

**Safetyware**

**SAFETYWARE GROUP**

*Responsibility & Care*



# RESPIRATORY PROTECTION

# SELECTING BREATHING PROTECTION

When all other measures have been taken to reduce dangerous levels of exposure, respiratory protection is the last but important step to prevent harmful air contaminants from entering the body through the airways.

The employer is responsible for the selection, maintenance and provision of breathing protection equipment and its use in the workplace. The user is in his turn responsible for using it according to the employer's routines. A programme designed to protect employees from exposure to air contaminants is described in the EN 529 guidelines: recommendations for the selection, use, care and maintenance of respiratory protection equipment.

## 4 THINGS TO CONSIDER

### 1. IDENTIFICATION:

Which hazardous gases, vapours, dust, smoke or aerosols do we need to protect ourselves from? Make workplace measurements and monitor the concentrations of hazardous substances.

### 2. RISK ASSESSMENT:

Is a sufficient oxygen level present during the entire period of exposure? What are the effects on health of the substances present? Are there any occupational exposure limits for these substances? Are there any other risks, such as splashing, sparks or explosive mixtures?

### 3. SELECTION OF BREATHING

Half mask, full-face mask, powered or air-fed respirators.

### 4. TRAINING:

Fitting, function checks, donning, storage and maintenance. Routines for cleaning and replacing filters and wearing parts.

## TYPE OF PARTICULATE RESPIRATORS

The table show below summarizes the difference between the NIOSH 42 CFR Part 84 and CE EN 149:2001 + A1:2009 standards.

Standard	Classification of the Filters	Efficiency Level	Breathing Resistance (Inhalation)	Total Inward Leakage	Categories of Resistance
NIOSH 42CFR-84	N95/R95/P95	95%	85L/Min 3,42 mbar	Not tested	N Series - Used in particulate environments free of oil aerosols
	N99/R99/P99	99%			R Series - Used for oil & non oil particles aerosol ( with time use limitations specified by NIOSH)
	N100/R100/P100	99.97%			P Series - Used for oil & non oil particles aerosol ( with time use limitations specified by manufacturer)
EN 149:2001 + A1:2009	FFP1	≥80%	95L/Min	≤ 22	All masks can be used against oil & non oil particulate aerosols
	FFP2	≥94%	FFP1: 2,1 mbar FFP2: 2,4 mbar FFP3: 3,0 mbar	≤ 8	
	FFP3	≥99%		≤ 2	

Based on efficiency level, FFP2 filters protection level is approximately equal to that of ANSI R95 level .

## CHOOSING THE APPROPRIATE LEVEL OF RESPIRATORY PROTECTION BY USING PROTECTION FACTORS

Type Of Respirator	Class	NPF	CE	OSHA	Type Of Respirator	Class	NPF	CE	OSHA	
Filtering Half Mask	N95	-	-	10	PAPR with Half Mask	P3	2000	40	50	
	R95	-	-	10		PAPR with Hood or Helmet	TH1	10	10	25/1000 <sup>4</sup>
	P95	-	-	10	TH2		50	20		
	FFP1	4	4	10 <sup>3</sup>	TH3		500	40		
	FFP2	12	10		PAPR with Tight Fitting Mask	TM1	20	10	1000	
	FFP3	50	20			TM2	200	20		
Half Mask	P1	4	4	10 <sup>3</sup>	TM3	2000	40	50		
	P2	12	10		Compressed Air w/ Half Face Airline	Continuous Flow Mode	200		20	
	P3	48	20			Compressed Air w/ Full Mask Airline	Continuous Flow Mode		2000	1000
	Gas X	50	10		Compressed Air w/ Hood or Helmet		Continuous Flow Mode		200	40
	Gas X P3	48	10				Pressure Demand		2000	2000
Full face Mask	P1	5	4	50	SCBA Positive Pressure					
	P2	16	10							
	P3	1000	40							
	Gas X	2000	20							
	Gas X P3	1000	20							

<sup>1</sup> Employers may select respirators with higher protection; <sup>2</sup> An effective respiratory program must be implemented; <sup>3</sup> Includes filtering facepiece respirators; <sup>4</sup> Manufacturer must provide test data to demonstrate an APF of 1,000 is achieved; <sup>5</sup> Per (Canada) CSA Z94.4-02, the APF for a full face mask is 100



