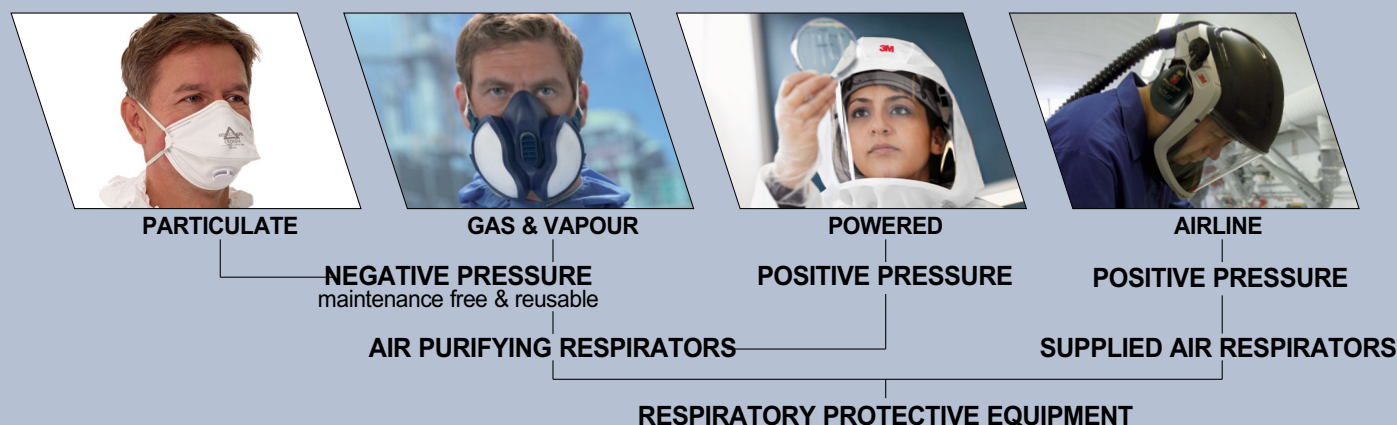# GUIDE TO RESPIRATORS

Types of Respiratory Protective Equipment (RPE)
Each type of RPE has specific limitations which dictate the types of application for which it may be used. RPE is tested to relevant European Standards which determines the product performance.

| PARTICULATE | GAS & VAPOUR | POWERED | AIRLINE |

NEGATIVE PRESSURE
maintenance free & reusable

POSITIVE PRESSURE

POSITIVE PRESSURE

AIR PURIFYING RESPIRATORS

SUPPLIED AIR RESPIRATORS

RESPIRATORY PROTECTIVE EQUIPMENT

BUYING GUIDE

Selecting the correct protection

The selection of Respiratory Protection follows a basic four-step method:

- Identify the hazards – dust, metal fume, gas, vapour
- Assess the hazards – assess the hazard level/other protection – skin and eye
- Select the proper respirator – disposable, half mask, full face, powered, airline
- Training in fitting and use – to optimise respiratory protection

Under current legislation, employers are responsible for providing suitable respiratory protection to employees who need it, however they must also provide training in its use, maintenance of the equipment and keeping maintenance documents.

RESPIRATORY HAZARDS

DUSTS
Produced when solid materials are broken down into finer particles, the longer the dust remains in the air the easier it is to inhale.

MISTS
Tiny liquid droplets formed by atomisation and condensation processes such as spraying. Mists are often combinations of several hazardous ingredients.

METAL FUMES
Occur when metals are vaporised under high heat. The vapour is cooled quickly and condenses into very fine particles that float in the air.

GASES
Airborne at room temperature. Able to diffuse or spread freely, can travel very far very quickly

VAPOURS
Gaseous state of substances that are liquids or solids at room temperature. Formed when substances evaporate in the way water vapour evaporates from water.

