
- Various optical classifications

### Goggles

#### Ease of use

- Polycarbonate lens options
- Direct vented, indirect vented, sealed options
- Prescription eyewear inserts available for certain models
- 3M™ Scotchgard™ Anti-Fog/Anti-Scratch coatings available on certain models for premium coating performance

#### Comfort

- Range of designs and shapes to suit most wearers
- Adjustable elasticated or neoprene straps
- Lens shades for comfort and different working environments
- Aspherical and cylindrical lens

#### Protection

- Medium energy (B) eye impact protection
- Liquid splash (indirect vented, sealed options)
- Particulate / gas (sealed goggle)
- Molten metal (some models)

# Eye & Face Hazards

## 3M™ Faceshields

Our face protection products can be combined with other personal protective equipment to accommodate the needs of your specific application or environment.



3M™ SecureFit™ Helmet Series X5000  
[Link to the website](#)  
3M™ Faceshield Holder U5B  
[Link to the website](#)



3M™ Hard Hat Series G3000  
[Link to the website](#)  
3M™ Faceshield Holder V5  
[Link to the website](#)



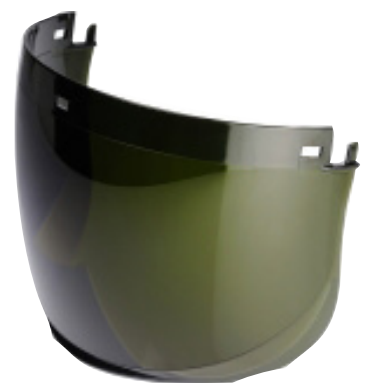
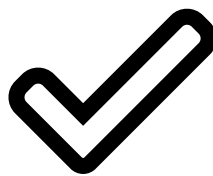
3M™ Hard Hat Series G3501  
[Link to the website](#)  
3M™ Faceshield Holder V5  
[Link to the website](#)



3M™ G500 Industry Headgear  
[Link to the website](#)  
direct attachment



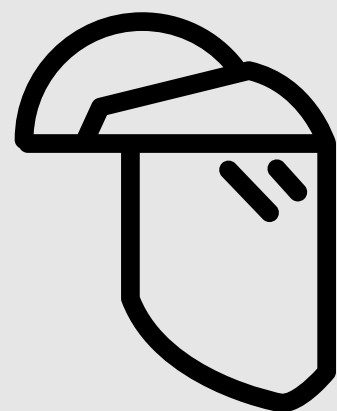
3M™ Faceshield 5F-11  
[Link to the website](#)



3M™ Faceshield 5E-11  
[Link to the website](#)



3M™ Faceshield 5XG-IR5  
[Link to the website](#)



### Ease of use

- Safety spectacles or prescription eyewear can be worn underneath
- Robust, durable, easy to use and don
- Can be combined with integrated helmets, eyewear, hearing/comms (certain models)

### Comfort

- Ratchet harness adjustment
- Head size adjustment
- Ventilation options (certain models)

### Protection

- Flying particles, liquid splashes (certain models / accessories)
- UV radiation, high intensity visible light (certain models / accessories)
- Radiant heat (IR) / molten metal splash / secondary welding



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# Eye & Face Hazards by industry



	Primary Metal	Fab Metal, Machinery, Transportation
Optical / Radiation	<ul style="list-style-type: none"><li>• Primary metal production</li><li>• Casting</li><li>• Rolling mills</li></ul>	<ul style="list-style-type: none"><li>• Forging</li><li>• Welding</li><li>• Grinding</li><li>• Cutting</li></ul>
Flying particles	All processes	All processes
Chemicals (dust, mists, liquids, gases & vapours)	All processes	<ul style="list-style-type: none"><li>• Welding</li><li>• Grinding</li><li>• Surface treatment</li><li>• Surface preparation</li><li>• Paint shop</li><li>• Foam filling</li></ul>

3M™ PPE solutions for metalworking industries

# Eye & Face Protection – Selection Criteria

To protect, Eye & Face Protection must be both “Adequate” and “Suitable”...

## ADEQUATE

“Adequate” – Is it right for the hazard, does it have the potential to protect?

Protect the eyes or entire face?

Optical radiation exposure type and levels?

Impact protection – low , medium , high energy

Particulate , liquid splash , gas & vapour protection?

Molten metal splash?

Extremes of temperature?

## SUITABLE

“Suitable” – Is it right for the wearer, i.e.  
compatible with the individual, environment & task?

### Task

- Duration of wear
- Compatibility or integration with other PPE – earmuff, helmets

### Environment

- Ambient conditions – heat, humidity, etc.
- Care & Maintenance
- Other hazards – molten metal, electric arc, etc.

### Wearer

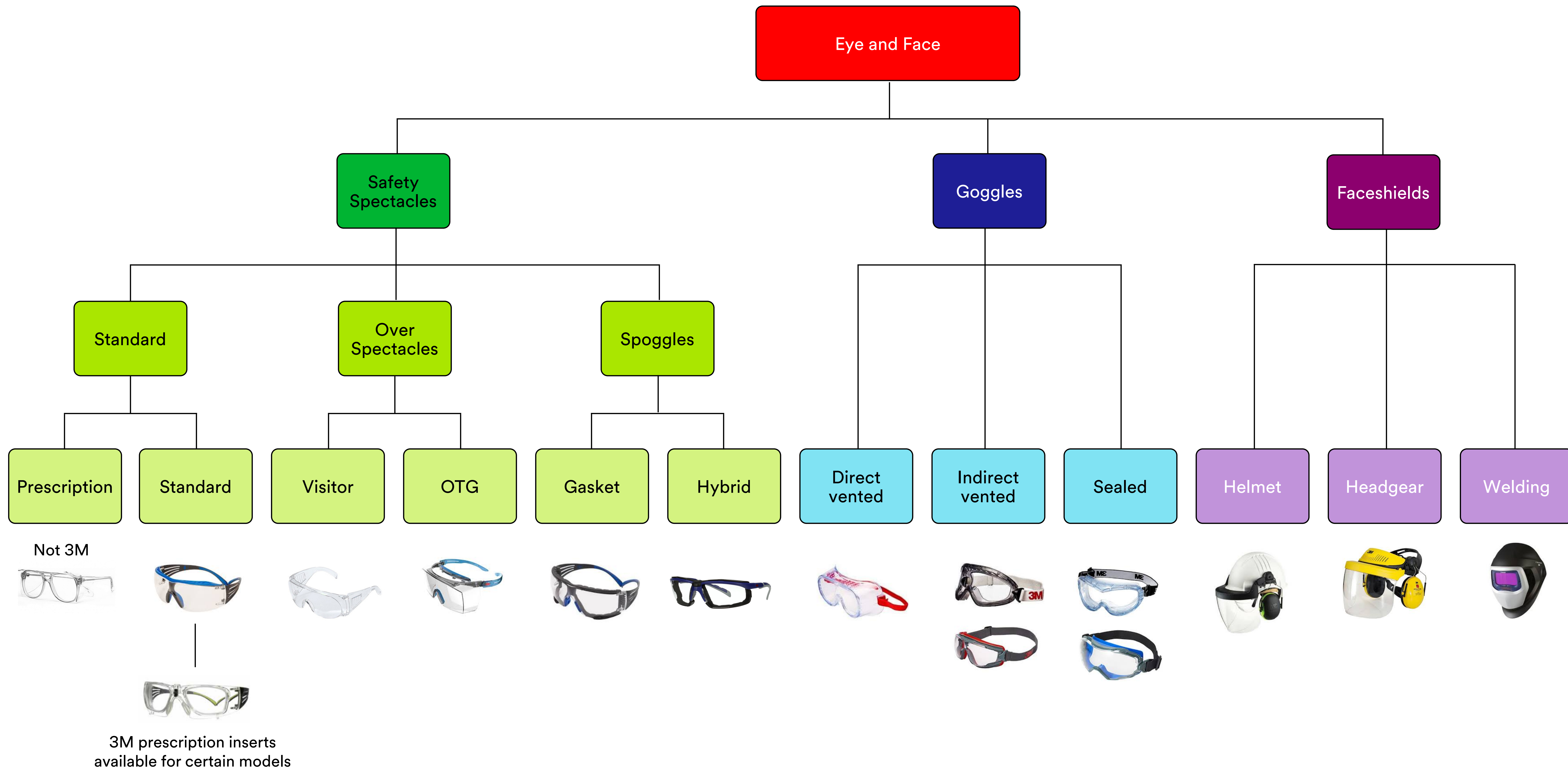
- Prescription eyewear
- Worker preference (comfort, style, appearance, etc..)