**Non-Woven Face Mask**

Item Code	Description	Standard	Filtration	Colour	Packing	Unit
1200EL	2-Ply, Basic, Earloop	Nil	Nil	White	50 pcs/bag; 40 bags/carton	BAG
1301EL 1301TO	3-Ply, Level 1, Earloop 3-Ply, Level 1, Tie On	EN 14683, Type I	BFE ≥ 95%	Blue	50 pcs/box; 40 boxes/carton	BOX
1302EL 1302ELR 1302TO	3-Ply, Level 2, Earloop 3-Ply, Level 2, Earloop 3-Ply, Level 2, Tie On	ASTM F2100-11, Level 2, EN 14683, Type IIR, AS 4381:2005, Level 2	BFE ≥ 99%, PFE ≥ 99%	Blue, Green, White	50 pcs/box; 40 boxes/carton 10 pcs/bag; 100 bags/carton 50 pcs/box; 40 boxes/carton	BOX BAG BOX
1412EL	4-Ply, Activated Carbon Level 2, Earloop	ASTM F2100-11, Level 2, EN 14683, Type IIR, AS 4381:2005, Level 2	BFE ≥ 99%, PFE ≥ 99% & Minor Organic Vapours	Grey	50 pcs/box; 20 boxes/carton	BOX
1403EL 1403TO	4-Ply, Level 3, Earloop 4-Ply, Level 3, Tie On	ASTM F2100-11, Level 3, EN 14683, Type IIR, AS 4381:2005, Level 3	BFE ≥ 99%, PFE ≥ 99%	Blue, Green, White	50 pcs/box; 20 boxes/carton	BOX
1311EL 1311ELR	3-Ply, Children, Level 2 3-Ply, Children, Level 2	EN 14683, Type II	BFE ≥ 99%	Blue, Pink	50 pcs/box; 40 boxes/carton 10 pcs/bag; 100 bags/carton	BOX BAG

- Made with premium SS grade Non-Woven Polypropylene (PP) which ensure superior comfort and performance
- The 3-Ply and 4-Ply models are made with high efficiency Meltblown PP filter which offers optimum filtration
- The outer layer non-woven PP is hydrophobic and it provides excellent splash resistance
- A special hydrophilic inner layer helps to absorb moisture which makes wearing the masks to be more comfortable especially for long hour usage
- Choose the 4-ply mask with activated carbon for filtration of organic vapours at nuisance level



## N95 Particulate Respirator with Valve

# 3223V

**1 Pre-Shaped Nose Cushion**  
Ensure custom shape and increase worker comfort and acceptance. No metal used. It avoids the contact between skin and metal, suitable for those environment where metal is not allowed

**2 Embossed Fringe Seal**  
Avoids fluffy open layer around the edges, contour design ensure the compatibility of glasses, goggles and reduces fogging

**3 Patented Adjustable Head Strap**  
Patent adjustable head strap buckle for personal adjustment

**4 Valve**  
Remove hot air effectively, stay cool and breathe easier. Good circulation of air inside the mask to minimize misting of eyewear

**5 Continuous Loop Headstrap**  
Allows to hang the mask around the neck when not in use

**6 Cool Latex-Free Cloth Head Strap**  
Cool latex-free cloth head strap for comfortable wearing, fit and seals securely, no metal used

## 6 Steps To Wear N95 Masks

**1 STEP**  
Wash your hands thoroughly with soap and water or hand sanitizer before putting on the mask.

**2 STEP**  
Select a suitable N95 mask that fits.

**3 STEP**  
Determine which side of the mask is the top and side. Hold the N95 mask with a cupped hand and place it firmly over your nose, mouth and chin.

**4 STEP**  
Stretch and position top band high at the back of head. Stretch and position bottom band under the ears.

**5 STEP**  
Make sure the Pre-shaped nose cushion is fits nicely on your face and adjust the length of head strap.

**6 STEP**  
Perform a fit test by inhaling and exhaling. During exhalation, check for air leakage around face.



**N95 Series Particulate Respirator**

Item Code	Protection	Type	Packing	Unit
3223	Harmful Particulates	Cone Shaped	20 pcs/box	Box
3223V	Harmful Particulates	Cone Shaped (Valve)	10 pcs/box	Box
3223CV	Harmful Particulates + Nuisance Level Organic Vapours	Cone Shaped (Valve, Activated Carbon)	10 pcs/box	Box
3223A	Harmful Particulates + Nuisance Level Organic Vapours, Acid Gases	Cone Shaped (Activated Carbon)	20 pcs/box	Box

