LIST OF RESPIRATORY PROTECTIVE DEVICES APPROVED BY THE BUREAU OF MINES

BY S. J. PEARCE AND L. B. BERGER

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Information Circular 7570

UNITED STATES DEPARTMENT OF THE INTERIOR
Oscar L. Chapman, Secretary
BUREAU OF MINES
James Boyd, Director

Work on manuscript completed April 1950. The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is made: "Reprinted from Bureau of Mines Information Circular 7570."

June 1950

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INTRODUCTION

One phase of Bureau of Mines' work in health and safety is promotion of the use of safe, satisfactory, and reliable respiratory protective devices. To insure that such devices will be available, the Bureau has established schedules of minimum requirements for self-contained breathing apparatus,3/ gas masks,4/ supplied-air respirators (hose masks, air-line respirators, and abrasive blasting helmets, hoods, or masks),5/ dispersoid (dust, fume, and mist) respirators,6/ and nonemergency gas respirators (chemical cartridge respirators).7/ Approval tests of self-contained breathing apparatus are conducted by the Safety Branch; approval tests of other types of respiratory protective equipment are conducted by the Health Branch. Both branches are in the Health and Safety Division.

Manufacturers of respiratory protective devices may submit their equipment to the Bureau of Mines for approval under the requirements of these

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3/ Bureau of Mines, Procedure for Establishing a List of Permissible Self-contained Mine Rescue Breathing Apparatus. Fees, Character of Tests, and Conditions Under Which Mine Rescue Breathing Apparatus Will be Tested: Sched. 13, March 5, 1919, 13 pp.; Sched. 13A (rev. of Sched. 13), January 21, 1930, 12 pp.; Sched. 13 B (rev. of Sched. 13A), August 12, 1935, 12 pp.; Sched. 13C (rev. of Sched. 13B), July 9, 1946, 11 pp.

4/ Bureau of Mines, Procedure for Establishing a List of Permissible Gas Masks, Fees, Character of Tests, and Conditions Under Which Gas Masks Will be Tested: Sched. 14, May 22, 1919, 13 pp.; Suppl. to Sched. 14, January 6, 1920, 4 pp.; Sched. 14A (rev. of Sched. 14), August 25, 1923, 15 pp.; Sched. 14 B (rev. of Sched. 14A), August 7, 1930, 13 pp.; Sched. 14C (rev. of Sched. 14B), August 20, 1934, 17 pp.; Sched. 14D (rev. of Sched. 14C), May 9, 1935, 17 pp.; Sched. 14E (rev. of Sched. 14D), December 24, 1941, 19 pp.

5/ Bureau of Mines, Procedure for Testing Hose Masks for Permissibility: Sched. 19, April 28, 1927, 8 pp.; Suppl. to Sched. 19, August 20, 1934, 3 pp. Procedure for Testing Supplied-air Respirators for Permissibility: Sched. 19A (rev. of Sched. 19 and suppl.; enlarged to include special hose masks without blowers, air-line respirators, and abrasive blasting helmets, hoods, or masks), August 9, 1937, 21 pp.; Sched. 19A as amended in the Federal Register on March 13, 1948, to include Type C, demand-class supplied-air respirators.

6/ Bureau of Mines, Procedure for Testing Filter-type Dust, Fume, and Mist Respirators for Permissibility: Sched. 21, August 20, 1934, 14 pp.

7/ Bureau of Mines, Procedure for Testing Nonemergency Gas Respirators (Chemical Cartridge Respirators) for Permissibility: Sched. 23, November 13, 1944, 10 pp.

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schedules. As a prerequisite to testing, the Bureau requires statements to the effect (1) that the device is completely developed and of design and materials the manufacturer believes suitable for a finished marketable device; (2) that the device has been subjected to such inspections and tests as are described in the schedules, and that it met those requirements when tested by the manufacturer or his testing agency; and (3) a statement regarding the nature, adequacy, and continuity of control of the quality of the respirator. If the manufacturer can satisfy these requirements, and if the device, when tested by the Bureau, meets its requirements, a certificate of approval will be granted, which not only states that the equipment has passed the schedule of requirements but also gives information about its limitations. If it is found at any time that approved devices purchased in the open market and tested do not meet the requirements of the schedule, the Bureau may rescind approval.

Lists of approved devices are published periodically for the information of the public. The last published lists (Inf. Circs. 7444 and 7513) list all devices approved to April 1, 1949.