### Other

- Cost: initial cost vs. total cost of ownership
- Availability, spare parts, ease of use, durability, etc.

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# Eye & Face Hazards – Types & Styles of 3M Eye and Face Protection



3M™ PPE solutions for metalworking industries

# Eye & Face Hazards – Overview of non-welding eye and face PPE



## Safety Spectacles

### Ease of use

- Simple, lightweight and easy to use
- Different features and styles to suit all tastes
- Anti-scratch and anti-fog coatings on certain models
- Optional gaskets and/or headbands for certain models
- 3M™ Scotchgard™ Anti-Fog/Anti-Scratch coating available on certain models for premium coating performance

### Comfort

- Range of designs and shapes to suit most wearers
- Range of different lens shades for comfort and different working environments
- Pressure Diffusion Temple Technology for security of fit for a wide range of head sizes without compromising in comfort.

### Protection

- Low energy (F) eye impact protection
- Various optical classifications

**Mechanical** – low energy (F) impact risk  
**Light** – specific radiation risk (certain models)



## Goggles

### Ease of use

- Direct vented, indirect vented, sealed options
- Prescription eyewear inserts available for certain models
- 3M™ Scotchgard™ Anti-Fog/Anti-Scratch coating available on certain models for premium coating performance

### Comfort

- Range of designs and shapes to suit most wearers
- Adjustable elasticated or neoprene straps
- Lens shades for comfort and different working environments
- Aspherical and cylindrical lens

### Protection

- Medium energy (B) eye impact protection
- Liquid splash (indirect vented, sealed options)
- Particulate / gas (sealed goggle)
- Molten metal (some models)

**Mechanical** – low (F) or medium (B) energy impact risk  
**Light** – specific radiation risk (certain models)  
**Liquid** – sealed goggle: particulate, gas risk / indirect vented goggle: liquid splash risk



## Faceshields

### Ease of use

- Safety spectacles or prescription eyewear can be worn beneath
- Robust, durable, easy to use and don
- Can be combined with integrated helmets, eyewear, hearing/ comms (certain models)

### Comfort

- Ratchet harness adjustment
- Head size adjustment

### Protection

- Medium energy (B) face impact protection
- Liquid splash, molten metal splash, IR (certain models / accessories)
- Certain models can be used for secondary welding or high radiant heat (IR) applications
- Radiant heat / molten metal splash

**Mechanical** – low (F) or medium (B)  
**Light** – specific radiation risk (certain models)  
**Liquid** – liquid splash risk

