



# RESP-FIT

RESPIRATOR FIT TESTING  
TRAINING & ACCREDITATION

## RESP-FIT Course Syllabus

RESP-FIT Committee

ARBN: 637 163 850

ABN: 50 423 289 752

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## 1.0 Introduction

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The Australian Institute of Occupational Hygienists (AIOH) RESP-FIT Committee has developed this course syllabus with the aims to provide persons conducting fit testing with the required knowledge and skills to conduct proper fitting of respiratory protective equipment (RPE) to determine an adequate match between the facepiece of the RPE and face of the wearer.

### 1.1 Learning outcomes

On completing this course successfully, the student will have an understanding of:

- The value of fit-testing and the role of the fit-tester,
- Factors affecting respirator fit and their impact on protection provided,
- Fit testing methodologies,
- How to correctly select and fit respiratory protective equipment,
- How to care for and maintain respiratory protective equipment.

Students who successfully complete a RESP-FIT approved training course and pass the examination, will be provided a “Certificate of Completion” by the approved training provider.

Completion of a “RESP-FIT Approved Course” is not a designation of competence or Accreditation by the AIOH or the RESP-FIT Program against the requirements of ISO 16975-3. Applicants seeking RESP-FIT accreditation will be required to undertake the RESP-FIT Accreditation process as detailed on the RESP-FIT website <http://www.respfit.org.au>.

### 1.2 Course format

Course syllabus theory (Module 1) components may be delivered in a variety of formats including Face to Face, or flexible delivery including online and/or independent pre-learning or a combination of these. However, a minimum of 4 hours face to face practical is required for Module 2.

A mandatory theory examination is required with an indicative time of 60 minutes. This may be by open or closed book and contain a variety of examination question types.

### 1.3 Course Size & Practical Training Resources

The training provider will nominate their maximum course size and trainer ratio to demonstrate how for the nominated course size there will be adequate theory time and practical hands on time for each participant in Module 2. A list of designated resources and equipment for each training course is also required and must adequately support the nominated course size.

### 1.4 Target Course Audience

Individuals interested in conducting respiratory protection fit testing including Occupational Hygienists and allied professionals such as health and safety professionals, occupational health specialists [including physicians and nurses], as well as respiratory protection program administrators.



## 1.5 Module 1 Theory Content:

Topic	Title
1	General Introduction & Fit Testing Overview
2	General fit-test considerations & selection of respiratory protective equipment
3	Fit-test records
4	Fit-test procedures
5	Maintenance requirements

## 2.0 Learning and teaching activities

Module 1: Theory		Indicative Required Hours
<ul style="list-style-type: none"> <li>• Face to Face or</li> <li>• Online Delivery or</li> <li>• Independent Pre-learning or</li> <li>• A combination of the above delivery methods</li> </ul>	Course work Theory/Lectures	No minimum specified, however must cover all theory required in the syllabus
	Module 1 Theory Assessment [including preparation]	1
Module 2: Face to Face Hands On Practical		Minimum Required Hours
Scheduled face to face contact hours Module 1 Theory is a mandatory pre-requisite before undertaking Module 2 Face to Face Hands On Practical and practical assessment/examination.	Practical hands on sessions and demonstrations for selected methodology/ies	4
<p>NOTE: Module 1 Theory can be delivered face to face or Online delivery as a standalone Awareness course however this would not be considered an “Approved RESP-FIT course”. Only courses that deliver Module 1 and Module 2 are eligible to be an “Approved RESP-FIT course”</p> <p>NOTE: We are currently conducting a trial with approved RESP-FIT training providers for an online delivery method for module 2. Please contact RESP-FIT if you would like information on this option.</p>		

## 1.6 Assessment details

Methods of Module 1 Theory Assessment	Examination provided by the training provider based upon the syllabus
Grading mode	Summative
Weighting (%)	100%



Pass mark	70%
Outline details	Minimum 20 questions to be answered in 60 minutes to cover all elements of the syllabus. Some questions may require calculations.