LIST OF APPROVED DEVICES, JUNE 1, 1950

Following is a list of all respiratory protective devices that had obtained official certification of approval from the Bureau of Mines on June 1, 1950. The manufacturers of this equipment have met the requirements; and the devices have passed the tests for safety, practicability, and efficiency required when approval was granted. The detailed requirements are described in the schedules cited. Photographs of approved devices are included. The addresses of the manufacturers of approved devices are listed alphabetically at the end of this Information Circular.

Self-Contained Breathing Apparatus Approved Under Schedules 13, 13A, 13B, and 13C

1. Gibbs oxygen breathing apparatus. Approval BM-1300, issued to Mine Safety Appliances Co., January 15, 1920.

2. Paul oxygen breathing apparatus. Approval BM-1301, originally issued to American Atmos Corp., January 15, 1920; later transferred to Mine Safety Appliances Co.

3. Fleuss-Davis Proto oxygen breathing apparatus. Approval BM-1302, issued to Siebe, Gorman & Co. (Ltd.), February 7, 1924.

4. McCaa oxygen breathing apparatus. Approval BM-1303, issued to Mine Safety Appliances Co., August 31, 1925.

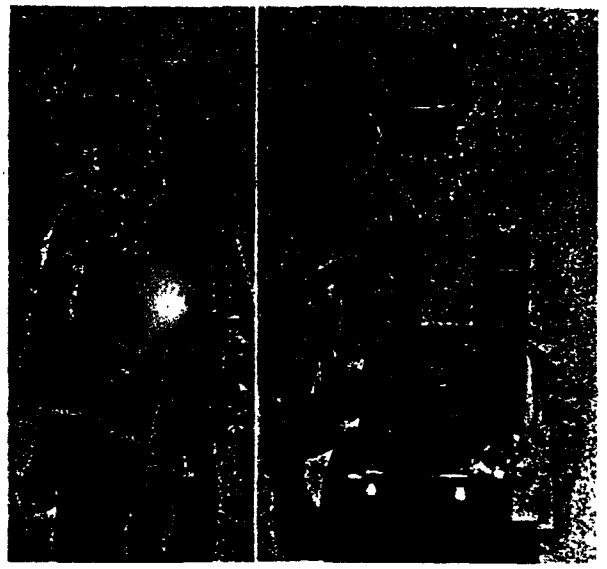
5. Draeger oxygen breathing apparatus (1924 type). Approval BM-1304, issued to Draegerwerk, August 1, 1929.

6. McCaa half-hour oxygen breathing apparatus. Approval BM-1305, issued to Mine Safety Appliances Co., April 1, 1931.

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Gibbs 2-Hour Apparatus
(front and back views),
BM-1300



Paul 2-Hour Apparatus
(front and back views),
BM-1301



Fleuss-Davis 2-Hour Apparatus
(front and back views),
BM-1302



McCaa 2-Hour Apparatus
(front and back views),
BM-1303

Figure 1. - Self-contained breathing apparatus.

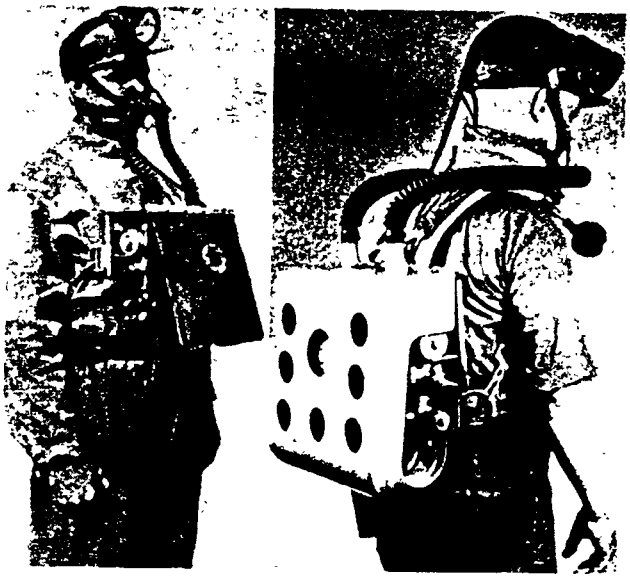
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Draeger (1924) 2-Hour Apparatus (with side tubes and shoulder tubes), BM-1304



McCaa M. S. A. One-Half-Hour Apparatus BM-1305



M. S. A. 1-Hour Apparatus (front and back types), BM-1306

Figure 2. - Self-contained breathing apparatus.