HEALTH & SAFETY

Legislation Update Amended Standard
En 149:2001+A1:2009

EN 149:2001 was superseded by an amended version, EN 149:2001+A1:2009 (EN 149+A1) in July 2009. Changes included the introduction of two usability classifications for disposable respirators; single shift only devices non-reusable (shown through marking 'NR') and reusable devices (marked 'R').

The amended European Standard EN 149:2001+A1:2009 states that all reusable devices (marked 'R') must withstand being cleaned and disinfected using a method provided by the manufacturer. This change, along with new performance requirements, is intended to give the user further confidence in respirators providing continuous respiratory protection in hazardous environments.
All particle filtering half masks featured fully conform to EN 149:2001+A1:2009
Disposable respirators that have passed the optional Dolomite clogging test have a suffix 'D' listed in their conformity standards.

EUROPEAN STANDARDS

Respirators are tested to the relevant European Standards and CE marked. All respirators carry the CE mark plus the European Standard and performance category markings.

EN149	–	Filtering facepiece and particulate respirators
EN405	–	Valved filtering half mask respirators for gases and/or particulates
EN140	–	Half mask facepieces
EN136	–	Full facepieces
EN137	–	Self-contained open-circuit compressed air breathing apparatus
EN143	–	Particulate filters
EN146	–	Powered Respirators – Hoods & Helmets
EN147	–	Powered – Full Face Masks
EN270	–	Heavy Duty Supplied Air
EN402	–	Escape Apparatus. SCBA with full face mask or mouthpiece assembly
EN529	–	Respiratory selection, use and care
EN1146	–	Compressed air escape apparatus with hood
EN1835	–	Light Duty Supplied Air
EN12941	–	Powered Respirators – Hoods and Helmets
EN12942	–	Powered Respirator Full Face Masks
EN14387	–	Gas & vapour filters

RESPIRATORY TERMINOLOGY

Workplace Exposure Limit (WEL)
Airborne concentration of a Hazardous Substance, averaged over a specified time period referred to as a Time Weighted Average (TWA).

WEL Time Periods
There are two reference periods for which WELs may be set; 8 hour Time Weighted Average (TWA) and 15 minute Short Term Exposure Limit (STEL). A substance may be assigned WELs at either one or both reference periods.

ı 8 hour TWA – some adverse health effects can occur after prolonged or accumulated exposure. The 8 hour TWA is set to restrict the total intake by inhalation over one or more shifts.

ı 15 minute STEL – Some adverse health effects may be seen after short exposures. 15 minute STEL may be applied to control these effects.

Immediately Dangerous to Life or Health (IDLH)
The IDLH concentration of a substance is defined as "that which poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment". The IDLH value represents a maximum concentration from which a worker would escape within 30 minutes without any impairing symptoms or irreversible health effects.

Odour Threshold
The concentration of a substance at which the majority of individuals can smell or taste it.

RPE SELECTION CALCULATION

For example: Woodworking

[1] Measured Levels (Wood Dust) = 60mg/m³ over 8 hours TWA.

[2] Workplace Exposure Limit (WEL) for wood = 5mg/m³.

[3] Divide [1] by [2] = $\frac{60}{5}$ = 12.

[4] This figure of 12 is the level at which the hazard is above the WEL, i.e. the Hazard Level is 12×WEL.

[5] Assuming all other control measures have been considered, including the eight new principles of good practice, select a respirator with an Assigned Protection Factor (APF) greater than 12 (e.g. 3M Aura 9332+ which has an APF of 20).

[6] Ask yourself the further question 'Do I need to lower levels as far below the WEL as is reasonably practicable?' i.e. is this substance one of the group of substances that can cause cancer, sensitisation or heritable genetic change? In this case, wood dust is a carcinogen and therefore levels should be lowered as far below the WEL as is reasonably practicable. Therefore, if all other control measures have been considered, an even higher performing respiratory protection product should be contemplated. However, always remember that RPE should be the last resort and that one of the main principles of RPE selection should be that it is "suitable to the job and the wearer".