## 1.7 Suggested Course Development Materials

Author	Date	Title	Publisher
Standards Australia	2009	AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment	Standards Australia
International Standards Organisation	2017	ISO 16975-3:2017 Respiratory protective devices – Selection, use and maintenance – Part 3: Fit-testing procedures	International Standards Organisation
Occupational Safety & Health Administration (OSHA)		<a href="#">OSHA 1910.134 Fit Test Procedures</a>	Occupational Safety & Health Administration (OSHA)
Occupational Hygiene Training Association (OHTA)	2019	W201 Basic Principles in Occupational Hygiene Student Manual <a href="#">Download for free</a>	OH Learning
Reed et al	2019	Principles of Occupational Health and Hygiene (3 <sup>rd</sup> Edition), Chapter 6 Personal Protective Equipment	Allen and Unwin

## 2. Dispute Resolution

If there is a dispute between the Training Provider and the RESP-FIT Board or AIOH, the dispute will be dealt with in accordance with the *AIOH Grievance and Dispute Resolution Policy & Procedure*.



### 3.0 Appendix 1: Learning Outcomes

Course Learning Outcomes		
<b>Learning Outcome 1: General Introduction/Fit Testing Overview</b>		
Course participants should appreciate, understand and apply, where appropriate, basic principles of physics, chemistry and human physiology as they relate to respiratory protection requirements.		
Course participants should understand & apply components of an effective RPD programme.		
1.1.0		Describe what fit testing is (i.e. use of a challenge agent and specific protocol to qualitatively or quantitatively determine the effectiveness of the seal between the wearer’s face and respiratory interface).
1.2.0		Demonstrate an understanding of and apply principles of human anatomy and physiology that pertain to respirator fit testing. This will involve being able to:
	1.2.1	Outline the respiratory system and how this system may be affected by occupational factors;
	1.2.2	Describe the respiratory system’s defences
1.3.0		Describe the routes of entry for potential physical, chemical and biological hazards that may be encountered in the workplace. These include:
	1.3.1	Describe the consequences of workplace occupational exposures and potential health effects and disease; and
	1.3.2	Demonstrate an awareness of workplace exposure standards for airborne contaminants and their application in the selection of respiratory protective equipment.
1.4.0		Demonstrate an understanding of why fit testing of tight-fitting respirators is important and what types of tight-fitting (positive and negative pressure) respirators require fit testing. Explain that tight-fitting positive pressure respirators must be fit tested in negative pressure mode.
1.5.0		Demonstrate an understanding of the components of an effective RPD Programme as outlined in AS/NZS1715, and including procedures in relation to the following: a. Appointment of program administrator. b. Selection of RPE. c. Medical screening of users of RPE.



Course Learning Outcomes	
	<ul style="list-style-type: none"> <li>d. Training.</li> <li>e. Issue of RPE.</li> <li>f. Fitting of equipment.</li> <li>g. Wearing of RPE (where required).</li> <li>h. Maintenance of RPE.</li> <li>i. Disposal of equipment.</li> <li>j. Record keeping.</li> <li>k. Program evaluation.</li> </ul>
<b>Learning Outcome 2: General Fit Test Considerations and Selection of Respiratory Protective Equipment</b>	
Course participants should be able to describe legal requirements relating to the selection, use and maintenance of RPD; factors affecting fit; and how to select a respirator appropriate for the wearer, task and workplace hazards.	
2.1.0	Understand the legal framework that underpins the requirements of respirator fit testing and how this relates to AS/NZS 1715:2009
2.2.0	Describe physiological and psychological factors that may affect users of RPE and identify why medical assessment pre use is required.
2.3.0	<p>Describe conditions that could interfere with the fit of respiratory protection.</p> <ul style="list-style-type: none"> <li>a. Facial hair:               <ul style="list-style-type: none"> <li>• Describe the types of facial hair that can interfere with a fit and how this occurs.</li> <li>• Describe the impact facial hair has on RPE fit.</li> </ul> </li> <li>b. Personal Protective Equipment:               <ul style="list-style-type: none"> <li>• Describe how other PPE e.g. safety or prescription glasses, hair nets, beanies, hard hats, head coverings etc can impact the fit and use of RPE and how to evaluate this.</li> </ul> </li> <li>c. Describe any other factors and conditions that could interfere with RPE fit and how to evaluate this.</li> </ul>