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M. S. A. Chemox Oxygen Breathing Apparatus,
BM-1307



Scott Air-Pak Self-Contained
Breathing Apparatus,
BM-1308



M. S. A. Demand-Type Oxygen Apparatus,
BM-1309



M. S. A. Demand-Type Air Apparatus,
BM-1310

Figure 3. - Self-contained breathing apparatus.

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7. McCaa one-hour oxygen breathing apparatus. Approval BM-1306, issued to Mine Safety Appliances Co., July 28, 1937.

8. Chemox oxygen breathing apparatus (three-quarter hour self-contained oxygen-generating breathing apparatus). Approval BM-1307, issued to Mine Safety Appliances Co., October 3, 1946.

9. Scott Air-Pak self-contained breathing apparatus (one-half hour self-contained compressed air breathing apparatus). Approval BM-1308, issued to Scott Aviation Corp., October 3, 1946.

10. M.S.A. demand-type oxygen apparatus (one-half hour self-contained compressed oxygen breathing apparatus). Approval BM-1309, issued to Mine Safety Appliances Co., October 3, 1946.

11. M.S.A. demand-type air apparatus (one-half hour self-contained compressed air breathing apparatus). Approval BM-1310, issued to Mine Safety Appliances Co., November 26, 1946.

Approved self-contained breathing apparatus are shown in figures 1, 2, and 3.

Gas Masks Approved Under Schedules 14, 14A, 14B, 14D, and 14E

Type A: Acid Gas Masks

1. M.S.A. hydrocyanic acid gas mask. Approvals BM-1413 (regular-size canister) and BM-1414 (supersize canister), issued to Mine Safety Appliances Co., December 9, 1933.

2. Acme chlorine gas mask. Approval BM-1421, issued to Acme Protection Equipment Co., Inc., April 21, 1939.

3. M.S.A. chlorine gas mask. Approval BM-1422, issued to Mine Safety Appliances Co., May 26, 1939.

4. Davis hydrocyanic acid gas mask. Approval BM-1424, issued to Davis Emergency Equipment Co., Inc., December 11, 1939.

5. Willson chlorine gas mask. Approval BM-1426, issued to Willson Products, Inc., March 8, 1940.

6. Davis chlorine gas mask. Approval BM-1427, issued to Davis Emergency Equipment Co., Inc., June 26, 1940.

7. Willson hydrocyanic acid gas mask. Approval BM-1428, issued to Willson Products, Inc., August 30, 1940.

8. Bullard chlorine gas mask. Approval BM-1430, issued to E. D. Bullard Co., February 10, 1941.

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9. Bullard hydrocyanic acid gas mask. Approval BM-1431, issued to E. D. Bullard Co., February 10, 1941.

10. Bullard chlorine gas mask. Extension of approval BM-1426, issued to E. D. Bullard Co., May 20, 1947.

11. Bullard hydrocyanic acid gas mask. Extension of approval BM-1428, issued to E. D. Bullard Co., May 20, 1947.

Type B: Organic Vapor Masks

1. M.S.A. organic vapor mask. Approval BM-1415, issued to Mine Safety Appliances Co., July 28, 1936.

2. Davis organic vapor mask. Approval BM-1417, issued to Davis Emergency Equipment Co., Inc., May 3, 1938.

3. Acme organic vapor mask. Approval BM-1418, issued to Acme Protection Equipment Co., Inc., May 13, 1938.

4. Bullard organic vapor mask. Approval BM-1419, issued to E. D. Bullard Co., July 15, 1938.

5. Willson organic vapor mask. Approval BM-1423, issued to Willson Products, Inc., October 6, 1939.

6. Willson organic vapor mask with large-size canister. Approval BM-1437, issued to Willson Products, Inc., August 5, 1944.

7. M.S.A. organic vapor mask with supersize G. M. A. canister. Approval BM-1441, issued to Mine Safety Appliances Co., August 2, 1946.

8. Bullard organic vapor mask. Extension of approval BM-1423, issued to E. D. Bullard Co., May 20, 1947.

9. Bullard organic vapor mask with large size canister. Extension of approval BM-1437, issued to E. D. Bullard Co., May 20, 1947.

Type BE: Toxic Dust, Fume, Mist, and Fog, and Organic Vapor Masks

1. Willson WIG-IG1-DF mask for organic vapors and toxic dusts, fumes, mists, and fogs. Approval BM-1446, issued to Willson Products, Inc., April 17, 1950.