- Patent-pending adjustable head strap buckle for personal adjustment
- Metal free and suitable for those environments where metal is not allowed
- Cool latex-free cloth head strap for comfortable wearing
- Continuous loop head strap design can allow to hang the mask around the neck when not in use
- Polypropylene (PP) inner layer provides the most intimate touch to your face
- Pre-shaped nose cushion and soft closed-cell nose foam ensure custom shape and increase the worker comfort and acceptance
- Embossed fringe seal avoids fluffy open layer around the edges
- Contour design ensures the compatibility of glasses, goggles and reduces fogging



**N95 Series Particulate Respirator (Foldable)**

Item Code	Protection	Type	Packing	Unit
3280	Harmful Particulates	Horizontally Foldable	20pcs/box	Box

- Foldable design for easy carry, storage and individual hygienically packed
- Sealed edge that avoids open layers and eliminates the possibility of irritation
- Made of soft Polypropylene (PP) outer and inner layer that provides smooth lining and comfortable feel shapes with minimum leakage
- The continuous loop design allows the users to hang the mask around the neck when not in use



8800



8800V



8800CV

**FFP2 Vertical Fold-Flat Particulate Respirator**

Item Code	Protection	Type	Packing	Unit
8800	Harmful Particulates	Vertically Foldable	20 pcs/box	Box
8800V	Harmful Particulates	Vertically Foldable (Valve)	20 pcs/box	Box
8800CV	Harmful Particulates + Nuisance Level Organic Vapours	Vertically Foldable (Valve, Activated Carbon)	20 pcs/box	Box

- The 8800 series is made with invisible nose bridge without any exposure of metal parts
- Patented head strap buckle to adjust the length of head strap for various facial sizes
- Cool latex-free textile braided head strap for comfortable wearing
- No staple used to avoid the contact between skin and metal and suitable for those environments where metal is not allowed
- Continuous loop design can allow to hang the mask around the neck when not in use
- Foldable design and individually hygienically packed





**N95 Series Particulate Respirator**

Item Code	Protection	Type	Packing	Unit
8200	Harmful Particulates	Cone Shaped	20 pcs/box	Box
8200V	Harmful Particulates	Cone Shaped (Valve)	10 pcs/box	Box
8200AV	Harmful Particulates + Nuisance Level Organic Vapours, Acid Gases	Cone Shaped (Valve)	10 pcs/box	Box

- Patent-pending adjustable head strap buckle
- No metal used
- Designed to offer protection against both oil-based and non oil-based particulate



**Vertical Fold-Flat FFP2 Particulate Respirator**

Item Code	Protection	Type	Packing	Unit
4802	Harmful Particulates	Cone Shaped	20 pcs/box	Box
4802V	Harmful Particulates	Cone Shaped (Valve)	20 pcs/box	Box
4802AV	Harmful Particulates + Nuisance acid gas, organic vapor.	Cone Shaped (Valve)	20 pcs/box	Box

- Polypropylene (PP) inner layer provides the most intimate touch to your face.
- Head strap buckle to adjust the length of head strap for various facial sizes.
- Adjustable hidden nose clip helps provide a custom & secure fit.
- Cool latex-free textile head strap for comfortable wearing.
- Continuous loop head strap design can allow to hang the mask around the neck when not in use.
- Ultrasonic welded to avoid fluffy open layer around the edges.
- Contour design ensures the compatibility of glasses/goggles and reduces fogging.
- Fold-flat design offers convenient storage and portability.
- Individual packaging helps protect the respirator from contamination before use.