Course Learning Outcomes		
2.4.0		<p>Explain what the following are and the differences between them</p> <ul style="list-style-type: none"> <li>• Workplace protection factor,</li> <li>• Assigned protection factor,</li> <li>• Required minimum protection factor</li> <li>• Fit factor</li> </ul>
2.5.0		<p>Explain the required fit factor to be used as a pass/fail point or acceptance for quantitative fit testing per the selected protocol and the determined fit factor level for a Qualitative Aerosol Taste Test (ATT)</p>
2.6.0		<p>Explain the main fit test protocols used globally and the difference between them. This may include but not limited to</p> <ul style="list-style-type: none"> <li>• ISO 16975-3</li> <li>• OSHA 1910.134</li> <li>• INDG479</li> <li>• ANSI Z88.10</li> </ul>
2.7.0		<p>Describe the importance and requirement of the 5 minute comfort assessment period prior to starting the fit test</p>
2.8.0		<p>Explain the two broad categories, types and selection criteria of respiratory protective equipment that can provide protection against atmospheric contaminants and their respective limitations:</p>
	2.8.1	<p>Air Purifying Respirators. Participants should be able to explain the use and limitations of the major types of RPE in this category including:</p> <ul style="list-style-type: none"> <li>• Particulate, gas and/or combined filters</li> <li>• Disposable and reusable</li> <li>• Half and full face</li> <li>• Non-powered and powered</li> </ul>
	2.8.2	<p>Air Supplied Respirators. Participants should have a basic awareness of the major types of RPE in this category including:</p> <ul style="list-style-type: none"> <li>• Escape Breathing Apparatus</li> <li>• Self-Contained Breathing Apparatus (SCBA)</li> <li>• Airline</li> </ul>



Course Learning Outcomes		
2.9.0		<p>Selecting respiratory protective equipment</p> <p>Describe the factors that should be considered when selecting RPE and how they impact on selection:</p> <ul style="list-style-type: none"> <li>• Contaminant</li> <li>• Task</li> <li>• Operator</li> <li>• Equipment limitations</li> <li>• Special response to HAZMAT incidents</li> </ul>
2.10.0		<p>Demonstrate general knowledge of the types of globally recognised fit methodologies, their benefits and limitations such as but not limited to:</p> <ul style="list-style-type: none"> <li>• User Seal Check</li> <li>• Qualitative (QLFT) – Aerosol Taste Test (ATT), Vapour isoamyl acetate (IAA/Banana Oil), Irritant smoke,</li> <li>• Quantitative (QNFT) – Ambient aerosol condensation nuclei counting (CNC), Controlled Negative Pressure (CNP)</li> </ul>
2.11.0		<p>Explain the factors that may influence the frequency of fit testing and describe what this frequency should be.</p>
2.12.0		<p>Demonstrate the process of correctly donning and doffing various respirator types per manufacturer guidance</p>
2.13.0		<p>Awareness of external factors relevant to the fit-test methodology selected such as:</p> <ul style="list-style-type: none"> <li>• HVAC systems;</li> <li>• Size of room (i.e. too small or too big);</li> <li>• Allergies to aerosols used during qualitative fit test;</li> <li>• High ambient particle count (&gt;100 000) for QNFT-CNC;</li> <li>• Confounders such as eating, smoking, chewing gum prior to a fit test.</li> </ul>
2.14.0		<p>Explain the importance of infection control while conducting fit testing such as:</p> <ul style="list-style-type: none"> <li>• Washing hands by the fit tester and those being fit tested</li> <li>• Cleaning Practices of masks</li> <li>• Actions to minimise transmission before, during and after a fit test</li> </ul>
2.15.0		<p>Explain and demonstrate the requirement for the person being fit tested to be standing or sitting for specific exercises per the selected protocol.</p>
2.16.0		<p>Explain and demonstrate that the last donning by the wearer prior to the beginning of a fit test is done without any assistance or guidance by the fit tester.</p>