Type AB: Acid Gas and Organic Vapor Masks

1. M.S.A. acid gas and organic vapor mask. Approval BM-1409, issued to Mine Safety Appliances Co., January 23, 1930.

2. M.S.A. hydrogen sulfide and petroleum vapor mask. Approval BM-1410, issued to Mine Safety Appliances Co., July 16, 1930.

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3. Davis [illegible] Approval BM-1411, issued to Davis Emergency Equipment Co., Inc., [illegible]

4. M.S.A. hydrogen sulfide and petroleum vapor mask. Approval BM-1412, issued to Mine Safety Appliances Co., September [illegible]

5. M.S.A. hydrogen sulfide and petroleum vapor mask. Approvals BM-1416 and BM-1416A issued to Mine Safety Appliances Co., June 16, 1937, and July 1, 1937, respectively.

6. Willson hydrogen sulfide and petroleum vapor mask. Approval BM-1444, issued to Willson Products, Inc., April 18, 1949.

Type C: Ammonia Gas Masks

1. M.S.A. ammonia gas mask. Approval BM-1401, issued to Mine Safety Appliances Co., April 10, 1920.

2. M.S.A. ammonia gas mask. Approval BM-1404, issued to Mine Safety Appliances Co., March 10, 1926.

3. LaFrance ammonia gas mask. Extension of approval BM-1401, issued to American-LaFrance & Foamite Industries, Inc., June 23, 1927.

4. M.S.A. ammonia gas mask. Approval BM-1406, issued to Mine Safety Appliances Co., February 14, 1928.

5. Davis ammonia gas mask. Approval BM-1408, originally issued to Bullard-Davis, Inc., December 19, 1928; later transferred to Davis Emergency Equipment Co., Inc.

6. LaFrance ammonia gas mask. Extension of approval BM-1408, issued to American-LaFrance & Foamite Industries, Inc., November 18, 1930.

7. McDonald ammonia gas mask. Extension of approval BM-1406, issued to B. F. McDonald Co., May 17, 1938.

8. Acme ammonia gas mask. Approval BM-1420, issued to Acme Protection Equipment Co., Inc., March 25, 1939.

9. Willson ammonia gas mask. Approval BM-1425, issued to Willson Products, Inc., December 20, 1939.

10. Bullard ammonia gas mask. Approval BM-1429, issued to E. D. Bullard Co., February 10, 1941.

11. Willson ammonia gas mask with large size canister. Approval BM-1438, issued to Willson Products, Inc., September 22, 1944.

12. LaFrance ammonia gas mask. Extension of approval BM-1406, issued to American-LaFrance & Foamite Industries, Inc., February 20, 1946.

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13. M.S.A. ammonia gas mask with Suprasite C. M. D. canister. Approval BM-1442, issued to Mine Safety Appliances Co., August 29, 1946.

14. Bullard ammonia gas mask. Extension of approval BM-1425, issued to E. D. Bullard Co., May 20, 1947.

15. Bullard ammonia gas mask with Suprasite canister. Extension of approval BM-1438, issued to E. D. Bullard Co., May 20, 1947.

Type D: Carbon Monoxide Gas Masks

1. M.S.A. self-rescuer. Approval BM-1402, issued to Mine Safety Appliances Co., March 6, 1924.

2. M.S.A. self-rescuer. Approval BM-1447, issued to Mine Safety Appliances Co., April 17, 1950.

Type N: Universal Gas Masks

Universal gas masks with filters that afford respiratory protection against smokes from ordinary fires and limited respiratory protection against dusts, fumes, mists, and fogs but do not afford respiratory protection against the toxic smokes of warfare.

