Personal Protective Equipment Respirator System Per Worker Unit Cost Breakdown

OSHA's Respiratory Protection Standard (29 CFR 1910.134)[1] identifies several types of respirators and their Assigned Protection Factors (APFs). The APF denotes the level of respiratory protection that a given respirator is expected to provide employees. Table presents example annualized unit costs estimates for respirators, respirator system components, training, fit testing, and medical clearance. Actual costs will vary for each rule depending on the affected industry and the analytical timeframe. Useful lives define the schedule used to discount each cost component before the estimates are annualized.

Respirators are organized by their corresponding APF. Unit cost estimates for individual respirator system components and kits are based on price data collected from retailer websites. Price data are averaged for component and kit unit cost estimates that incorporate the price of more than one product brand.

Table 1: Example Annualized PPE Unit Costs per Worker, by Respirator System

Respirator System	Component	Unit Cost	Useful Life	Annualized Unit Costs[1]	
				3%	7%
APF Factor 10					
APR, Half Mask	Half Mask, (APR)	$20.14	2	$11	$11
	Cartridge Filters (APR)	$18.22	0.01	$1,822	$1,822
	Training	$83.60	1	$84	$84
	Qualitative Fit-Testing	$42.50	1	$43	$43
	Medical Clearance	$93.60	21	$6	$8
			Total	**$1,966**	**$1,968**
APF Factor 25					
PAPR, Loose-Fitting Facepiece	Loose-Fitting Facepiece (PAPR)	$52.95	3	$18	$19
	Cartridge Filters (PAPR)	$11.58	0.02	$579	$579
	PAPR System	$1,053.98	3	$362	$375
	Breathing Tube	$54.19	3	$19	$19
	Training	$167.20	1	$167	$167
	Medical Clearance	$93.60	21	$6	$8
			Total	**$1,151**	**$1,167**
APF Factor 50					
APR, Full Facepiece	Full Facepiece (APR)	$220.92	2	$116	$117
	Cartridge Filters (APR)	$18.22	0.01	$1,822	$1,822
	Training	$83.60	1	$84	$84
	Qualitative Fit-Testing	$42.50	1	$43	$43
	Medical Clearance	$93.60	21	$6	$8
			Total	**$2,071**	**$2,074**

[1] The Respiratory Protection Standard (29 CFR 1910.134), promulgated by OSHA, contains requirements for program administration, procedures for respirator selection, employee training, fit testing, medical evaluation, respirator use, APFs and Maximum Use Concentrations (MUCs), as well as other provisions.

Respirator System	Component	Unit Cost	Useful Life	Annualized Unit Costs[1]	
				3%	7%
PAPR, Half Mask	Half Mask	$20.14	3	$7	$7
	Cartridge Filters (PAPR)	$11.58	0.02	$579	$579
	PAPR System Components Kit	$1,053.98	3	$362	$375
	Breathing Tube and Airline Hose	$54.19	3	$19	$19
	Training	$167.20	1	$167	$167
	Quantitative Fit-Testing	$104.79	1	$105	$105
	Medical Clearance	$93.60	21	$6	$8
			Total	**$1,245**	**$1,260**
SAR, Continuous Flow Mode, Half Mask	Half Mask	$20.14	3	$7	$7
	Breathing Tube	$147.39	3	$51	$52
	Pump	$913.55	7	$142	$158
	Pump Installation	$50.00	7	$8	$9
	Pump Inlet Filter	$7.79	0.48	$16	$16
	Pump Outlet Filter	$13.16	0.19	$69	$69
	Training	$167.20	1	$167	$167
	Quantitative Fit-Testing	$104.79	1	$105	$105
	Medical Clearance	$93.60	21	$6	$8
			Total	**$571**	**$591**
APF Factor 1000					
PAPR, Full Facepiece	Full Facepiece	$181.62	3	$62	$65
	PAPR System	$1,053.98	3	$362	$375
	Breathing Tube	$54.19	3	$19	$19
	Cartridge Filters (PAPR)	$11.58	0.02	$579	$579
	Training	$167.20	1	$167	$167
	Quantitative Fit-Testing	$104.79	1	$105	$105
	Medical Clearance	$93.60	21	$6	$8
			Total	**$1,300**	**$1,318**
PAPR, Helmet/Hood	Hood	$89.83	3	$31	$32
	PAPR System Components Kit	$1,053.98	3	$362	$375
	Breathing Tube	$54.19	3	$19	$19
	Cartridge Filters (PAPR)	$11.58	0.02	$579	$579
	Training	$167.20	1	$167	$167
	Quantitative Fit-Testing	$104.79	1	$105	$105
	Medical Clearance	$93.60	21	$6	$8
			Total	**$1,269**	**$1,285**
SAR, Continuous Flow Mode, Full Facepiece	Full Facepiece	$181.62	3	$62	$65
	Pump (1/4 HP)	$913.55	7	$142	$158

Respirator System	Component	Unit Cost	Useful Life	Annualized Unit Costs[1]	
				3%	7%
	Breathing Tube and Airline Hose	$147.39	3	$51	$52
	Pump Installation	$50.00	7	$8	$9
	Pump Inlet Filter	$7.79	0.48	$16	$16
	Pump Outlet Filter	$13.16	0.19	$69	$69
	Training	$167.20	1	$167	$167
	Quantitative Fit-Testing	$104.79	1	$105	$105
	Medical Clearance	$93.60	21	$6	$8
	Total			**$626**	**$649**
SAR, Continuous Flow Mode, Helmet/Hood	Hood	$89.83	3	$31	$32
	Pump (3/4 HP)	$987.69	7	$154	$171
	Breathing Tube and Airline Hose	$147.39	3	$51	$52
	Pump Installation	$50.00	7	$8	$9
	Pump Inlet Filter	$11.73	0.48	$24	$24
	Pump Outlet Filter	$13.16	0.19	$69	$69
	Training	$167.20	1	$167	$167
	Quantitative Fit-Testing	$104.79	1	$105	$105
	Medical Clearance	$93.60	21	$6	$8
			Total	**$615**	**$637**
APF Factor 10000					
SCBA, Positive-pressure Mode, Full Facepiece	Positive-pressure SCBA System (includes full facepiece):	$2,274.60	3	$781	$810
	Air Compressor	$5,404.36	16	$552	$624
	Training	$334.40	1	$334	$334
	Quantitative Fit-Testing	$104.79	1	$105	$105
	Medical Clearance	$93.60	21	$6	$8
			Total	**$1,778**	**$1,881**
SCBA, Positive-pressure Mode, Helmet/Hood	Positive-pressure SCBA system (includes hood)	$2,489.20	3	$854	$886
	Air Compressor	$5,404.36	16	$552	$624
	Training	$334.40	1	$334	$334
	Quantitative Fit-Testing	$104.79	1	$105	$105
	Medical Clearance	$93.60	21	$6	$8
			Total	**$1,851**	**$1,957**

[1] Costs are annualized over a 20-year time period

Acronyms

- APF: Assigned Protection Factors
- APR: Air-Purifying Respirator
- OSHA: Occupational Safety and Health Administration
- PARP: Powered Air-Purifying Respirator
- PPE: Personal Protective Equipment
- SAR: Supplied-Air Respirator (SAR) or Airline Respirator
- SCBA: Self-Contained Breathing Apparatus

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