Course Learning Outcomes		
2.17.0		<p>Explain common reasons why a fit test may fail or need to be stopped while undertaking a fit test. These may be, but not limited to</p> <ul style="list-style-type: none"> <li>• Poor seal</li> <li>• Fit-test subject touches the respirator during a fit test</li> <li>• Fit-test subject speaks during a fit test in the non-talking exercises</li> <li>• Low ambient aerosol count</li> <li>• Low alcohol level</li> <li>• Nebuliser observed to not releasing any aerosols between replenishments and/or at the end of the test</li> <li>• Fit-test subject unable to taste aerosols at end of the test</li> </ul>
2.18.0		Explain potential health and safety hazards associated with the chemicals and/or equipment used in fit testing
<b>Learning Outcome 3: Fit-test records</b>		
Course participants should understand requirements for retention of fit-testing records and what the records must contain.		
3.1.0		Terminology and information gathering
3.2.0		Information required and contained on the fit test record
3.3.0		Record retention, ownership and confidentiality
<b>Learning Outcome 4: Fit-testing procedures</b>		
		<p>Course participants should understand the relevant selected fit testing methodology and how to correctly fit respiratory protective equipment using the selected methodology or methodologies.</p> <p><b>N.B. A minimum of one (1) fit test methodology must be selected from those listed below at 4.2.0, 4.3.0 and/or 4.4.0.</b></p>
4.1.0		General
	4.1.1	<p>Select the RPD assembly that is representative of the RPD used in the workplace or the wearer's individually assigned RPD.</p> <p>RPD used for fit testing shall be equipped with filters and/or adapters appropriate for the selected fit-test method. The filter used for fit testing may be different than those used in the workplace. The weight of filters, and/or fit-test adapters used for fit testing can affect fit.</p>



Course Learning Outcomes		
	4.1.2	Educate and assess the fit test subject's ability to: <ul style="list-style-type: none"> <li>• Don and doff a selected respirator</li> <li>• Adjust strap tension</li> <li>• Perform user seal check</li> </ul> Explain to the fit test subject the purpose, procedure and outcome of the test
	4.1.3	Explain all exercises and their rationale to the fit test subject and assess the performance of each exercise. Demonstrate the different exercises required per the selected protocol.
4.2.0		<b>Qualitative Fit Testing (QLFT) – Aerosol Taste Test (ATT)</b>
	4.2.1	Explain the theory of the Aerosol Taste Test and the equivalent fit factor and how this links to AS/NZS 1715.  Identify limitations of the method, types of RPE this method is suitable for and explain when Aerosol Taste Test may not be suitable.
	4.2.2	Describe the use of the qualitative aerosol taste test fit test kit and how it informs the qualitative fit test.  <b>Practical:</b> set up all equipment, brief the test subject and perform a temporary threshold screening check and a complete fit test <ul style="list-style-type: none"> <li>• Briefing the fit-test subject</li> <li>• Sensitivity test</li> <li>• Observation of donning / user seal check</li> <li>• 5 Minute comfort assessment period</li> <li>• Allow suitable time between sensitivity and fit test solution</li> <li>• Instruct correct exercise conduct per the selected protocol</li> <li>• Troubleshoot a failed test</li> </ul>
	4.2.3	Demonstrate correct recording of a fit test
	4.2.4	List maintenance and cleaning requirements and indicators of when they should be performed.