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# Welding Protection

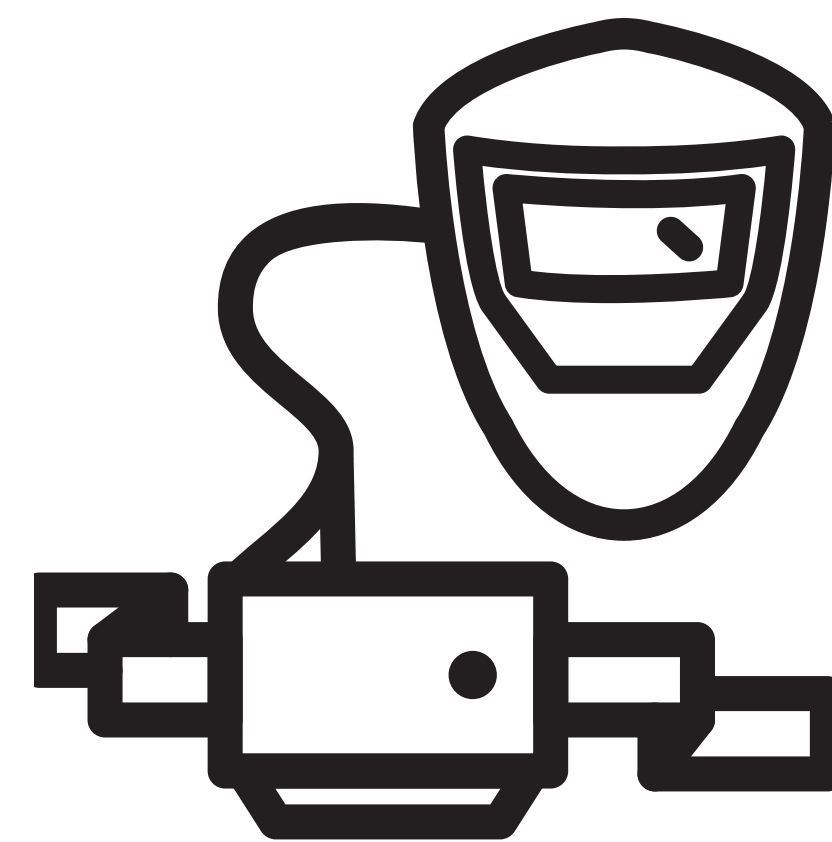
## 3M™ Welding Protection

 **Speedglas™**

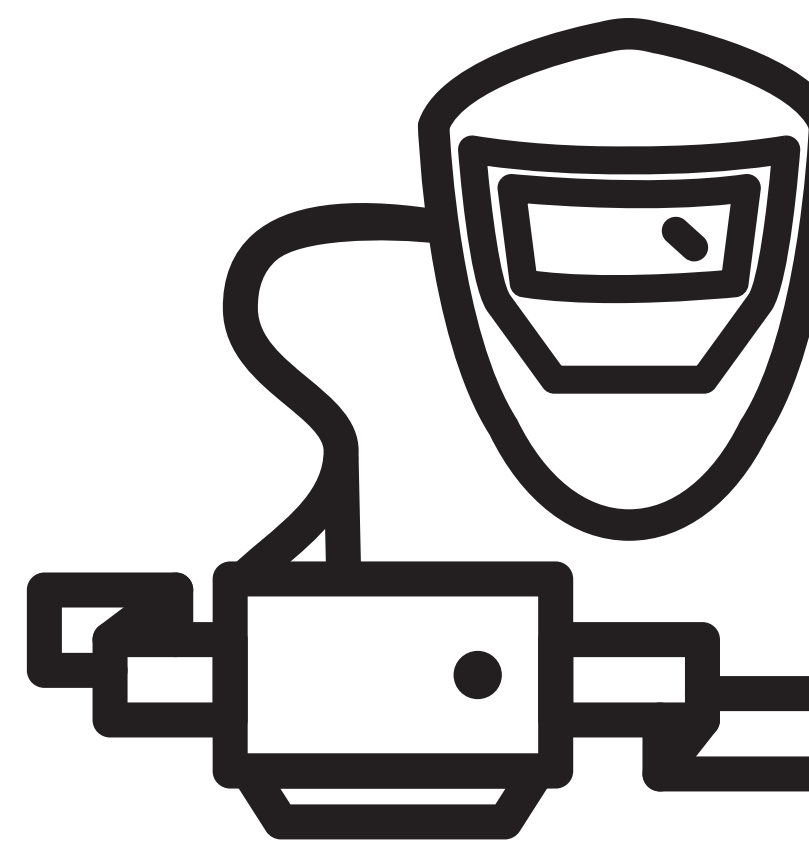
As the innovators of Welding Auto-Darkening Filters, **3M™ Speedglas™** knows what professional welders need. Our knowledge and experience of welders' working conditions sparks innovative development of products that enable welding performance and make the welder's job safer and more comfortable.

**click here & learn more ...**

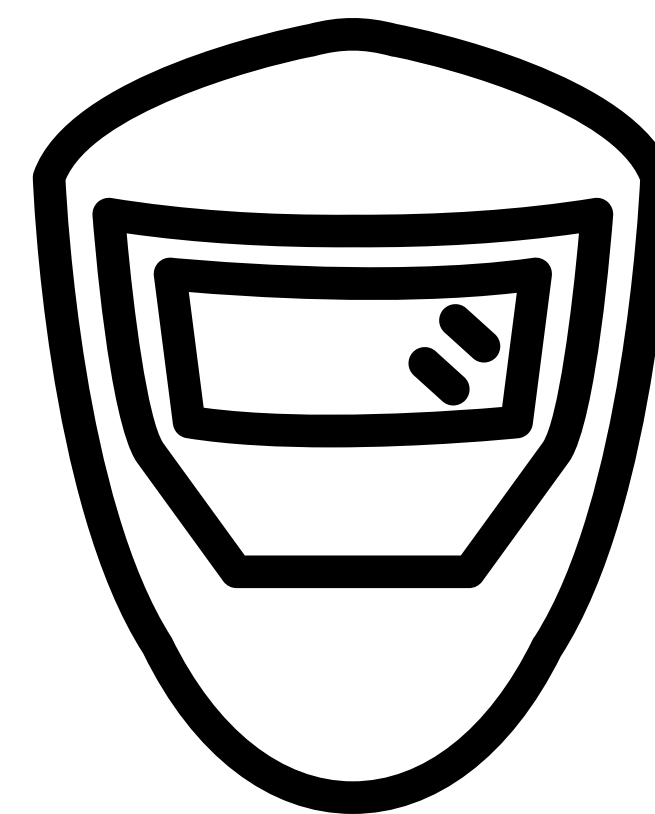
- [Infographic – Welding fume](#)
- [Welding Helmet Advisor](#)
- [3M™ Speedglas™ Heavy-Duty Welding Helmet G5-01 – Request a demo](#)



Welding Helmet with  
Powered Air Respirator



Welding Helmet with  
Powered Air Respirator and  
Head Protection



Welding Helmet

## Applications

### Primary Metals

- Raw material handling and preparation
- Anode Production / Repair
- Pyrometallurgy (thermal reduction - Furnaces, Smelting, Refining)
- Casting to semi-finished product
- Rolling mill)
- Foundry / Casting

### Metal fabrication

- Forming, Bending, Rolling
- Extruding, Drawing
- Forging
- Cutting
- Machining
- Deburring
- Brazing, Soldering
- Welding, Air gouging
- Grinding, Weld refinement, Edge bevelling
- Heat treatment

### Surface Preparation

- Descaling, mechanical, shot-blasting
- Degreasing, Chemical cleaning
- Pickling (Alkali, Acide Etching, Surface Prep)

### Metal finishing:

- Polishing (Electrolating, Chemical milling, etching, phosphating, metalising, hot dip galvanising)

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# Welding Protection

## 3M™ Welding Protection – 5th Generation of Speedglas™

 **Speedglas™**

### More versatile & comfortable than ever!

3M Heavy-Duty Welding Helmet G5-01 has more adjustable features than ever: from the color as seen through the welding filter to the direction of the airflow and the level of coverage. The world's first curved auto-darkening filter (ADF) with the 3M™ Speedglas™ Welding Helmet G5-02. Utilizing the new 3M™ Speedglas™ Curved Glass Technology, its shape follows your head's curvature and expands the range of your peripheral vision. Designed for specialist TIG welders, the G5-02 helmet sets a new world standard for precision ADF viewing. This is the helmet for welders doing high-performance, critical work.



**3M™ Speedglas™ Welding Helmet G5-01 with 3M™ Adflo™ Powered Air Respirator and welding filter G5-01VC, 617830**

#### [Link to the website](#)

- Variable dark shade 5, 8-13 and tack welding comfort mode
- The big, 170 × 104 mm, clear protective visor is curved, with excellent views up, down and peripherally.
- Speedglas Natural Colour technology makes the filter view seem lighter, more detailed and colourful.
- For more control over your comfort, the innovative G5-01 helmet duct system lets you direct the airflow to either your face, visor or somewhere in-between.
- Re-configure your helmet using our many additional accessories to just the right coverage for your head, neck, and shoulders.
- The slim profile and ergonomic design makes it even more lightweight and easier to go into tight welding spaces .
- The G5-01 ADFs are Bluetooth enabled: with the 3M Connected Equipment app, users get access to additional functionalities, statistics and documentation.



