

Criteria for the Selecting a Respiratory Protective Equipment for Workers Engaged in the Disposal of Decontaminated Waste

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Table 1 Designated protection factor for each type of respiratory protective equipment

(Source: JIS T 8150: 2006 Guidance for selection, use, and maintenance of respiratory protective equipment)

Types of respiratory protective equipment		Face piece/filter types	Protection factor	Protection from	
Combination of air-line respirator and air-purifying respirator	Pressure-demand type gas mask with dust protection function	Full face piece; for organic gases; RS3, RL3	1000	Cs ¹³⁴ , Cs ¹³⁷ , fumes and dioxin particles	
		Full face piece; for organic gases; RS3, RL3	5000		
Air-purifying respirator	Powered air purifying respirator	Full face piece; RS3, RL3	100	Cs ¹³⁴ , Cs ¹³⁷ , dioxin particles	
		Full face piece; RS2, RL2	16.6		
		Half face piece; RS3, RL3	50		
		Half face piece; RS2, RL2	14.3		
		Hood style; RS3, RL3	25		
		Hood style; RS2, RL2	11.1		
	Gas mask with dust protection function (Organic gas canister)	Gas mask with dust protection function (Organic gas canister)	Full face piece; RS3, RL3	50	Cs ¹³⁴ , Cs ¹³⁷ , fumes and dioxin particles
			Full face piece; RS2, RL2	14.3	
			Half face piece; RS3, RL3	10	
			Half face piece; RS2, RL2	6.7	
	Dust mask	Dust mask	Full face piece; RS3, RL3	50	Cs ¹³⁴ , Cs ¹³⁷ , dioxin particles
			Full face piece; RS2, RL2	14.3	
Half face piece; RS3, RL3			10		

		Half face piece; RS2, RL2 DS2, DL2	6.7
		Half face piece; RS1, RL1, DS1, DL1	3.3

Notes:

The protection factor in Table 1 is calculated by the following equation.

Leak rate of the face piece: L_m (%)

Penetration efficiency of filter: L_f (%)

Total leak rate of respiratory protective equipment: TIL (%); $TIL (\%) = L_m (\%) + L_f (\%)$ Equation (1)

Total protection factor of respiratory protective equipment: PF; $PF = 100 / TIL (\%)$ Equation (2)

The leak rate of the face piece and penetration efficiency of the filter used as the basis to calculate protection factor with above equations are as follows.

Types of respiratory protective equipment	Face piece/filter types	Leak rate of face pieces (%)	Filter penetration efficiency (%)
Air-line respirator: Pressure-demand type	Full face piece	0.1	
	Half face piece	2	
Compressed air open-circuit: Pressure-demand type	Full face piece	0.02	
	Half face piece	2	
Powered air purifying respirator	Full face piece	1	
	Half face piece	2	
	Hood style	4	
Dust mask (no power)	Full face piece	2	
	Half face piece	10	
Dust mask filter	RL3, RS3		0.1
	RL2, RS2, DL2, DS2		5
	RL1, RS1, DL1, DS1		20
Gas mask canister			0