Particulate Respirators 42 CFR Part 84 – Quick Tips

The National Institute for Occupational Safety and Health (NIOSH), under authorization of the Occupational Safety and Health (OSH) Act of 1970, provides a testing, approval, and certification program assuring respirators used in the workplace meet the standards of Title 42 Public Health Code of Federal Regulations (CFR) Part 84 Approval of Respiratory Protective Devices.

Twenty-five years ago (July 1995) NIOSH updated and modernized 42 CFR Part 84. The update addressed existing NIOSH and Mine Safety and Health Administration (MSHA) certification requirements for respiratory protective devices and replaced the MSHA regulations at 30 CFR Part 11 with the public health regulations at 42 CFR Part 84 for all classes of respirators. Testing requirements for particulate respirators were also updated and revised.

The revised testing requirements for particulate filters are much more demanding than the old 30 CFR Part 11 tests and provide much better evidence of the filter's ability to remove airborne particles. The established testing criteria simulate worst-case respirator use. These particulate filters can be used without particle size analysis or filter penetration testing in the workplace.

Particulate respirators fall into nine different classes broken down into three levels of filter efficiency (95 percent, 99 percent and 99.97 percent) and three categories of filter degradation (N, R and P). The selection of N-, R- and P-series filters depends on the presence or absence of oil particles. If no oil particles are present, then any series filters (N-, R- or P-series) may be used. If oil particles are present, then either an R- or P-series filter may be used. If oil particles are present and the filter is to be used for more than one work shift, then only a P-series filter may be used. N-series filters cannot be used if oil particles are present.

Powered air-purifying particulate respirators are classified into two classes—HE and PAPR100—and three series: HE, PAPR100-N, and PAPR100-P. The N-series filters are restricted to use in those workplaces free of oil aerosols. The P-series filters are intended for removal of any particulate that includes oil-based liquid particulates. All three filter series must have a minimum efficiency level of 99.97 percent.

Use Limitations

The service life of all three filter series (N, R and P) is limited by hygiene, damage and breathing resistance. All filters should be replaced whenever they are

damaged or soiled, or whenever they cause noticeable increased breathing resistance. Increased breathing resistance causes discomfort to the wearer.

N-Series Filters
The use and repeated use of N-series filters is limited by hygiene, damage and increased breathing resistance. When working in very dirty or dusty environments that can result in high filter loading, a filter's service time should be limited to continuous or intermittent use of eight hours. This service time can be extended if an evaluation is done of the specific workplace setting to prove that extended use will not degrade the efficiency level of the respirator.

R-Series Filters
The R-series filters should only be used for one working shift (or for eight hours of continuous or intermittent use) when oil is present. Service time for R-series respirators can be extended using the same criteria as N-series respirators. An evaluation must be done of the specific workplace setting to prove that extended use will not degrade the efficiency level of the respirator.

Determinations for both N- and R-series filters should be repeated whenever conditions change, or modifications are made to processes that could change the type of particulate being generated.

P-Series Filters
Use and reuse of the P-series filters is subject only to considerations of hygiene, damage and increased breathing resistance.

Selection

To select the correct respirator for protection against particulates, the following conditions must be known:

- The identity and concentration of the particles in the workplace air.
- The Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL), National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) or other occupational exposure limit (OEL) for the contaminant.
- The hazard ratio (HR) (i.e., the airborne particulate concentration divided by the exposure limit).
- The assigned protection factor (APF) for the class of respirator (the APF should be greater than the HR).
- The immediately dangerous to life or health (IDLH) concentration for the contaminant and whether oxygen levels are sufficient.
- Any service life information available for combination cartridges or canisters.

Multiplying the occupational exposure limit by the APF for a respirator gives the maximum workplace concentration in which that respirator can be used. For example, if the commonly accepted APF for a respirator is 10 and the PEL is five milligrams per cubic meter of air (mg/m^3), then 50 (mg/m^3) is the highest workplace concentration in which the respirator can be used against that contaminant. In no case should an air-purifying respirator be used in IDLH atmospheres or in areas that are oxygen deficient, and under no circumstances should the manufacturer's guidelines be exceeded.

Commonly Asked Questions

1. **Which class of Part 84 respirator should be used where a specific OSHA Standard requires the use of HEPA filtration?**

2. When a hazard requires the use of a respirator with HEPA filtration, the appropriate class is Type 100 (N100, R100, or P100).
3. **How is the proper respirator size determined?**
4. Proper respirator size is determined through a fit test. Employees using negative or positive pressure tight-fitting facepiece respirators must pass an appropriate fit test using the procedures detailed in OSHA's respirator standard (29 CFR 1910.134). Particulate respirators are negative pressure tight-fitting respirators.
5. **When is respirator fit testing required?**
6. Fit testing of all negative or positive pressure tight-fitting facepiece respirators is required prior to initial use, whenever a different respirator facepiece is used, and at least annually thereafter. An additional fit test is required whenever there are changes in the user's physical condition that could affect respirator fit (e.g., facial scarring, dental changes, cosmetic surgery or an obvious change in body weight). The employee must be fit tested with the same make, model, style and size of respirator that will be used.
7. **What are the employer's obligations when respiratory protection is not required but employees wear respirators of their own accord?**
8. The employer must implement those elements of the written respiratory protection program necessary to ensure that any employee using a respirator voluntarily is medically able to use that respirator, and that the respirator is cleaned, stored and maintained so that its use does not present a health hazard to the user. Also, employers must provide the voluntary respirator users with the information contained in Appendix D of 29 CFR 1910.134. Employers are not required to include in a written respiratory program those employees whose only use of respirators involves the voluntary use of filtering facepieces (negative pressure particulate respirators).

Source

42 CFR Part 84

29 CFR 1910.134

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