

FASTER OSHA-COMPLIANT FIT TESTING

APPLICATION NOTE ITI-081

How long does it really take to do an honest OSHA-compliant respirator fit test?

All quantitative respirator fit test instruments have the ability to perform quick fit factor measurements. However, OSHA does not permit you to use that capability indiscriminately. OSHA insists on specific time/activity-based fit test protocols designed to assure scientifically valid results. For example, the TSI PORTACOUNT® Plus Respirator Fit Tester can measure respirator fit in 30 seconds. But, if your organization is required to comply with OSHA, you must use the specific Ambient Aerosol protocol from the Respiratory Protection Standard 29CFR1910.134, which takes just over 7 minutes. Different fit test methods have different OSHA-mandated protocols. For example, instruments such as the OHD FitTester 3000 must use OSHA's mandatory Controlled Negative Pressure (CNP) protocol that requires nearly 10 minutes per fit test.

A fit test performed in less time than shown in Table 1 is **NOT** OSHA-compliant.

The information below was compiled to help eliminate confusion with regard to how long it takes to do OSHA-compliant respirator fit testing. Table 1 summarizes the minimum fit test times for all OSHA-accepted fit test methods. There are no other protocols allowed by OSHA. The protocols are listed in Appendix A of the

OSHA Respiratory Protection Standard 29CFR1910.134. Details supporting the computations follow. A fit test performed in less time than shown in Table 1 is **NOT** OSHA-compliant. Don't take anyone's word that OSHA allows a faster method. Insist on written proof from OSHA.

This issue also affects qualitative fit test methods such as Saccharin and Bitrex. It's easy to perform these protocols too fast when there is no machine controlling the timing. Doing so technically invalidates the test result and makes the whole fit test non-OSHA compliant as well.

Table 1 summarizes the time it takes to do an OSHA-compliant fit test for all of the fit test methods permitted by OSHA, including both qualitative (QLFT) and quantitative (QNFT) methods. The listed times do not take into account any necessary preparation activities, threshold screening tests for the qualitative test methods, or the 5-minute comfort assessment period required for all methods.

Table 1: Duration of OSHA-compliant Respirator Fit Tests

OSHA Protocol	Type of Fit Test	Minimum Fit Test Time for Each Person (min:sec)
Ambient Aerosol (PortaCount)	QNFT	7:15
CNP (FitTester 3000)	QNFT	9:45
Generated Aerosol	QNFT	7:15
Isoamyl Acetate (banana oil)	QLFT	9:00*
Saccharin Solution	QLFT	7:00*
Bitrex™ Solution	QLFT	7:00*
Irritant Smoke	QLFT	7:00*

* Does not include time for required threshold screening test done prior to qualitative fit tests.



The reason for not including preparation activities in these computations is because they do not have OSHA-mandated time requirements or can be accomplished "off line." For example, the 5-minute comfort assessment can be done while the respirator wearer waits for his or her turn to be fit tested. Threshold screening is a requirement for all qualitative fit tests, but the time it takes to do that is not mandated by OSHA and is therefore operator-dependent. The table is intended to list the minimum time during which the fit of the respirator is undergoing evaluation. Don't assume that fit testing can be accomplished this quickly on an ongoing basis. In practice, preparation time, threshold screening, repeating failed tests, etc. make fit testing take longer.

Tables 2 - 8 show a detailed breakdown for each OSHA-accepted fit test protocol listing the time it takes for each step:

Table 2: Time Required for OSHA Ambient Aerosol (PortaCount) QNFT Protocol

Note: Computation does not include time required for test subject preparation or the 5-minute comfort assessment.

Exercise/Activity	Minimum Time (min:sec)
Normal breathing	1:00
Deep breathing	1:00
Turning head side to side	1:00
Moving head up and down	1:00
Talking	1:00
Grimace	0:15*
Bending over	1:00
Normal breathing	1:00
Total	7:15

*Requires use of FitPlus Software, otherwise 60 sec.
Reference: OSHA 29CFR1910.134, appendix A

Table 3: Time Required for OSHA CNP (FitTester 3000) QNFT Protocol

Note: Computation does not include time required for test subject preparation or the 5-minute comfort assessment.

Exercise/Activity	Minimum Time (min:sec)
Normal breathing	1:00
Static measurement #1	0:10
Deep breathing	1:00
Static measurement #2	0:10
Turning head side to side	1:00
Static measurement #3 head left	0:10
Static measurement #4 head right	0:10
Moving head up and down	1:00
Static measurement #5 head up	0:10
Static measurement #6 head down	0:10
Talking	1:00
Static measurement #7	0:10
Grimace	0:15
Bending over	1:00
Static measurement #8	0:10
Remove and re-don mask	1:00*
Normal breathing	1:00
Static measurement #9	0:10
Total	9:45

*Maximum of 1 minute is allowed to remove and re-don mask. If this is done more quickly, the total test time will be slightly reduced. Reference: OSHA 29CFR1910.134, appendix A

Table 4: Time Required for OSHA Generated Aerosol QNFT Protocol

Note: Computation does not include time required for test subject preparation or the 5-minute comfort assessment.

Exercise/Activity	Minimum Time (min:sec)
Normal breathing	1:00
Deep breathing	1:00
Turning head side to side	1:00
Moving head up and down	1:00
Talking	1:00
Grimace	0:15
Bending over	1:00
Normal breathing	1:00
Total	7:15

Reference: OSHA 29CFR1910.134, appendix A

Table 5: Time Required for OSHA Isoamyl Acetate QLFT Protocol

Note: Computation does not include time required for test subject preparation, odor threshold screening or the 5-minute comfort assessment.

Exercise/Activity	Minimum Time (min:sec)
Test atmosphere stabilization	2:00
Normal breathing	1:00
Deep breathing	1:00
Turning head side to side	1:00
Moving head up and down	1:00
Talking	1:00
Grimace	Not used for QLFT
Bending over	1:00
Normal breathing	1:00
Total	9:00

Reference: OSHA 29CFR1910.134, appendix A

Table 6: Time Required for OSHA Saccharin Solution Aerosol QLFT Protocol

Note: Computation does not include time required for test subject preparation, taste threshold screening or the 5-minute comfort assessment.

Exercise/Activity	Minimum Time (min:sec)
Normal breathing	1:00
Deep breathing	1:00
Turning head side to side	1:00
Moving head up and down	1:00
Talking	1:00
Grimace	Not used for QLFT
Bending over	1:00
Normal breathing	1:00
Total	7:00

Reference: OSHA 29CFR1910.134, appendix A

Table 7: Time Required for OSHA Bitrex™ Solution Aerosol QLFT Protocol

Note: Computation does not include time required for test subject preparation, taste threshold screening or the 5-minute comfort assessment.

Exercise/Activity	Minimum Time (min:sec)
Normal breathing	1:00
Deep breathing	1:00
Turning head side to side	1:00
Moving head up and down	1:00
Talking	1:00
Grimace	Not used for QLFT
Bending over	1:00
Normal breathing	1:00
Total	7:00

Reference: OSHA 29CFR1910.134, appendix A

Table 8: Time Required for OSHA Irritant Smoke QLFT Protocol

Note: Computation does not include time required and test subject preparation, threshold screening or the 5-minute comfort assessment.

Exercise/Activity	Minimum Time (min:sec)
Normal breathing	1:00
Deep breathing	1:00
Turning head side to side	1:00
Moving head up and down	1:00
Talking	1:00
Grimace	Not used for QLFT
Bending over	1:00
Normal breathing	1:00
Total	7:00

Reference: OSHA 29CFR1910.134, appendix A



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