**3M™ Speedglas™ Welding Helmet G5-02 with Curved Welding Filter, Headband, Cleaning Wipe & Bag, 621120**

#### [Link to the website](#)

- Our largest ADF field of view ever (150×76 mm), utilizing the 3M™ Speedglas™ Curved Glass Technology.
- Great clarity before, during and after welding, with our 3M™ Speedglas™ Natural Colour Technology.
- By selecting just the right settings for each task, you help reduce eye strain and can improve the quality of every weld.
- The sensitivity of arc detection can be adjusted for unsurpassed switching reliability
- Delay function to set the dark-to-light opening time.
- Bluetooth enabled: with the 3M Connected Equipment app, users get access to additional functionalities, statistics and documentation.



**3M Speedglas 9100 MP Welding & Safety Helmet and 3M Adflo Powered Air Respirator, incl bag, 577700**

#### [Link to the website](#)

- Combined head, face, eye and powered air respiratory protection for welding applications
- Comes with 3M™ Speedglas™ Welding Helmet MP and 3M™ Adflo™ Powered Air Respirator (welding filter sold separately)
- Meets the EN 379 standard for industrial safety helmets
- 3M™ Speedglas™ Welding Filter 9100X offers variable dark shades of 5, 8 and 9-13 for most types of arc welding
- Welding filter viewing area: 54 mm x 107 mm
- Nominal Protection Factor 500 (TH3)
- Light-to-dark switching time of 0.1 ms
- Possible to lock-in any shade, e.g. light shade 3 when grinding
- Side windows (shade 5) can help widen the field of vision

#### • **Please Note**

- 3M™ Speedglas™ Auto-darkening Welding Filter 9100X, 500015 sold separately.

[Click here to learn more](#)

3M™ PPE solutions for metalworking industries

# Working at height & Confined Spaces

A large proportion of reportable accidents are caused by falls from a height. The injuries caused are usually significant and sometimes fatal. Against this background, it is of vital importance to take the right measures for safe working at height. This is where 3M can support you with our fall protection specialists. Our Specialists can advise and support you in the selection, of personal protective equipment (PPE) against falls from height. The ABC of fall protection combines these typical components:

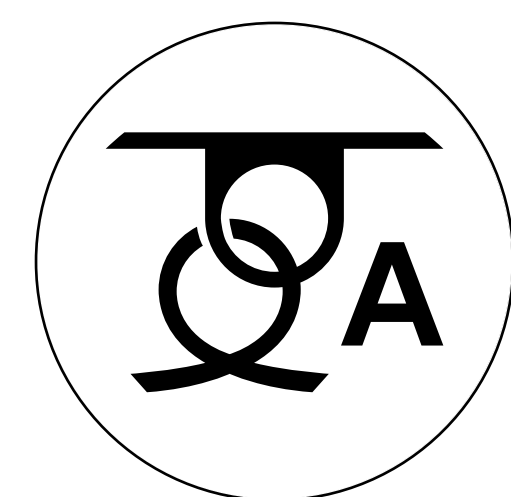
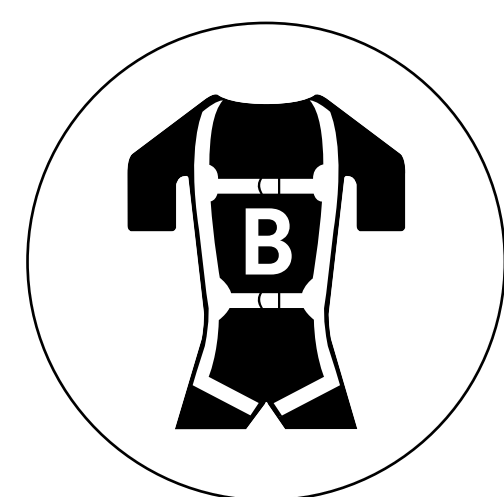
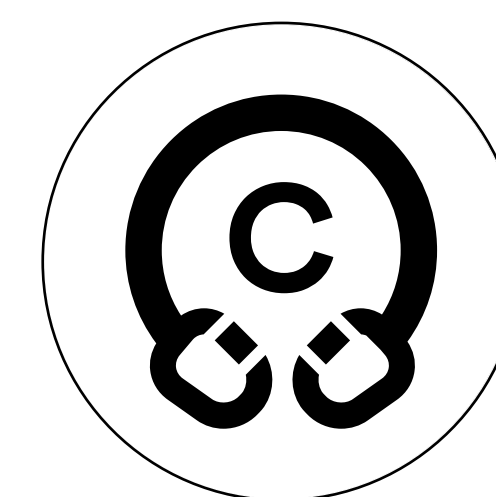
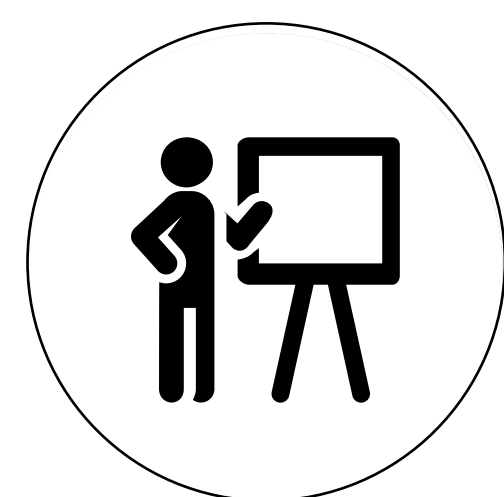
The **A**nchorage/anchorage connector, **B**ody support and **C**onnecting device – when used together – form a complete system for maximum worker protection. But don't forget the other important components of a comprehensive fall protection programme:

**D**escent and rescue, **E**ducation and **F**all protection for tools.

**click here & learn more ...**

- [Working at Height and Fall Protection Solutions](#)
- [Hazards in Confined Spaces](#)
- [3M™ Fall Protection Configurator App \(iOS\)](#)
- [3M™ Fall Protection Configurator App \(Android\)](#)

## The **ABC** of fall protection

**A**nchor**B**ody Support**C**onnecting Devices**D**escent**E**ducation**F**all Protection for Tools

# Working at height

## The ABC of fall protection



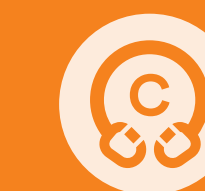
### Anchor

Anchor points are secure attachment points. Anchoring equipment varies depending on the industry, activity, type of plant and type of building. They must be able to withstand the forces in the event of a fall, rope-assisted work or rescue.



