

3M Regulation Update: MSHA Respirable Crystalline Silica and Respiratory Protection

On April 18, 2024, the Mine Safety and Health Administration (MSHA) published “Lowering Miners’ Exposure to Respirable Crystalline Silica and Improving Respiratory Protection”. For coal mine operators, compliance is required by April 14, 2025; for metal and nonmetal (MNM) operators, compliance is required by April 8, 2026. Following are some key items with regard to respiratory protection. Please see the Federal Register for further information: www.govinfo.gov/content/pkg/FR-2024-04-18/pdf/2024-06920.pdf or relevant MSHA standards as they are updated.

- The permissible exposure limit (PEL) of respirable crystalline silica is 50 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) for a full-shift exposure, calculated as an 8-hour time weighted average (TWA) for all mines.
- Engineering controls are the primary means of controlling respirable crystalline silica. Administrative controls, not including miner rotation, may be used when necessary as a supplementary control.
- If any samples exceed the PEL, corrective action must be taken immediately. Approved respirators must be made available before the start of the next work shift. Affected miners must wear respirators for the full shift or during the period of overexposure until exposures are below the PEL.
- Air purifying respirators shall be NIOSH approved as either 100 series or High Efficiency. **NOTE:** Some sites may also have areas under OSHA jurisdiction. OSHA allows all classes of particulate respirators for silica including N95; see 29 CFR 1910.1053 and 1926.1153.
- If a physician or other licensed health care professional (PLHCP) determines that a miner is unable to wear a respirator, the miner shall be temporarily transferred either to work in a separate area or where respiratory protection is not required in that same mine.
- In MNM mines (but not coal mines), respirators may be used temporarily if miners must work in concentrations above the PEL while 1) engineering controls are being developed and implemented, or 2) it is necessary by the nature of work involved (for example, occasional entry into hazardous atmospheres to perform maintenance or investigation).
- When respirators are used, a written respiratory protection program must be implemented that meets the requirements of ASTM F3387–19 Standard Practice for Respiratory Protection for medical evaluation, respirator selection, training, fit testing, maintenance, inspection and storage.
 - Respirators must be selected based on the ratio of silica exposure level/PEL, and the protection factors listed in the OSHA standard for respiratory protection 29 CFR 1910.134. For example, half mask air purifying respirators may be used for silica exposure up to 10x PEL ($500 \mu\text{g}/\text{m}^3$).
 - Respirator fit testing is required before initial respirator use and at least annually. Fit test methods are specified in ANSI Z88.10. These include quantitative fit tests or qualitative fit tests such as the sacharrin or Bitrex™ aerosol methods.

3M offers several different half and full facepiece 100 level particulate respirators such as the following:

- 3M™ Particulate Respirator, 8233, N100 and 3M™ Particulate Respirator, 8293, P100
- 3M™ Half facepieces 6000, 6500 and 7500 Series or Full facepieces 6000, 7800S or FF-400 Series with 2091, 2291 or 7093 Particle Filters, P100
- 3M™ Secure Click™ HF-800SD or FF-800 Series with D3091 or D9093 Particle Filters, P100

Fit test kits include 3M™ FT-10 Qualitative Fit Test Kit, Sweet and FT-30 Qualitative Fit Test Kit, Bitter.

For more information about 3M respirators, please see [Respiratory Protection | 3M - US](#).

Personal Safety Division

3M Center, Building 235-2W-70
St. Paul, MN 55144-1000

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occupational use only.

3M Canada

P.O. Box 5757
London, Ontario
N6A 4T1

In United States of America

Technical Service 1-800-243-4630
Customer Service 1-800-328-1667
3M.com/workersafety

In Canada

Technical Service 1-800-267-4414
Customer Service 1-800-364-3577
3M.ca/Safety

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