

**Respiratory Fit Testing Protocol Guide**

A consistent approach across Victorian health services

Version 1.1, 15 February 2022

## Updates

To ensure you are aware of the most recent changes, all content updates and the date the document was last updated will be highlighted in yellow text.

Introduction

The focus of respirator fit testing is to ensure there is an adequate seal between the face of the worker and the chosen respirator. There are two different methods of fit testing - quantitative and qualitative; the qualitative fit test method results in a pass or fail response, and a quantitative test, provides an estimate of the number of particles that leak into a respirator.

Why this advice

Quantitative respirator fit testing has been developed in accordance with AS/NZS 1715:2009, ISO 16975-3 and OSHA 1910.134 protocol. The quantitative (QNFT CNC) protocol is the most widely used protocol and relies on the achievement of a fit factor greater than 100. Recently a number of Victorian health services have adopted the practice of recording a fail of a respirator if a person fails any one of the exercises of the quantitative fit test. These two different practices by Victorian health services has led to inconsistencies in reporting of fit test results between health services which is impacting on the transferability of results across Victorian health services. This guidance seeks to clarify that the QNFT CNC modified fast protocol is the preferred approach for Victorian health services.

Fit testing Protocol

Both internationally and within Australia, the OSHA protocol is the most widely used protocol. There are two OSHA protocols, with the modified (fast) protocol of 4 exercises the most commonly used within Victorian health services. The wide usage of the modified protocol is driven by time efficiencies for health services who are fit testing very large numbers of HCWs, and the challenges faced with removing clinical staff from performing essential clinical work.

Victorian health services should follow the OSHA modified QNFT CNC (fast protocol) as the preferred protocol for undertaking fit testing of healthcare workers (HCWs).

A minimum overall fit factor of 100 is required to achieve a fit test pass for disposable respirators. The overall fit factor is the most important item and must be recorded for all HCWs fit tested. Health services are strongly encouraged to record the fit factors for the individual exercises. Although this is not a requirement, recording all fit factor results may assist with the recognition of fit test results by other health services if HCWs are moving between health services and sites. It is possible to have an overall fit factor of 100 (depending on the respirator) even though one of the exercises resulted in a failed fit factor. If a Fit Factor numeric values is close to the pass/fail criteria, it should be investigated and may require readjustment of the respirator with retesting.

The recording of both the overall Fit Factor and the results of individual exercises should is preferred. For further information, refer to the [Transferability of fit test records](https://www.health.vic.gov.au/publications/transferability-of-fit-testing-records) guidance*.*

Factors affecting fit testing

**Facial hair, PPE, prescription glasses and other interferences**

A fit test should not be commenced if there is any hair growth between the face and the respirator seal; this includes stubble, beards, moustaches, and sideburns. Long hair may also interfere with the test and should be positioned away from the seal. Skin should be shaved within 24hrs of the fit test and preferably within 12 hours. In addition to fit testing, anytime where RPE is required to be worn, facial hair including stubble that interferes with the respirator seal must not be present and long hair should be tied or pinned back and out of the way. Further information on facial hair and RPE, will soon be available.

Those being fit tested will have refrained from smoking and vaping and have fasted from food (including sweets and gum) and flavoured drinks for thirty minutes prior to commencing the fit test. Consuming these items may adversely affect fit test results by increasing the chance of failing a fit test by introducing contaminants into the breathing space of the respirator which may be detected by the machine.

Other items that may cause interference with the fit test such as jewellery, creams, gels, lotions, barrier wipes, and clothing should be positioned so that they do not interfere with the seal that may impact on the test. Any creams, gels, lotions, or barrier wipes should be applied at least one hour prior to the test to allow drying/absorption.

Cosmetics that are applied to the area of the respirator seal should be avoided when fit testing or any time a FFR is required to be worn. Cosmetics may allow the seal to move and slip.

Prescription eyewear that is intended to be worn with PPE should be worn during the test. Careful attention should be made to avoid the eyewear straps or temple bars from interfering with the respirator straps. They should not be placed underneath the respirator straps.

Any other PPE that is intended to be worn with the RPE and has the potential to interfere with the RPE, should be worn during the fit test to determine compatibility. This might include goggles, face shields, gowns, or other protections.

If dentures are intended to be worn with the RPE then they should be worn during the test. If dentures are not intended to be worn with the RPE then they should not be worn during the test.

**Facial dressings for RPE related pressure areas**

Where possible fit testing should be avoided when dressings are applied to the face as some dressings may cause the respirator to slip. There is also current uncertainty as to the impact that facial dressings placed underneath FFRs may have on the creation of an adequate seal. For further information on facial dressings and preventing facial injuries relating to FFR usage, see *Factsheet: Extended P2/N95 respirator and eye protection use -preventing facial injury during COVID-19* found at <https://www.dhhs.vic.gov.au/infection-prevention-control-resources-covid-19>

**Comfort assessment test**

The comfort assessment test plays an important role in the selection of a suitable respirator for wearer acceptance. According to the OSHA protocol and ISO 16975-3:2017, the comfort assessment test should take approximately five minutes to determine comfort and to purge the air from within the respirator. The wearer may make adjustments to the respirator to improve comfort during the comfort assessment period.

In some instances, comfort may be able to be determined in a shorter period of time, particularly if the wearer is familiar with the makes and models being tested, however fit testers should be conscious of the time required to purge air from the FFR. The comfort assessment period may also be utilised for procedural explanation and other set-up requirements.

**Real-time fit check**

The real-time fit check function is a useful tool, available on both the AccuFIT™ and PortaCount© machines, that indicates in under a minute to the tester whether the selected respirator is likely to fit the wearer, and therefore indicate whether a fit test should proceed on that respirator, potentially saving much time.