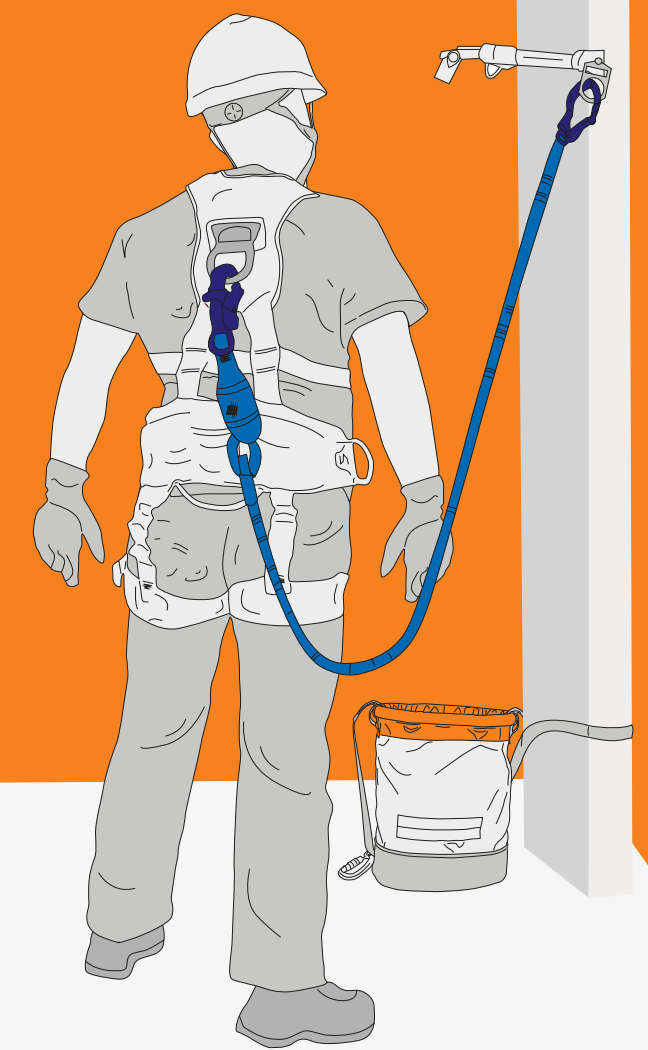
### Body Support

Fall arrest harnesses distribute the forces generated during a fall across the thighs, pelvis, chest and shoulders. They provide a connection point for attaching the person.



### Connecting Devices

Lanyards, such as webbing energy absorbers or height safety devices, are the link between the harness and the anchor point.



### 3M™ DBI-SALA® Saflok™ Concrete Wedge Anchor



[Link to the website](#)

### 3M™ Protecta PRO™ Welders Harness



[Link to the website](#)

### 3M™ Protecta® Welders Shock Absorbing Lanyards



[Link to the website](#)

### 3M™ DBI-SALA® Flexiguard™ Modular Jib Systems



[Link to the website](#)

### 3M™ Protecta® Standard Vest Style Harness



[Link to the website](#)

### 3M™ DBI-SALA® Nano-Lok™ Personal Self Retracting Lifeline for Hot Work



[Link to the website](#)

**3M** Science.  
Applied to Life.™

3M™ PPE solutions for metalworking industries

# Working at height



## Descent

Abseiling and rescue equipment are used to lower or lift a fallen or injured user to safety or to free them from a confined space. To bring them to safety or free them from a confined space.



## Education

At our state-of-the-art training centres around the world, we offer a variety of world-class, certified training for working at height and in confined spaces.



## Fall Protection for Tools

Fall protection for tools provides safer and more productive work environments by reducing accidents caused by falling objects.



### 3M™ DBI-SALA® Rollgliss™ R350 Rescue and Positioning Device

[Link to the website](#)



### Education

[Link to the website](#)



### 3M™ DBI-SALA® Hook2Loop Bungee Tether

[Link to the website](#)



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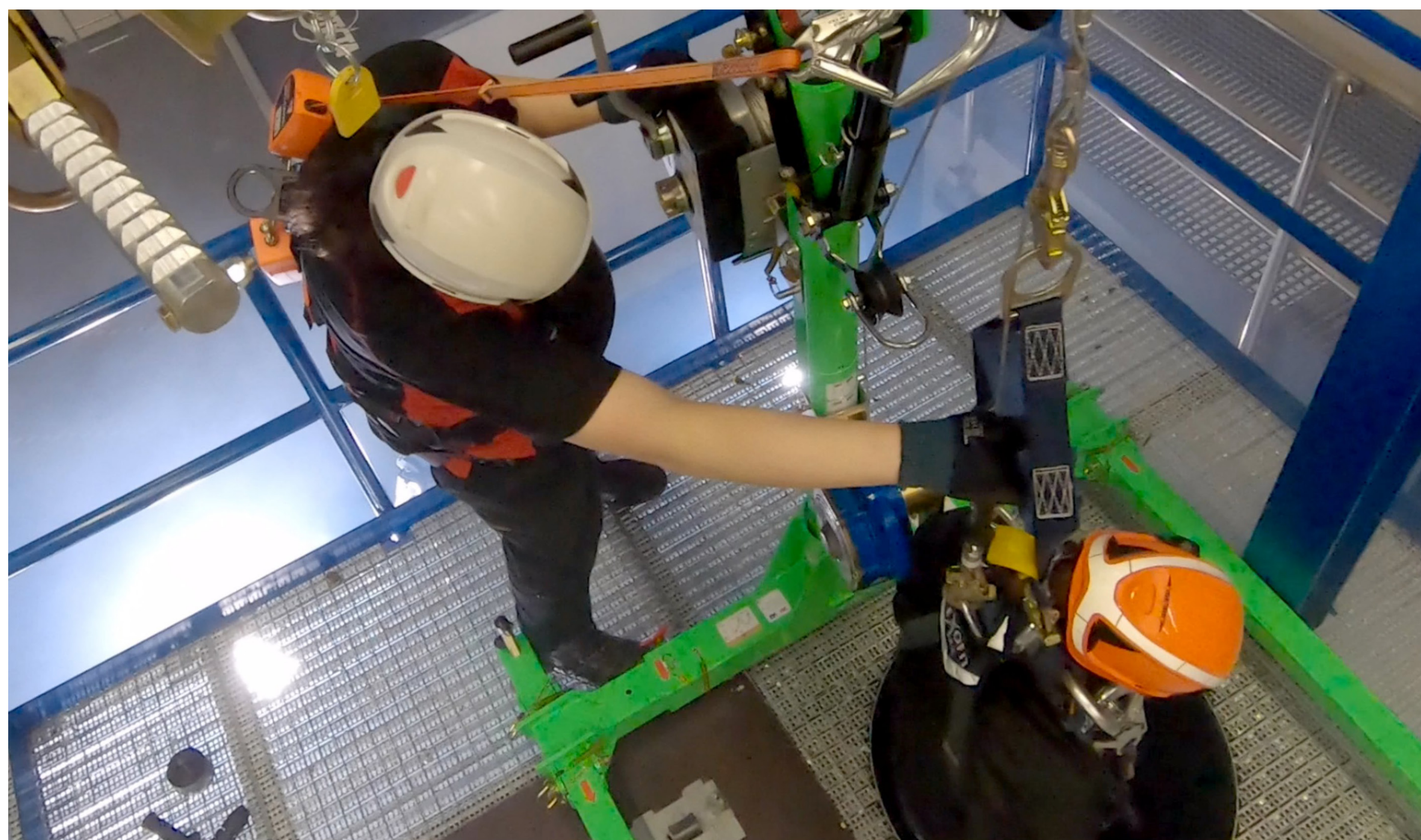
# Hazards in Confined Spaces

Confined spaces, as well as injuries and fatalities that occur within them occur across almost all industries and workplaces. If the space is partially or fully enclosed and contains a hazard or some work within, it creates a hazard to your health or safety, then the space may be classed as a confined space. Depending on the workplace, typically there will be a high number of confined spaces, where entries cannot be avoided and need to be undertaken on a regular basis.

