

What is respirator fit testing all about?

Respirators must be the appropriate size and design to match the facial features of the wearer for an adequate fit to be achieved. Factors that affect the effectiveness of a respirator include:

- correct usage of the respirator
- the condition of the respirator, including filters, cartridges, and the surface that seals against the face
- whether the worker is clean-shaven
- appropriateness of the respirator, cartridges, or filters for the airborne contaminants

Respirator fit testing ensures that respirators can achieve an adequate fit when worn correctly. Furthermore, fit testing for tight-fitting respirators is a requirement for complying with AS/NZS 1715:2009 and AS/NZS/ISO 16975.3:2003. Furthermore, Regulation 17 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 states that any personal protective provided to the worker must be of a suitable size and fit and reasonably comfortable for the worker who is to wear or use it.

Fit testing may be done using qualitative or quantitative methods.

Qualitative fit testing (QLFT) is subjective and relies on a worker's senses and honesty. Briefly, it involves placing a hood over the worker's head while they are wearing their respirator. A bitter- or sweet-tasting challenge agent is sprayed into the hood while the worker performs a series of exercises. If the worker detects the challenge agent during the exercises, then the respirator does not fit the worker. QLFT can only be used for fit testing of disposable respirators and half-facepiece respirators – it cannot be used for full-facepiece respirators. Fit-Test New Zealand does not conduct QLFT.

Quantitative fit testing (QNFT) is objective and does not rely on a worker's senses, but uses a so-called 'condensation nuclei counter' (CNC) instrument, such as the TSI PortaCount, to measure the concentration of particles inside the respirator for comparison with the ambient particle concentration (the concentration outside the respirator). As with QLFT, the worker performs a series of exercises during the fit test. The ratio of particles outside to inside the respirator is the fit factor and this determines whether or not the respirator fits the worker. QNFT can be used for fit testing all types of tight-fitting respirators, including full-facepiece respirators. Fit-Test New Zealand uses the QNFT method.

Fit testing will be conducted **only for workers who are clean-shaven**. Workers must remain clean-shaven whenever they wear their respirators to ensure they are protected from airborne contaminants. The Life Shavers poster gives some guidance in terms of what facial hair is acceptable.

Fit checking (as opposed to fit testing)

Fit **checking** is different to, and is not a substitute for, fit testing. Fit checking (or self-fit checking) is something that the worker should carry out each and every time before they enter the contaminated area. It ensures that the respirator has been donned correctly and is properly sealed to the face. It can also show if the respirator has not been assembled properly after cleaning or sanitising.

Conducting a fit check involves doing positive pressure and negative pressure seal checks. Depending on manufacturers' instructions, one or both checks may be required, and it is important that they are conducted as detailed by the manufacturer. Normally the instructions for donning, fit checking and cleaning/disinfection are supplied in documentation provided with the respirator. If this is misplaced or lost, a search of the manufacturer's website may reveal this important information.

A Positive pressure fit check typically involves:

The wearer sharply exhaling while covering the exhalation valve (for half- and full-facepiece respirators), or covering the facepiece (for disposable respirators) with the hands. It is not usually possible to conduct a positive pressure fit check with a valved disposable respirator because it's usually not possible to cover the valve adequately with the hands. There should be a slight build-up of pressure inside the respirator (causing the respirator to bulge slightly) without air leaking out around the edges.

A Negative pressure seal check typically involves:

The wearer inhaling sharply while covering the filter inlets (e.g. using the hands or filter covers). There should be a slight collapse of the respirator against the face and this partially collapsed state should remain while the wearer holds their breath, and no air should leak inwards.

A failed fit check means the respirator may need to be adjusted or repositioned. Facial hair, improper donning, or a damaged respirator can compromise the seal between the respirator and the face.

Fit-Test New Zealand

Healthy breathing starts here

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