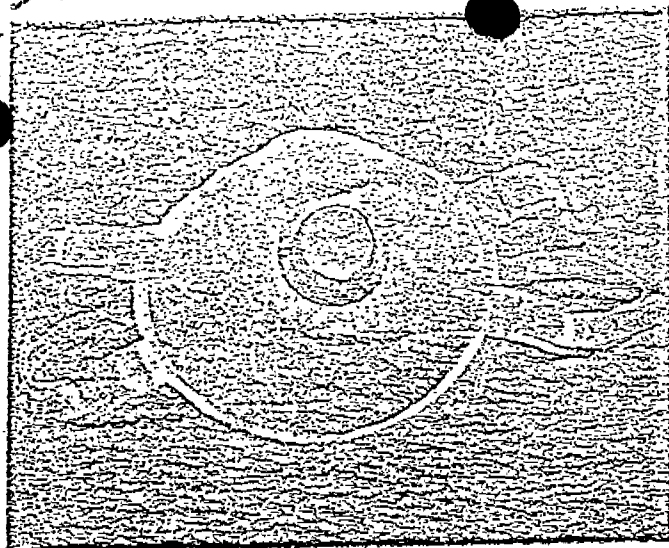




Important Facts on the 3M Brand

#9920 Dust, Fume and Mist Respirator (TC-21C-202)

What is the 9920?

The 3M Brand #9920 Dust, Fume, and Mist respirator is a NIOSH/MSHA approved half-mask respirator made from non-woven fibers designed for worker comfort and protection.

What NIOSH/MSHA approvals did the #9920 receive?

The #9920 Dust, Fume and Mist Respirator was approved under Subpart K of 30 CFR 11 (TC-21C-202, November 20, 1978) for respiratory protection against:

- a) Dusts, including but not limited to aluminum, flour, iron ore, free silica, coal, cadmium, chromium, lead and manganese.
- b) Fumes of various metals including but not limited to aluminum, antimony, cadmium, chromium, copper, iron, lead, magnesium, manganese and zincs.
- c) Mists produced by spray coating with vitreous enamels, chromic acid mist produced during chromium plating, and other mists of materials whose liquid vehicle does not produce harmful gases or vapors.
- d) Radon daughters and radon daughters attached to dusts, fumes and mists.
- e) Asbestos containing dusts and mists.

Is the 9920 classified as a HEPA filter?

No. HEPA refers to a high efficiency particulate filter. The HEPA filter must be at least 99.97% against 0.3 μm DOP particulates. The #9920 was tested against 0.4 to 0.6 μm silica particulates and against lead oxide fume particulates. In these tests, the 9920 is at least 99.9 + % efficient.

Does the 9920 offer protection against gases and vapors?

No. The 9920 offers protection against particulate materials only. Do not use the 9920 for protection against gases or vapors associated with spray paint.

How long can the 9920 be used?

The 9920 is designed for use during a normal work period. It can be used for longer periods provided that:

- a) breathing is not difficult, and
- b) the respirator is not physically damaged.

Can the 9920 be used for protection against welding fumes?

Yes. The 9920 is approved for respiratory protection against metal fumes generated in welding operations for fumes of metals with a threshold limit value — time weighted average (TLV-TWA) concentration greater than 0.05 mg/m^3 . The American Conference of Governmental Industrial Hygienists recommends a TLV-TWA for welding fumes of 5 mg/m^3 if no toxic elements are present in the welding rod.

In welding operations, will the 9920 protect against the nitrogen oxides, carbon monoxide and ozone that may be generated?

No. The 9920 offers no protection against gases and vapors. However, these gases are not normally at concentrations that would require respiratory protection.

Is there an OSHA standard or NIOSH recommendation on welding?

No. Each contaminate is considered separately. The following is a table of metal fumes and gases that may be associated with welding operations.

Maximum Exposure Levels of Welding Fumes and Gases

	Threshold Limit Values ^a						
Material	Time-weighted averages (TWA), mg/m ³ in 8 hours			Short-term exposure limits (STEL), mg/m ³ in 15 min.			Possible Health Hazard When TLV Is Exceeded
Fumes	ACGIH ^b	OSHA	NIOSH	ACGIH ^b	OSHA	NIOSH	
Aluminum (Al ₂ O ₃)	10	—	—	20	—	—	Nuisance dust
Arsenic (As)	0.5	0.5	—	0.5	—	0.002	Lung & lymphatic cancer, respiratory irritant
Beryllium (Be)	0.002	0.002	—	0.025	0.005	0.005 (130 min)	Lung cancer, pneumonitis
Cadmium Oxide (Cd)	0.05	0.1	0.04	0.15	0.3	0.2	Lung and kidney effects, pulmonary edema
Chromium (Cr)	1 ^c —	1.0 ^c —	0.001 ^c 0.025 ^d	— —	— —	0.05 ^c —	Lung cancer, skin ulcers, nasal perforation
Cobalt (Co)	0.1	0.1	—	—	—	—	Chemical pneumonitis
Copper Fume (Cu)	0.2	0.1	—	—	—	—	Irritant, fume fever
Fluoride (F)	2.5	2.5	2.5	—	—	—	Kidney and bone effects
Iron Oxide (Fe ₂ O ₃)	5	10	—	10	—	—	Nuisance dust
Lead, Inorganic (Pb)	0.15	0.2	<0.05	0.45	—	—	Systemic poisoning
Magnesium Oxide (MgO)	10	15	—	—	—	—	Fume fever
Manganese (Mn)	5	—	—	—	5	—	Nervous system disorders
Molybdenum (Mo)	5 ^e 10 ^f	5 ^e 15 ^f	— —	10 ^e 20 ^f	— —	— —	Respiratory irritant
Nickel (Ni)	1	1	0.015	—	—	—	Lung and nasal cancer, skin effects
Tin Oxide (SnO ₂)	10	—	—	20	—	—	Nuisance dust
Titanium Dioxide (TiO ₂)	10	—	—	20	—	—	Nuisance dust
Vanadium (V)	0.05	—	—	—	0.1	0.05	Eye, skin, and lung effects
Zinc Oxide (ZnO)	5	5	5	10	—	15	Fume fever
Welding fumes	5	—	—	—	—	—	Depends on constituents
Gases							
Carbon Dioxide (CO ₂)	5,000	5,000	10,000	15,000	—	30,000 (10 min)	Respiratory effects
Carbon Monoxide (CO)	50	50	35	400	—	200	Asphyxiant
Hydrogen Fluoride (HF)	3	3	2.5 ^g	—	—	5 ^g	Skin, eye irritation, bone effects
Nitrogen Dioxide (NO ₂)	5	5	—	—	—	1	Airway effects
Nitrogen Monoxide (NO)	—	25	25	—	—	—	Blood effects
Ozone (O ₃)	0.1	0.1	—	0.3	—	—	Pulmonary edema
Phosgene (COCl ₂)	0.1	0.1	0.1	—	—	0.2	Airway effects

- a. Threshold limit values for the measured elements and compounds, given in parentheses by their chemical symbols, are listed in mg/m³ (milligrams per cubic metre) for particulate fumes and in ppm (parts per million) for gases.
- b. ACGIH = American Conference of Governmental Industrial Hygienists.
- c. Carcinogenic chromium.
- d. Noncarcinogenic chromium.
- e. Soluble molybdenum.
- f. Insoluble molybdenum.
- g. Reported as mg/m³, milligrams of fluorine per cubic metre.

Source: NIOSH Research Report "Assessment of Selected Controlled Technology Techniques for Welding Fumes";
Report No. NIOSH 79-125.

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