

Qualitative Fit Testing: Frequently Asked Questions (Global)

3M Fit Test Kits

Q: How many fit tests can be conducted with one 3M qualitative fit test kit?

Approximately 150 fit tests can be conducted before you need to re-order fit test solutions. Note, however: the number of people you can fit test with one set of bottles varies depending on how many people you fit test in each session and what their sensitivity thresholds are (10, 20, or 30). When you first fill the nebulizers, you should use 1 tsp of solution. You might only need to fill the sensitivity nebulizer once per fit test session. If you fit test more than 20 people in each fit test session, you will need to fill your fit test nebulizer multiple times and will run out of fit test solution earlier than you run out of sensitivity solution. If using saccharin, the nebulizers should be emptied, rinsed, and refilled at least once every 4 hours as saccharin has a tendency to clog. Please note that some local best practice guidance specifies that the solutions should be disposed of between each wearer for hygiene purposes.

Q: Can we fit test non-3M respirators with a 3M fit test kit?

Yes, you can use 3M fit test kits to fit test non-3M respirators. Verify the qualitative fit test protocol is specified in your local fit test standard.

You can also use non-3M fit test kits to fit test 3M respirators, as long as these fit test kits meet the specifications in your local fit test standard.

3M Fit Test and Sensitivity Solutions

Q: What is in the fit test kit solutions?

The sweet solutions in the FT-10 and FT-20 kits contain sodium saccharin.

Sodium saccharin is commonly used as an artificial sweetener in many commercially available beverages and foods. The bitter solutions in the FT-30 kit contain denatonium benzoate. Denatonium benzoate is used as a taste aversion agent to prevent children from ingesting certain household products.

Q: Do the fit test and sensitivity solutions expire?

There is no published shelf life for the solutions. Any solution left in the nebulizers at the end of your fit test session should not be poured back into the bottles and be discarded to avoid contamination of the solution remaining in the bottle.

Q: Are the solution SDS's available to me?

Yes, visit the following website and select your location: https://www.3m.com/3M/en_WW/sds-search-select-location/

To obtain a copy of the SDS in the format required by your country's legislation, please contact your local 3M subsidiary.

Q: There is a white powdery solid around the cap of the solution. Should I be concerned?

White crystals will form around the cap if it is not sealed tightly to the bottle. This is true for both the sweet solutions and the bitter solutions. It occurs because the solutions are very concentrated, and if drops of the solutions leak out of loose lids, the water evaporates, leaving crystals of the sweet or bitter solute. It is not cause for concern and can simply be wiped away for appearance and convenience.

Bitter Solutions

Q: How can you help subjects remove the bitter taste from their mouths after the fit test?

The taste of denatonium benzoate can be countered with chocolate. Many fit testers offer chocolate to subjects, but this should be done only after the entire fit test protocol is complete.

Saccharin Solutions

Q: There are solids at the bottom of the bottle of sweet solution. Should I be concerned?

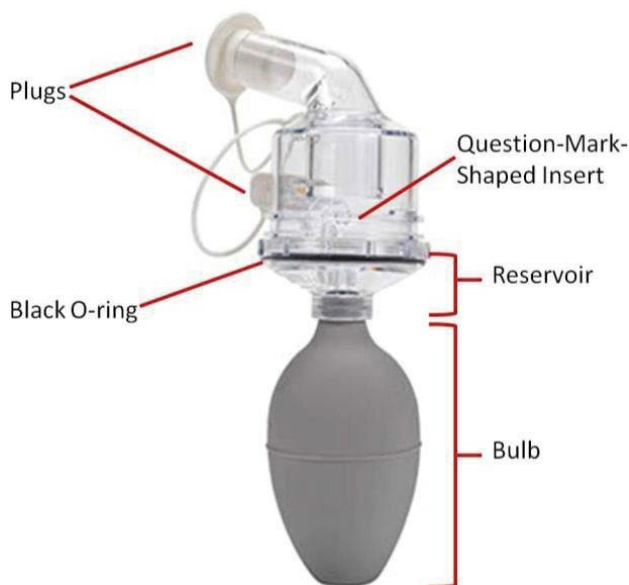
The FT- 12 may crystallize under certain storage conditions, such as if the temperature is lowered. Per the instructions included with the FT-10 and FT-20, if clear solid crystals are present, hold the closed bottle under a warm stream of water and shake vigorously to dissolve back into solution. (If the solution looks cloudy instead of clear, it's possible that it is contaminated and should be discarded.)

Q: During the sensitivity test, no subjects can taste the sweet solution. What should I do?

Check to make sure your nebulizers are generating aerosol when squeezed. Hold them against a solid dark background to see if a cloud of aerosol appears when you squeeze the nebulizer. If no white aerosol cloud appears, perform the following steps:

1. Make sure both white plugs are removed from the nebulizer openings (Fig. A).
2. Make sure the question-mark-shaped insert is present in the nebulizer reservoir (Fig. B) and is pushed down as far as possible on the stem.
3. Verify that the black O-ring is present in the reservoir (Fig. A).
4. The sweet solutions can crystallize on certain parts of the nebulizer, which can impact aerosol generation. Even if you wash your nebulizers frequently, crystals can remain in the two narrow tubes in the nebulizer (Fig. B). Your fit test kit came with a curl of small-gauge wire that should be used to ensure those narrow tubes are clear of crystals. If you no longer have your wire, contact 3M for a replacement.

Figure A. Nebulizer Components



Nebulizers

Q: I noticed my nebulizer is not producing aerosol. What should I do?

See steps 1 – 4 in the answer to the question on [Pg. 2 about sensitivity testing with saccharin](#).