Course Learning Outcomes		
4.3.0		<b>Quantitative Fit Testing (QNFT) – Ambient Aerosol Condensation Nuclei Counting (CNC)</b>
	4.3.1	<p>Explain the theory of the Ambient Aerosol Condensation Nuclei Counting (CNC), including the ratio of ambient and in respirator concentrations to determine a fit factor and how this links to AS/NZS 1715.</p> <p>Explain the function of the alcohol soaked wick and the required level of purity of the alcohol.</p> <p>Identify limitations of the method.</p>
	4.3.2	<p>Understand acceptable/recommended range of ambient particle count, and factors that can affect ambient count – room size, air conditioning, ventilation, location of particle generator, alcohol level.</p> <p>Be able to state the differences between the protocol options, including exercises, timing, standing/sitting, fit factor pass criteria.</p> <p>Aerosol generator / N95 companion – Explain how these affect fit factor pass rate and particle counts.</p> <p><b>Practical:</b> Prepare the machine up ready for use, including:</p> <ul style="list-style-type: none"> <li>• Correct Connections – hose, usb, power, adaptor</li> <li>• Install alcohol-soaked wick</li> <li>• Familiarity with software – navigate around the application, including adding to respirator table / people table, finding and printing fit test records, using real time readings, conducting a fit test.</li> <li>• Perform daily checks – Explain the purpose of the daily checks, and steps to be taken if daily checks fail.</li> </ul>
	4.3.3	<p>Explain the function of fit test adapters and the importance of the correct positioning of sampling probes and adaptor/s location for the selected respirator.</p> <p>How to mitigate weight of hose when fit testing disposable respirators</p> <p>Correct filter selection for conducting the fit test.</p> <p>Explain why a fit factor result cannot be compared to actual workplace protection factors.</p> <p>Explain what scenarios would make a respirator unsuitable for testing.</p> <p>Explain why the “filter efficiency less than 99%” option must be selected when fit testing with P1 or P2 particulate rated filter.</p>



Course Learning Outcomes		
4.3.4	<b>Practical:</b> Conduct an Ambient Aerosol Condensation Nuclei Counting (CNC) fit test including:	<ul style="list-style-type: none"> <li>• Briefing the fit-test subject</li> <li>• Observation of correct donning / user seal check</li> <li>• Correct selection of filters used for the fit test</li> <li>• Correct probe and adaptor location per the selected protocol</li> <li>• Settling and 5 minute comfort assessment period</li> <li>• Instruct correct exercise conduct per the selected protocol</li> <li>• Interpret real time counts</li> <li>• Evaluate test results</li> <li>• Explain the pass / fail result</li> <li>• Print &amp; sign certificate and explain certificate information / limitations</li> </ul>
4.3.5	<b>Practical:</b> Cleaning and Disinfection of RPE and fit test equipment:	<ul style="list-style-type: none"> <li>• Explain rationale for and conduct of correct cleaning and disinfecting of respirator and fit test equipment.</li> <li>• Removal of probes and adapter from respirator, replace filters and valves as necessary.</li> <li>• Disposal of probed disposable masks.</li> <li>• Correct machine shutdown procedure, including removing alcohol cartridge.</li> <li>• Explain methods of moisture management in tubing.</li> </ul>
4.3.6	<b>Practical:</b> Failed Test Scenarios	<ul style="list-style-type: none"> <li>• Troubleshoot, identify and rectify staged scenarios that lead to a failed test</li> </ul>
4.3.7	Explain the importance of regular calibrations and the minimum calibration frequency.	List maintenance procedures that can be carried out in-house and indicators of when they should be performed.
4.4.0	<b>Quantitative fit testing (QNFT) - Controlled Negative Pressure (CNP)</b>	
4.4.1	Explain the theory of the controlled negative pressure, leak rate, and how fit factor is determined	Identify limitations of the method.



