

## QLFT versus QNFT: Good...Better...Best

Application Note RFT-010

Businesses that have workers wearing respirators for protection against known airborne hazards are required by OSHA to have a written respiratory protection plan. That plan must include annual respirator fit testing. When full-face respirators are used, OSHA requires\* a quantitative fit test (QNFT) with a minimum fit factor of 500. However, when half-mask respirators are used (including N95 filtering-facepieces), OSHA allows the employer to select either QNFT or qualitative fit testing (QLFT).

So how does a manager with a half-mask equipped work force decide which fit test method is best for his business, and the well-being of his employees? The table below was created to assist respiratory protection managers in making that decision by comparing four different ways to perform fit testing. The four methods shown are:

- QLFT with the commonly-used hand-squeezed nebulizer.
- QLFT with the TSI Qfit™ Respirator Fit Tester (manual version)
- QLFT with the TSI Qfit™ Respirator Fit Tester (automatic version)
- QNFT with the TSI PORTACOUNT® Respirator Fit Tester

Issue	Good		Better		Best
	QLFT	QLFT	QLFT	QLFT	QNFT
	Hand Nebulizer	Qfit - Manual	Qfit - Auto	PORTACOUNT	
OSHA-approved	Yes	Yes	Yes	Yes	Yes
Allowed for half-mask respirators including N95 filtering-facepieces.	Yes	Yes	Yes	Yes	Yes
Allowed for full-face respirators.	No*	No*	No*	No*	Yes
Risk of operator making exercise timing errors that invalidate the test.	High. Exercise timing is left to the operator's discretion.		Low. Pre-programmed to run OSHA protocols.		Zero. Everything is software controlled.
Risk of repetitive stress injury for operator (hand/wrist/forearm).	High. 85 to 255 full-fisted nebulizer squeezes per fit test.	Low. 17 to 54 button pushes using one finger.	Lower. 2 to 4 button pushes using one finger.		Zero. Not applicable.
Risk of operator mixing chemicals improperly and invalidating test.	High. Manual mixing.	Zero. Uses pre-mixed and filled disposable cartridges.			Zero. Not applicable.
Risk of operator contaminating self (hands) with obnoxious test chemicals.	High. Manual handling of open containers.	Low. Uses pre-mixed and filled disposable cartridges.			Zero. Not applicable.
Risk of highly variable or improper aerosol test concentration from exercise to exercise that may invalidate fit test.	High. Nebulizer output depends on operator technique.	Low. Battery-powered nebulizer has fixed output per button press.	Zero. Unit controls the aerosol output for each exercise.		Zero. Test concentration is measured by instrument.
Risk of nebulizer clogging during fit test.	High	Low. Due to fewer start/stop cycles that cause clogging.			Zero. No nebulizer.
Operator stress due to tedium of doing fit testing for hours at a time.	Very High. Intense one-on-one procedure.	Medium. Less effort due to powered nebulizer.	Low. Less effort due to powered nebulizer and built-in timing protocols		Very Low. Operator can relax while fit test proceeds automatically.
Automated record keeping and report generation available.	No				Yes

\*OSHA requires full-face masks to be fit tested with a minimum fit factor of 500. Since all QLFT methods are limited to a fit factor of only 100, QLFT cannot be used for full-face masks. However, there is an exception when the facepiece is always used in a positive-pressure ensemble such as a PAPR or SCBA. In that case OSHA allows QLFT to be used.



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