1. M.S.A. All-Service gas mask. Approval BM-1403, issued to Mine Safety Appliances Co., July 1, 1925.

2. M.S.A. All-Service gas mask. Approval BM-1405, issued to Mine Safety Appliances Co., August 24, 1928.

3. McDonald All-Service gas mask. Extension of approval BM-1405, issued to B. F. McDonald Co., October 2, 1937.

4. Willson WUG-N1 universal gas mask. Approval BM-1432, issued to Willson Products, Inc., February 2, 1942.

5. Acme All Purpose gas mask. Approval BM-1435, issued to Acme Protection Equipment Co., Inc., September 30, 1942.

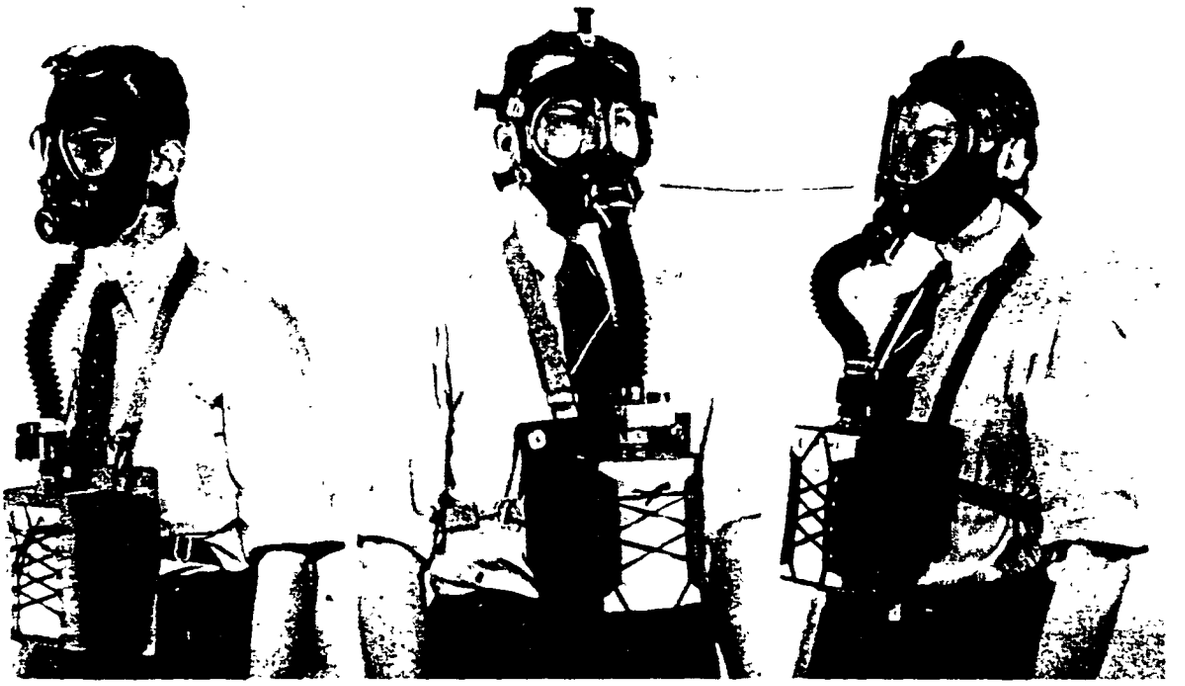
6. Bullard universal gas mask. Approval BM-1439, issued to E. D. Bullard Co., May 16, 1945.

7. Bullard universal gas mask. Extension of approval BM-1432, issued to E. D. Bullard Co., May 20, 1947.

8. Willson WUG-N1 universal gas mask. Approval BM-1443, issued to Willson Products, Inc., May 25, 1948.

9. Bullard Multigas universal gas mask. Extension of approval BM-1443, issued to E. D. Bullard Co., January 12, 1949.

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Willson Universal Gas Mask, WUG-N1 BM-1443

M.S.A. All Service Gas Mask, Model S BM-1434

Acme All-Purpose Gas Mask, Type N BM-1435



La France Ammonia Mask, BM-1406

Davis Organic Vapor Mask, BM-1417

Bullard Chlorine Gas Mask, BM-1426

Figure 4. - Typical approved gas masks.

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Universal gas masks with filters that afford respiratory protection against toxic dusts, fumes, mists, fogs, and smokes.

1. Willson WUG-N2 universal gas mask. Approval BM-1433, issued to Willson Products, Inc., September 9, 1942.

2. M.S.A. All-Service, Model S, gas mask. Approval BM-1434, issued to Mine Safety Appliances Co., September 30, 1942.

3. LaFrance Protexall gas mask. Extension of approval BM-1434, issued to American-LaFrance & Foamite Industries, Inc., March 2, 1943.

4. Acme Model FD universal gas mask. Approval BM-1436, issued to Acme Protection Equipment Co., Inc., October 27, 1943.

5. Bullard universal gas mask. Approval BM-1440, issued to E. D. Bullard Co., May 16, 1945.

6. Bullard universal gas mask. Extension of approval BM-1433, issued to E. D. Bullard Co., May 20, 1947.

7. Willson WUG-N2 universal gas mask. Approval BM-1445, issued to Willson Products, Inc., June 29, 1949.

8. Bullard Smokeater universal gas mask. Extension of approval BM-1445, issued to E. D. Bullard Co., December 7, 1949.

Typical approved gas masks are shown in figure 4.

