

## Respiratory Protection for 1,3-Butadiene

*29 CFR 1910.1051(h)*

**Program:** Must conform to 29 CFR 1910.134 (b) through (d) [except (d)(1)(iii), (d)(3)(iii)(B)(1), and (2)] and (f) through (m)

**Permitted Use:**

1. During installation/implementation of engineering and work practice controls
2. In work operations that are non-routine, infrequent, and of limited duration
3. As a supplement to engineering controls and work practices that are insufficient to reduce exposures to or below PELs
4. In emergencies

**Selection:**

1. From options in Table 1
2. Approved by NIOSH under 42 CFR Part 84
3. PAPRs or supplied air respirators must be provided to employees who cannot use negative pressure respirators

**Use:**

1. Air purifying filter elements must be replaced at the beginning of each work shift and according to the following:
  - a. At replacement life intervals specified in Table 1,  
or,  
At 90% of the expiration of service life (derived from worst case data)  
or  
According to a NIOSH-approved end of service life indicator (ESLI) (when available)
  - b. If an employee detects the odor of BD
2. Filter elements must be labeled with date and time first installed on respirator

TABLE 1  
Minimum Requirements for Respiratory Protection  
for Airborne BD

<u>Concentration of Airborne BD (ppm) or Condition of Use</u>	<u>Minimum Required Respirator</u>
Less than or equal to 5 ppm (5 times PEL)	(a) Air-purifying half mask or full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. <i>Cartridges or canisters shall be replaced every 4 hours.</i>
Less than or equal to 10 ppm (10 times PEL)	(a) Air-purifying half mask or full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. <i>Cartridges or canisters shall be replaced every 3 hours.</i>
Less than or equal to 25 ppm (25 times PEL)	(a) Air-purifying full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. <i>Cartridges or canisters shall be replaced every 2 hours.</i>  (b) Any powered air-purifying respirator equipped with approved BD or organic vapor cartridges. <i>PAPR cartridges shall be replaced every 2 hours.</i>  (c) Continuous flow supplied air respirator equipped with a hood or helmet.
Less than or equal to 50 ppm (50 times PEL)	(a) Air-purifying full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. <i>Cartridges or canisters shall be replaced every (1) hour.</i>  (b) Powered air-purifying respirator equipped with a tight-fitting facepiece and approved BD or organic vapor cartridges. <i>PAPR cartridges shall be replaced every (1) hour.</i>
Less than or equal to 1,000 ppm (1,000 times PEL)	(a) Supplied air respirator equipped with a half mask or full facepiece and operated in a pressure demand or other positive pressure mode.
Greater than 1,000 ppm, unknown concentration, or firefighting	(a) Self-contained breathing apparatus equipped with a full facepiece and operated in a pressure demand or other positive pressure mode.  (b) Any supplied air respirator equipped with a full facepiece and operated in a pressure demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in a pressure demand or other positive pressure mode.
Escape from IDLH conditions	(a) Any positive pressure self-contained breathing apparatus with an appropriate service life.  (b) Air-purifying full facepiece respirator equipped with a front or back mounted BD or organic vapor canister.

Notes: Respirators approved for use in higher concentrations are permitted to be used in lower concentrations.  
Full facepiece is required when eye irritation is anticipated.