**Safety Challenges in Confined Spaces:** Confined spaces often present unseen challenges like extreme temperatures, unstable materials, or the potential for falls. Your planning, preparation and equipment can mean the difference between getting in and out safely or not.

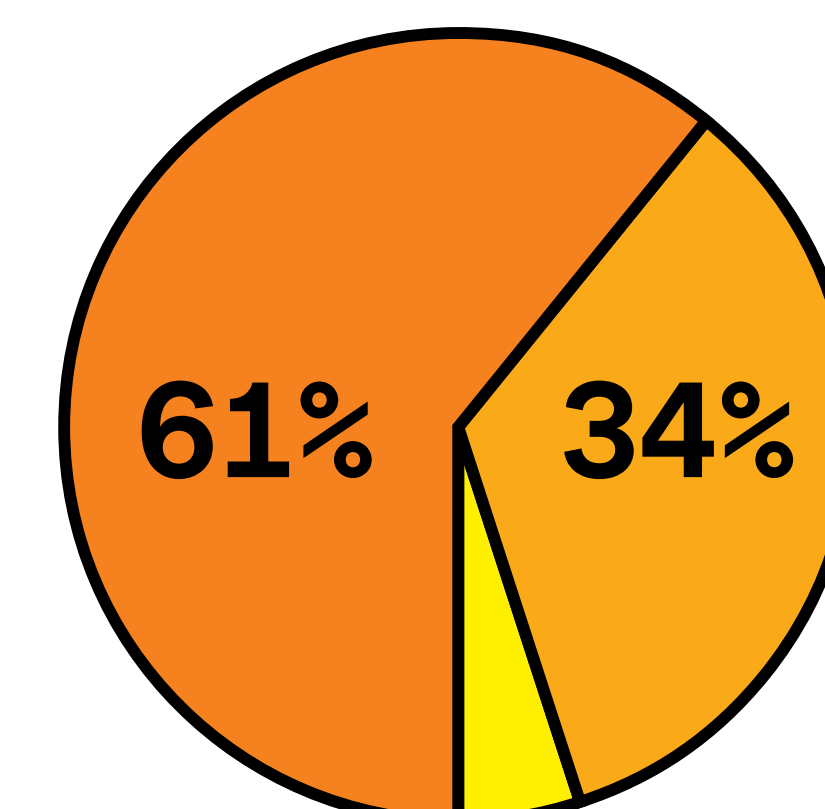
**click here & learn more ...**

- [Hazards in Confined Spaces](#)



148 deaths occur each year in the USA alone

- 61% deaths from physical hazards  
(engulfment, falls, “struck by”, electrocution, heat, etc.)
- 34% deaths from atmospheric hazards  
asphyxiation, toxic atmospheres, etc.
- 5% other



**Other hazards include:**

- configuration hazards  
(slippery surfaces, long traverses, small openings)
- biological hazards  
(rodent droppings, poisonous plants & animals,  
moulds, fungi, infectious microorganisms)

Source: BLS, 2018 <https://www.bls.gov/iif/oshcfoi1.htm#other>

# Working in Confined Spaces

## 1. Plan

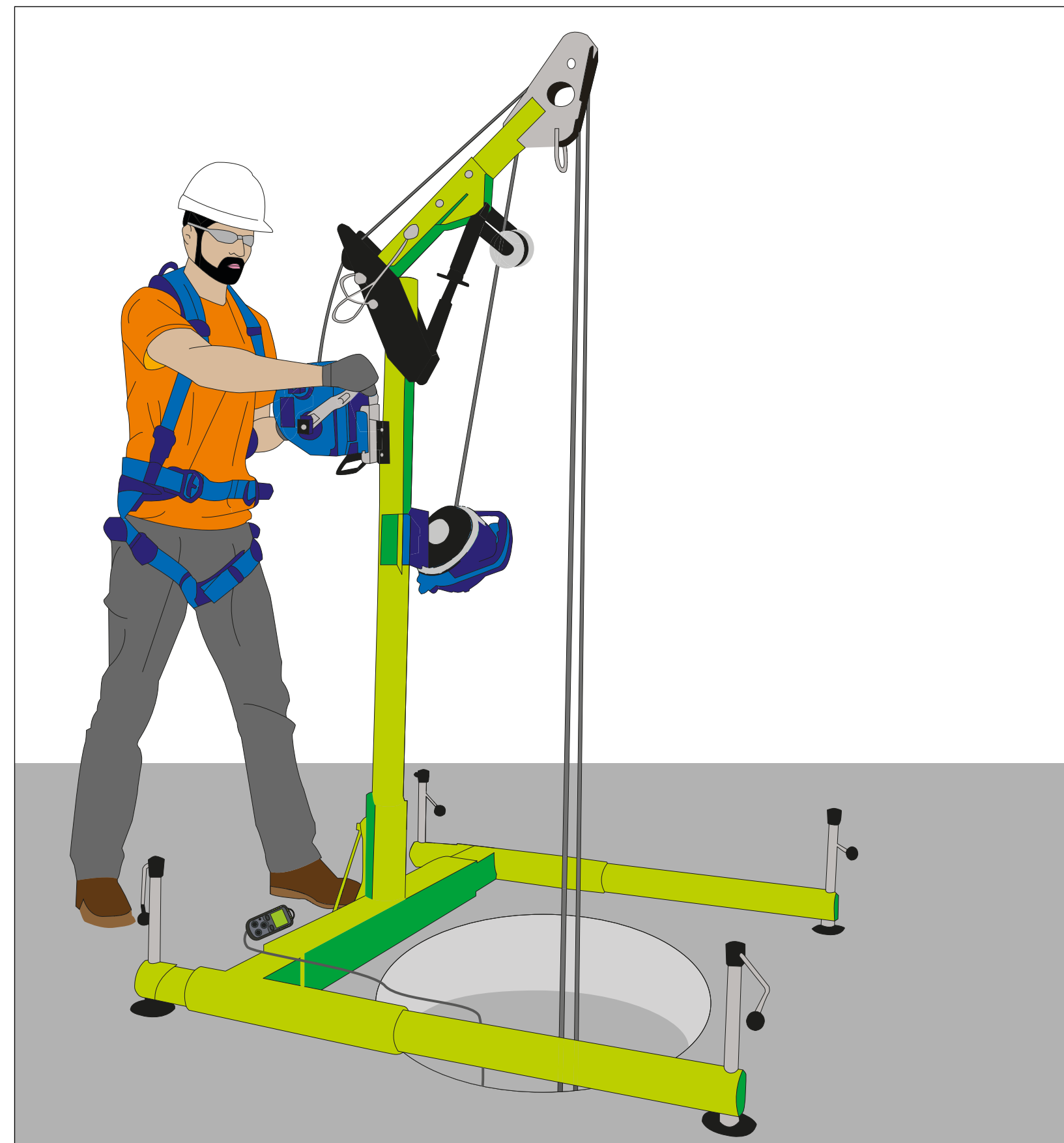


- Training courses
- Regulatory requirements
- Practical tools

Training

[Link to the website](#)