Course Learning Outcomes		
4.4.2	Understand acceptable leak range and factors that can affect pressure - movement of head and body.  State the differences between the protocol options, including exercises, fit factor pass criteria.  <b>Practical:</b> Set the machine up ready for use, including: <ul style="list-style-type: none"> <li>• Correct Connections – hose, usb, power, adaptor</li> <li>• Familiarity with software – navigate around the application, including adding to respirator table / people table, finding and printing fit test records, using real time readings, conducting a fit test.</li> <li>• Perform daily check – Explain the purpose of the daily calibration, and steps to be taken if daily calibration fails.</li> </ul>	
4.4.3	Describe the function of fit test adapters and correct positioning of sampling tubes.  Describe scenarios that would make a respirator unsuitable for testing.  <b>Practical:</b> Check the mask, correctly install a fit test adapter and tubing.	
4.4.4	<b>Practical:</b> Conduct a Controlled Negative Pressure (CNP) fit test including correct fitting of RPE, conduct a fit test to yield a pass result, including: <ul style="list-style-type: none"> <li>• Briefing the fit-test subject</li> <li>• Observation of correct donning / user seal check</li> <li>• Correct selection of filters used for the fit test</li> <li>• Correct adaptor location per the selected protocol</li> <li>• Settling and 5 minute comfort assessment period</li> <li>• Instruct correct exercise conduct per the selected protocol</li> <li>• Interpret real time counts</li> <li>• Evaluate test results</li> <li>• Explain the pass / fail result</li> <li>• Print &amp; sign certificate and explain certificate information / limitations</li> </ul>	
4.4.5	<b>Practical:</b> Cleaning and Disinfection of RPE and fit test equipment: <ul style="list-style-type: none"> <li>• Explain rationale for and conduct of correct cleaning and disinfecting of respirator and fit test equipment.</li> <li>• Removal adapter from respirator, replace filters and valves as necessary.</li> <li>• Correct machine shutdown procedure</li> </ul>	



Course Learning Outcomes		
4.4.6	<b>Practical:</b> Failed Test Scenarios	Troubleshoot, identify and rectify staged scenarios that lead to a failed test
4.4.7		Explain the importance of regular calibrations and the minimum calibration frequency. Describe maintenance procedures that can be carried out in-house and indicators of when they should be performed.
<b>Learning Outcome 5: Maintenance Requirements</b>		
Course participants should be able to demonstrate how to effectively disinfect and maintain RPDs.		
5.1.0		Maintenance and Respirator End of Life Requirements
5.1.1		<p>Explain the importance of RPE maintenance requirements commensurate to the type of RPE</p> <p>Provide information on where to find specific RPE maintenance literature and who is to conduct RPE maintenance (dependent on complexity of RPE if completed by site employees or manufacturer for example).</p> <p><b>Practical component:</b> provide examples of manufacturers RPE maintenance documents</p> <p><b>Practical component:</b> Explain the components of either a half face or full-face respirator. Practically take apart a respirator and demonstrate each component and how the respirator is reconstructed.</p>
5.1.2		<p>Explain the importance of cleaning and disinfecting RPE and the frequency required for cleaning per manufacturer guidance and AS/NZS 1715 recommended guidance. Provide examples of workplace health hazards whereby cleaning and disinfection may be required at more frequent intervals.</p> <p>Provide a clear methodology, as per manufacturers guidance and AS1715:200 to clean and disinfect RPE to the required level.</p>
5.1.3		<p>Explain the importance of inspection</p> <p>Provide examples of typical defects observed in common types of RPE</p>
5.1.4		<p>Briefly describe storage requirements for correct storage of RPE. Discuss:</p> <ul style="list-style-type: none"> <li>• Separation of clean RPE vs contaminated RPE</li> <li>• RPE for emergency/rescue work</li> </ul>



Course Learning Outcomes

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|--|--|
|  | <ul style="list-style-type: none"><li>• Environment RPE is to be stored in</li><li>• Impact of storage on gas and vapour filters</li></ul> |
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