As the real-time fit check is not part of the fit test, it provides an opportunity to train the wearer on how to correctly don the respirator and adjust if necessary, to achieve an adequate seal. The real-time fit check can also be used to troubleshoot failed fit tests which may have failed because of improper positioning or moulding of the respirator or respirator straps.

**The real-time fit check provides an indicative measurement of fit without conducting the fit test exercises and does not replace the need for a fit test.**

**The Fit Factor**

Quantitative fit testing requires the use of equipment such as an AccuFIT™ or PortaCount© machine to provide a numerical value which represents the fit of a respirator to the wearer’s face. This value is called the fit factor (FF).

To determine the FF, a challenge agent is introduced into the surrounding area of the subject. The equipment measures the particle count of the challenge agent in the ambient surroundings outside of the respirator and the challenge agent count within the respirator whilst the subject performs a series of exercises as per the fit testing protocol.

The quantitative fit factor (QNFF) is calculated as a ratio by dividing the ambient particle count outside the respirator by the particle count inside the respirator. Refer to Fit Testing Procedures (Mandatory) Part 1. OSHA-Accepted Fit Test Protocols, (1910.134 App A), <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134App> for an explanation of how the QNFF is calculated.

As stipulated by the ISO 16975-3:2017, the RFF for P2/N95 respirators is 100 which subsequently determines that the required minimum overall QNFF is 100. A wearer of P2/N95 respirators must not wear a respirator where the overall QNFF is calculated at 99 or below.

At the completion of the entire fit test, the machine will provide an indication of whether the fit test is a pass or fail by providing an overall QNFF.

**Threshold for a fit test pass / fail**

The OSHA protocol determines that a respirator has passed the fit test where all exercises have been completed **and** the overall QNFF is equal to or greater than 100. This pass threshold is recommended for Victorian health services and is consistent with practice in other Australian states and territories.

Although an overall QNFF equal to or greater than 100 is considered a pass, at the health service’s discretion, close pass results may prompt a further fit test to try to ascertain a higher numerical overall QNFF (mask with better fit). The additional test may be performed on another respirator make/model or repeated on the same respirator. In the absence of an improved overall QNFF, the respirator with a borderline pass should be considered suitable for use.

Fit tests that have failed may be troubleshooted and repeated.

The practice of force-fitting (repeating a failed fit test greater than three times until a fit is finally achieved) is not recommended and should be avoided.

General

**Repeat fit testing**

Further information on repeat fit testing frequency and repeat fit testing indications can be found in the [Repeat Fit testing Guidance for Health Service Organisations](https://www.health.vic.gov.au/publications/repeat-fit-testing-guidance-for-health-service-organisations) document.

**Documentation**

Data should be captured for each individual who undergoes fit testing. This should include the HCW’s name or identification number, the date of the test and specifics of the respirators tested including make, model and size. Failed respirators should also be documented. Other details should include the protocol used, fit factor results, fit testing equipment used, and any PPE or prescription eyewear worn during the test.

Information and education provided should also be documented. These include consent, donning and doffing education, user seal check education, repeat testing information, and further support such as failure to fit / no fit support where required.

Maintenance and cleaning records should also be maintained.

**Transferability of results**

HCWs who have been successfully fit tested should be provided with documentation that would allow them to carry with them and/or present to other health services as evidence of successful fit testing. Of particular importance is the inclusion of a fit factor result for each exercise and the overall fit factor result. For further information on documentation, refer to the [Respiratory Protection Program Guidelines](https://www.health.vic.gov.au/victorian-respiratory-protection-program-COVID-19-pdf) and [Transferability of fit test records Appendix 1 : Sample fit test card](https://www.health.vic.gov.au/publications/transferability-of-fit-testing-records) guidance.

Where applicable, prior to commencing work, new employees or agency/locum staff should undergo an interview regarding their fit testing status and training. This will help to determine whether they are required to undertake a fit test before commencing work and, if applicable, identify what respirators they’ve been fitted to. The interview should also determine their ability to perform a user seal check.

Resources

[Victorian Respiratory Protection Program Guidelines](https://www.health.vic.gov.au/victorian-respiratory-protection-program-COVID-19-pdf) <https://www.health.vic.gov.au/victorian-respiratory-protection-program-COVID-19-pdf>

[Repeat fit testing Guidance for health service organisations](https://www.health.vic.gov.au/publications/repeat-fit-testing-guidance-for-health-service-organisations) <https://www.health.vic.gov.au/publications/repeat-fit-testing-guidance-for-health-service-organisations>

[Transferability of fit testing records](https://www.health.vic.gov.au/publications/transferability-of-fit-testing-records) <https://www.health.vic.gov.au/publications/transferability-of-fit-testing-records>

[Factsheet: Cleaning and disinfection of respiratory fit testing equipment](https://www.health.vic.gov.au/publications/cleaning-and-disinfection-of-respiratory-fit-testing-equipment-factsheet) <https://www.health.vic.gov.au/publications/cleaning-and-disinfection-of-respiratory-fit-testing-equipment-factsheet>

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Occupational Safety and Health Administration, 2004, *Appendix A to 1910.134 – Fit Testing Procedures (Mandatory) Part 1. OSHA-Accepted Fit Test Protocols*, (1910.134 App A), <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppA>

Clinical Excellence Commission, Respiratory Protection Program Manual, Version 1.0, December 2021

<https://www.cec.health.nsw.gov.au/__data/assets/pdf_file/0004/696712/Respiratory-Protection-Program-Manual.pdf>,

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