## 2. Access



- Training courses
- Air monitoring
- Retrieval equipment & PPE

3M™ DBI-SALA® Short Reach Davit System

[Link to the website](#)



## 3. Work Inside



- Training courses
- Retrieval equipment & PPE

3M™ DBI-SALA® Delta Comfort Rescue Harness

[Link to the website](#)



## 4. Rescue & Retrieval



- Training courses
- Tools to help with Rescue plan
- Rescue & retrieval equipment

3M™ DBI-SALA® Saled-Blok™ with Retrieval Winch

[Link to the website](#)



3M™ PPE solutions for metalworking industries

# Hand-Arm Vibration

Hand-arm vibration syndrome (HAVS) is an industrial injury that is caused by continuous exposure to vibrations from handheld tools or machinery. Prolonged exposure to vibration can damage the blood vessels, nerves and tendons in the fingers, hand and wrist. Such injuries cause reduced sensitivity, strength and dexterity. Once these conditions take hold, they are irreversible.

HAV management should start with correct assessment of the intensity of the vibration & its duration. Preventing & reducing HAV would imply the following types of controls:

- Elimination & substitution of tasks:  
i.e. alternative working methods like automation
- Careful selection and proper use of tools & consumables, i.e.  
high performance coated abrasives



**3M™ Cubitron™ II  
fibre discs**

[Link to the website](#)



**3M™ Cubitron™ II  
grinding & cut-off wheels**

[Link to the website](#)



**3M™ Scotch-Brite™  
XT-PRO discs**

[Link to the website](#)

## click here & learn more ...

- [Reducing HAV exposure with 3M solutions](#)
- [Link to Health & Safety Executive on HAV at work](#)
- [3M Bombardier case study - reducing hand-arm vibration](#)
- [3M Abrasives for Metalworking](#)

## Applications

### Primary Metals

- Casting to semi-finished product
- Foundry/Casting
- Maintenance & repair

### Fabricated Metals

- Forging
- Cutting
- Deburring
- Welding, gouging, fillet weld removal
- Grinding, Weld refinement, Edge beveling
- Blending

### Surface Preparation

- Mill scale removal
- Blending
- Weld preparation

### Metal Finishing

- Polishing
- Blending

3M™ PPE solutions for metalworking industries

# 3M™ Science of Safety

H&S officials and employers have a duty to provide the correct safety equipment and training. Maintaining consistency in this area can prove difficult, hindering the health and safety process. 3M’s experts are here to help you. Training measures must offer real added value for companies and employees. 3M has a professional and highly qualified team of trainers and provides high quality training in stationary and mobile training centres, as well as at your site.

## 3M Science of Safety Centre – Essential Resources for Health & Safety Professionals

Access expert industry knowledge through our live & on-demand webinars and stay up to date with guidance on hazards and health & safety legislation with our Essential Resource Packs.



Fit Validation



Trainings at 3M locations



Live & On-demand webinars

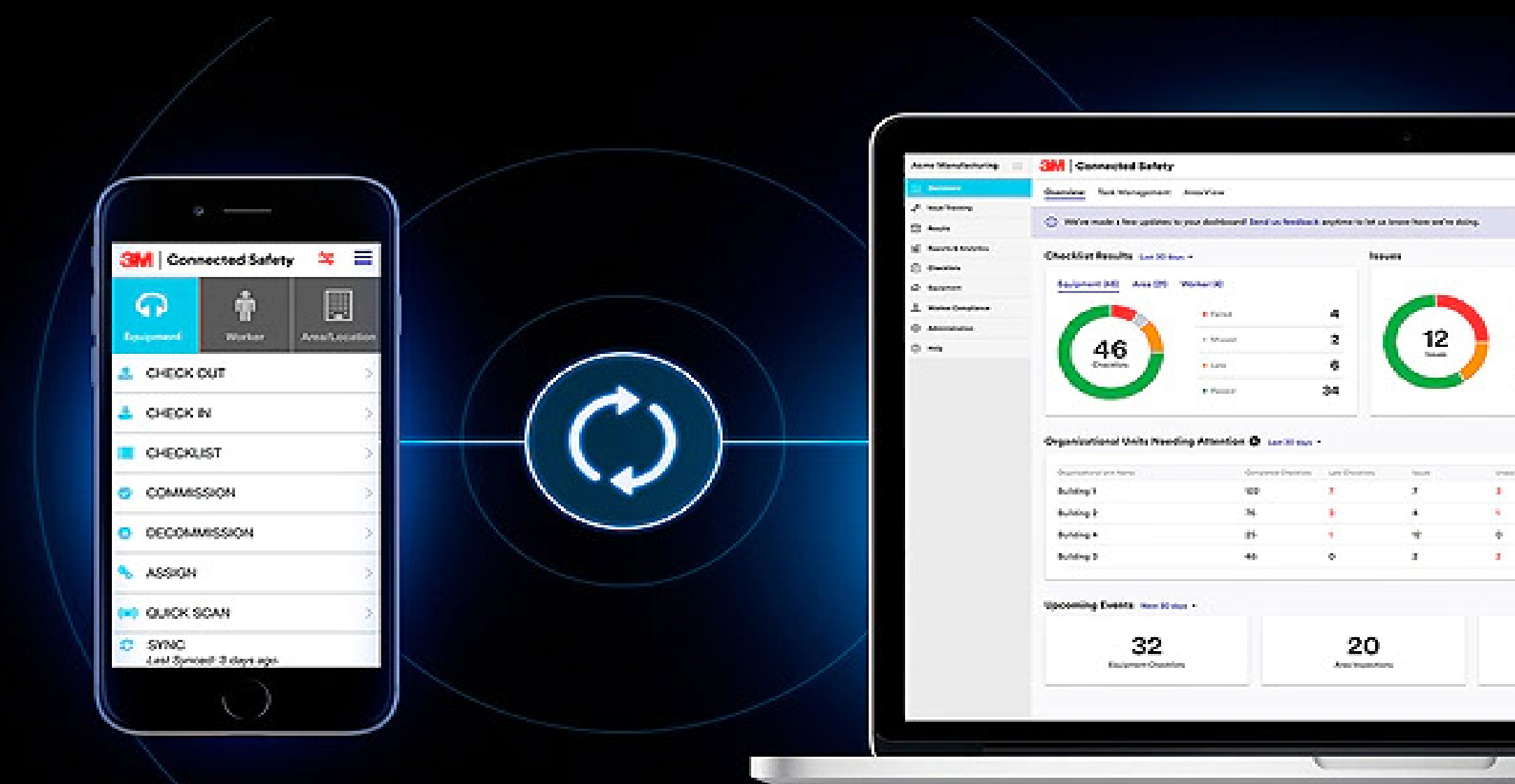


Mobile Training solutions  
(e.g. Welding caravan & Fall protection Unit)