# WORK SITUATIONS



Work situation	Type of pollutant	Type of protective device	Type of filter
Painting/roller application of solvent-based paint. Degreasing/ washing. Work with adhesives and jointing compounds.	Solvent vapours.	Half mask or full face mask (if the eyes are irritated).  Fan unit SR 500 with chosen head top.	Gas filter SR 217 A1/ SR 218 A2  Gas filter SR 518 A2+ Particle filter SR 510 P3 R*
Spray painting with water-based paint/ solvent-based paint in open, ventilated areas. Spraying with secticides, etc. High-pressure washing with additives.	Liquid aerosols (spray) and vapours/ solvent vapours Liquid aerosols (spray), vapours from organic weed killers, insecticides, etc. and solvent vapours (degreasing).	Half mask or full face mask (if the eyes are irritated).  Fan unit SR 500 with chosen head top.	Gas filter SR 217 A1/ SR 218 A2 + Particle filter SR 510 P3 R  Gas filter SR 518 A2 + Particle filter SR 510 P3 R
Grinding work (if no gas is emitted). Rock drilling. Chimney-sweeping. Drilling of metals. Turning. Mould spores and other micro organisms.	Particles.	Half mask or full face mask (if the eyes are irritated).  Fan unit SR 700 with chosen head top.	Particle filter SR 510 P3 R
Welding.	Smoke and gas.	Half mask SR 900 with remote filter SR 905, Hose SR 951 Welding Shield SR 591 or SR 592.	Gas filter SR 315 ABE1 + Particle filter SR 510 P3 R + Steel net disc SR 336
Work in sewage treatment plants, public baths, etc. Work on acids, such as in etching, pickling, ensilage.	Inorganic gases/vapours and acid gases (chlorine, sulphur dioxide, sulphuric acid, nitric acid, formic acid).	Half mask or full face mask (if the eyes are irritated).  Fan unit SR 500 with chosen head top.	Gas filter SR 315 ABE1 + Particle filter SR 510 P3 R  Gas filter SR 515 ABE1 + Particle filter SR 510 P3 R
Work with products containing isocyanates i.e. manufacturing of polyurethane (PU) or when heating/burning of PU products.	Gas/vapour or a combination of gas/ vapour and particles (dust, smoke, aerosols).	Compressed air-fed respiratory protective devices or full face mask. Fan unit SR 500 + Visor SR 540 / SR 570	Gas filter SR 315 ABE1 + Particle filter SR 510 P3 R, max 40 hours.  Gas filter SR 515 ABE1 + Particle filter SR 510 P3 R, max 16 hours.
Asbestos removal.	Particles in the form of fibres	SR 200 Airline + compressed air for high levels. SR 500 + SR 200 for lower levels.	Particle filter SR 510 P3 R
PCB removal.	Particles and gases.	SR 500 together with SR 200	Gas filter SR 518 A2 + Particle filter SR 510 P3 R

\*Each gas filter shall be combined with a particle filter SR 510 P3 R.



## EEBD-SS30

### EEBD Emergency Escape Breathing Devices

Air Cylinder	3L
Working Duration	≥ 15 minutes
Working Pressure	210 Bar
Flow Rate	40 L Air/Min
Weight	7kg
Approved Temperature	-30 °C to 60 °C
Dimension	590 mm x 250 mm x 175 mm
Material	Cylinder: Steel Hood: Flame retardant PVC Tube: Flame retardant PVC Storage bag: Flame retardant PVC
Standard	EN 1146:2005, ISO 23269-1:2008, SOLAS, IMO Res. MSC.98(73)

- Designed for easy donning and optimal respiratory protection.
- Easy operation – starts automatically when the bag is opened.
- Encased in a carry bag that, when opened, triggers the supply of breathable air.
- Maintains overpressure inside the hood to prevent inhaling toxic gases.
- Integrated inflatable air cushion on the back of the head automatically adjusts the hood for a secure fit.
- Hands-free during donning for maximum safety and comfort.
- Includes an alarm whistle to signal low air supply.
- Comes with a 3L steel cylinder.



## SCBA-SD68

### SCBA with 6.8L composite cylinder

The **SCBA-SD68** is an open circuit, self-contained, compressed air breathing apparatus. It consists of back plate, carrying harness and pneumatic system, consisting of a cylinder connector, regulator, pressure gauge, whistle and demand valve.

Maximum Input Pressure	30MPa	
Outlet Pressure	0.5+/-0.9MPa	Style
Opening pressure for relief valve	1.2+/-0.2MPa	Colour
Working temperature	-30 C +60 °C	
Type	Dynamic Equilibrium Type	
Flow Restrictor to Gauge Supply Hose	<25Litres minute	

#### Medium Pressure Hose

- Maximum working pressure = 2MPa
- Minimum burst pressure = 1MPa

#### High Pressure Hose

- Maximum working pressure 400Bar
- Minimum burst pressure 600Bar