Q: How and when should I clean my fit test nebulizer components?

Nebulizers should be cleaned and disinfected in accordance with local infection prevention and control guidance. Some countries recommend cleaning the nebulizer and disposing of the unused sensitivity and fit test solutions between each fit test subject. If this is not the practice in your country, 3M recommends nebulizers should be rinsed in fresh water after every session or at least every four hours, or if the nebulizer becomes clogged. If you use the sweet solutions, we recommend periodically using the curl of small-gauge wire that came with your fit test kit to remove any crystals that might have formed in the two narrow passageways indicated in Fig. B. Always discard any unused solution.

Figure B. Locations of two narrow passageways that must be cleaned with small-gauge wire.



Hoods and Collars

Q: How should I clean the hoods and collars?

The hood and collar should be cleaned and disinfected in accordance with local infection prevention and control guidance. Some countries recommend cleaning the hood and collar between each fit test subject. Some organizations have multiple hoods they rotate during fit testing session to allow longer periods to dry. If this is not the practice in your country, 3M recommends the hood and collar are cleaned and disinfected after each fit test session.

Respirators

Q: How should I clean the respirators?

If elastomeric respirators are used to fit test multiple subjects, the respirators should be cleaned and disinfected in accordance with local infection prevention and control guidance and the manufacturer's recommendations. Disposable respirators cannot be cleaned and should be safely disposed of following the fit test.

Qualitative Fit Test Protocol

Q: What is the difference between a qualitative and a quantitative fit test?

Local standards specify the approved procedures for qualitative fit testing (QLFT) and quantitative fit testing (QNFT). There are several methods of QNFT – some involve measuring the concentration of an aerosol challenge agent both inside and outside the facepiece; others involve measuring the seal of the respirator by creating a vacuum inside the facepiece. QNFT methods yield a numerical value called a Fit Factor, which is meant to represent the ratio of the concentration outside the facepiece to the concentration inside the facepiece – i.e., the reduction in the airborne concentration of the relevant contaminant. QLFT, on the other hand, yields a pass or fail result, depending on whether the subject reports detecting the challenge agent during the fit test. It is deemed to have an equivalent fit factor of 100. Refer to your local fit test standard to determine when it is appropriate to use QLFT or QNFT depending on the type of respirator you are fit testing and the protection that is required.

Q: How long does each exercise last? How long does a fit test last?

Each exercise lasts 60 seconds. There are 7 exercises in most of the fit test protocols, so the entirety of properly administered fit test exercises lasts a minimum of 7 minutes. Keep in mind that the entire qualitative fit test procedure includes the sensitivity test, donning, and performing user seal checks – in addition to the fit test itself. If a person does not pass a fit test using this method the whole process needs to be repeated including sensitivity threshold process which takes additional time.

Q: What if an individual doesn't taste the sensitivity solution after the first 10 squeezes?

Administer 10 more squeezes, for a total of 20. If the subject still does not taste the solution, administer 10 more squeezes, for a total of 30. If they still don't taste it, they are deemed insensitive to that challenge agent, and you must try an alternative method. (If the challenge agent is the bitter solution, you may switch to the sweet solution, and vice versa.)

Q: Why must I continue to insert the fit test aerosol into the hood every 30 seconds throughout the fit test exercises?

As the subject breathes the aerosol-laden air through the respirator filter, they effectively clean the air. After 30 seconds, more aerosol must be inserted into the hood to restore the airborne concentration to its original level. This protocol was validated to maintain an acceptable concentration of aerosol inside the hood throughout the fit test.

Q: What should I do if someone tastes the challenge agent during the fit test?

Stop the fit test for that person. Ask them to remove the hood and the respirator. (If you are fit testing more than one person simultaneously, finish the fit test for the rest of the subjects.) Work with the person to determine why they failed – examine their donning technique, fit, the respirator, etc. Ask them to re-don the respirator or try a different model or size. Since they may have tasted a high concentration of the fit test solution, encourage them to get a drink of water. When they are ready to be tested again, you must begin the entire procedure again, starting with the sensitivity test and then completing an entire fit test. Reassure the subject that they have not “failed” personally, it is just that they were not able to achieve an appropriate fit with that specific respirator.

Fit Test Regulatory Requirements

Q: Are there any respirators that don't require fit testing?

Loose-fitting facepieces, hoods and helmets, which are all used in positive-pressure configurations, do not depend on a tight seal with the face to provide protection and therefore do not need to be fit tested. Refer to your local standard for respiratory fit testing requirements.

Q: What is a Respiratory Protection Program medical evaluation and who can conduct this for me?

Refer to your local Respiratory Protection standard for medical evaluation requirements and frequencies which is a different component to fit testing in a respiratory protection program.

Q: Does the fit test subject need to be clean-shaven?

Yes. 3M does not support conducting qualitative or quantitative fit tests on people wearing negative-pressure respirators (half and full facepiece air-purifying respirators) or positive-pressure tight-fitting respirators with any facial hair that extends under the respirator seal or interferes with valve function.

Q: How should I document my fit testing?

Record keeping requirements are dependent upon local fit test standards. Examples of required information to collect when document fit testing include: the name or employee number; the type of fit test performed; the make, model, and size of the respirator; the date of the test; PPE worn during fit testing; pass/fail results for QLFT or numerical results for QNFT; etc. The 3M Wear it Right App can help with this.

Q: What is the difference between a fit test and a user seal check?

A fit test helps to verify that the selected respirator can achieve an acceptable fit on a particular wearer's face. The frequency is specific to your local fit test standard. A user seal check is performed by the wearer each time the respirator is donned, to help the wearer confirm that the respirator is donned correctly and has sealed to the face.



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