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Applied to Life.™

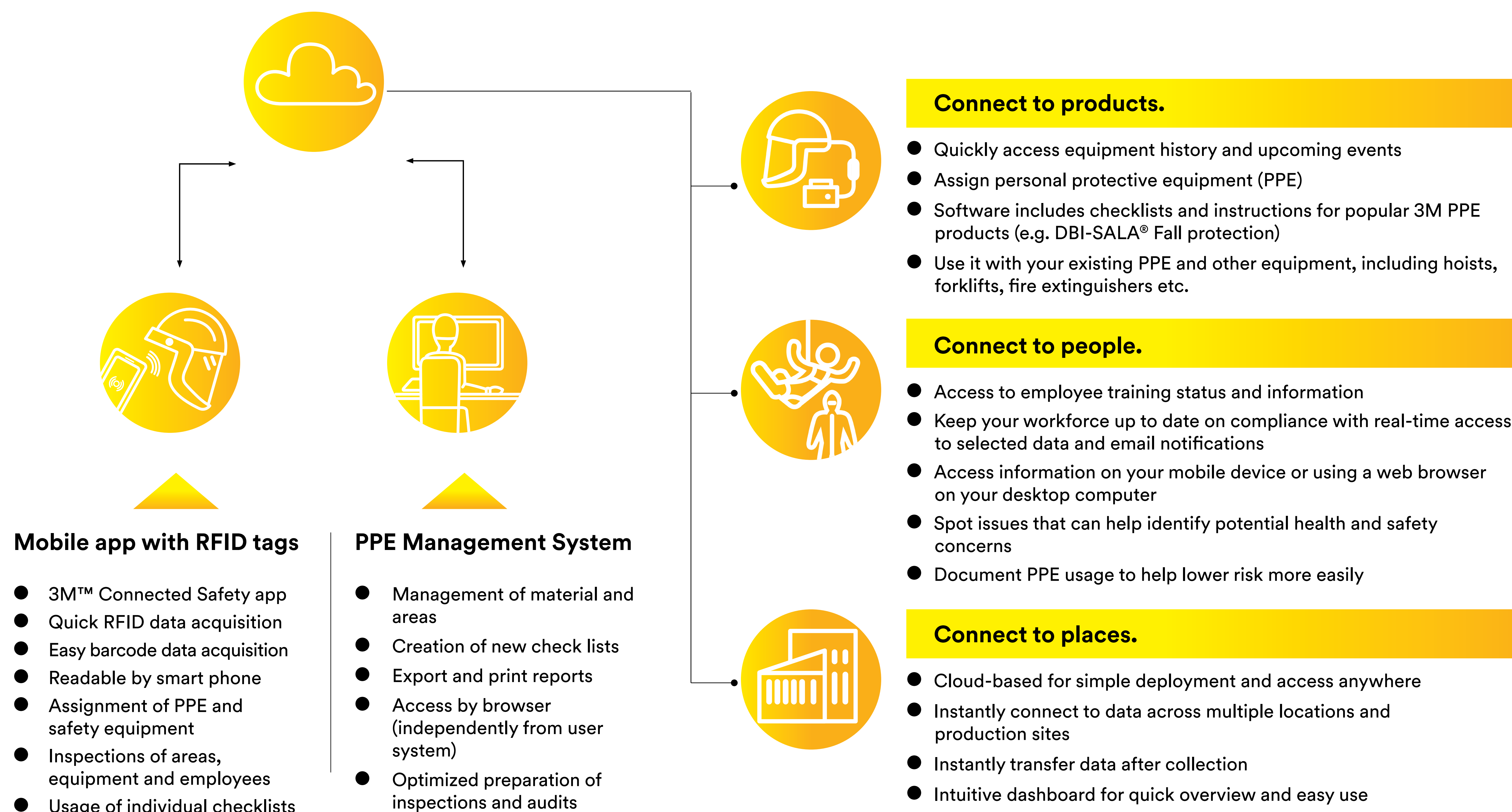
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# Connected Safety



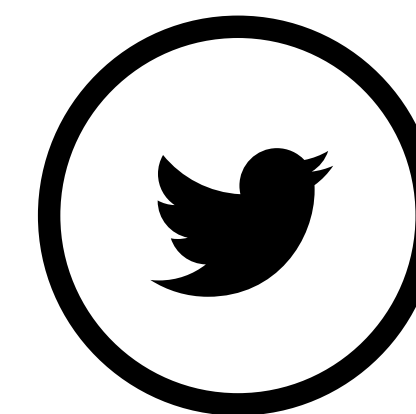
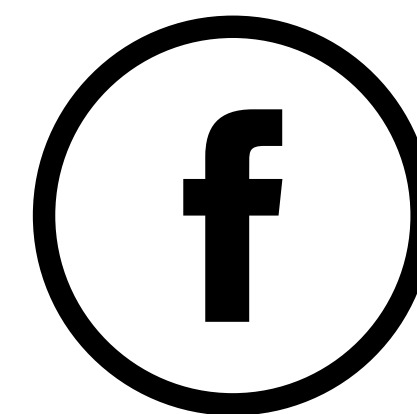
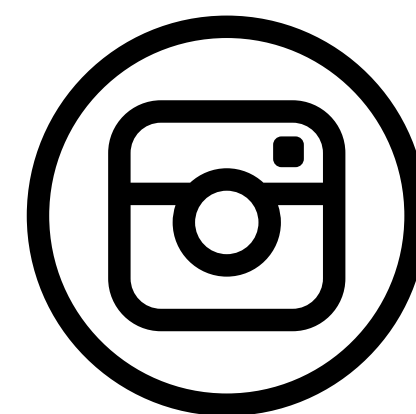
When managing diverse and many items of PPE companies typically invest a lot of time, money and resource. 3M has been listening to their customers and has developed a state of the art cloud-based software that will help improve the efficiency of your safety organization by upgrading to IoT-enabled connected PPE and digitizing legacy processes using our health, safety & compliance software: 3M Safety & Inspection Manager enables your real-time PPE inspection and documentation.

It will also help identify areas of risk and opportunities for improvement through analysis of data and insights generated through 3M Connected Safety products and software to take your compliance programs to the next level. Workers will be able to anticipate workplace hazards better, allowing them to be confident in their safety decisions and focus on the task at hand.



**[click here & learn more ...](#)**

- **[To learn more about 3M Connected Safety Solutions, click here](#)**



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