Supplied-air Respirators Approved Under Schedules 19, 19A, and the Amendment to Schedule 19A

Type A: Hose Masks

1. M.S.A. combination hose mask. Approval BM-1901, issued to Mine Safety Appliances Co., May 29, 1929.

2. Davis hose mask. Approval BM-1902, issued to Davis Emergency Equipment Co., Inc., March 30, 1931.

3. Bullard hose mask. Approval BM-1903, issued to E. D. Bullard Co., April 14, 1933.

4. Davis hose mask. Approval BM-1904, issued to Davis Emergency Equipment Co., Inc., October 29, 1934.

5. M.S.A. combination hose mask. Approval BM-1905A, issued to Mine Safety Appliances Co., July 2, 1935.

6. Davis hose mask. Approval BM-1906, issued to Davis Emergency Equipment Co., Inc., August 2, 1935.

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7. LaFrance fresh air mask. Extension of approval BM-1905A, issued to American-LaFrance & Foamite Industries, Inc., September 20, 1938.

8. Acme supplied-air respirator, type A. Approval BM-1910, issued to Acme Protection Equipment Co., July 16, 1938.

Approved type A supplied-air respirators are shown in figure 5.

Type B: Special Hose Masks Without Blowers

1. Davis air-line mask. Approval BM-1913, issued to Davis Emergency Equipment Co., Inc., March 10, 1939.

2. Bullard Simplex hose mask. Approval BM-1916, issued to E. D. Bullard Co., October 14, 1939.

Approved type B supplied-air respirators are shown in figure 6.

Type C: Air-line Respirators

Continuous-flow class air-line respirators, which supply air to the interior of the facepiece continuously at a set rate.

1. M.S.A. air-line respirator. Approvals BM-1909 and BM-1909A, issued to Mine Safety Appliances Co., July 15, 1938, and May 19, 1947, respectively.

2. Willson air-line respirator, models GA, GB, and GC. Approval BM-1912, issued to Willson Products, Inc., October 7, 1938.

3. Cesco No. 602 Healthguard direct-air mask. Approval BM-1917, issued to Chicago Eye Shield Co., August 17, 1940.

4. METCO air-line respirator. Extension of approval BM-1920, issued to Metallizing Engineering Co., Inc., December 8, 1948.

Demand class air-line respirators, which supply air to the interior of the facepiece only when the wearer inhales and at a rate governed by his breathing.

1. M.S.A. Demand-type airline respirator. Approval BM-1922, issued to Mine Safety Appliances Co., May 27, 1949.

2. Scott Demand respirator. Approval BM-1924, issued to Scott Aviation Corp., September 28, 1949.

Approved type C supplied-air respirators are shown in figure 7.

Type CE: Abrasive Blasting Helmets, Hoods, or Masks

1. M.S.A. abrasive mask. Approvals BM-1907 and BM-1907A, issued to Mine Safety Appliances Co., July 15, 1938, and May 19, 1947, respectively.

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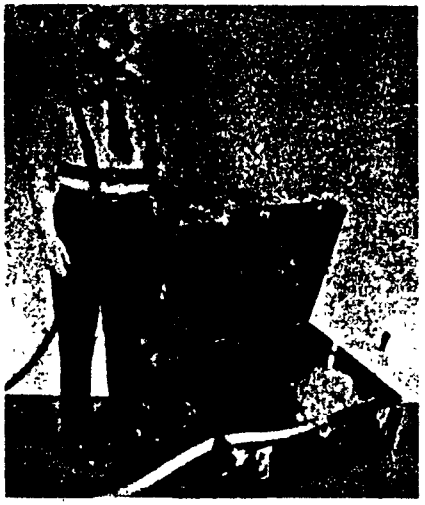
Bullard Hose Mask,
BM-1903



La France Fresh-Air Mask,
Model A BM-1905A



M.S.A. Combination Hose Mask,
BM-1905A



Davis Hose Mask,
BM-1906



Acme Supplied-Air Respirator,
Type A BM-1910

Figure 5. - Type A supplied-air respirators.

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Davis Airline Mask,
BM-1913



Bullard Simplex Hose Mask,
BM-1916

Figure 6. - Type B supplied-air respirators.

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Continuous-flow class



M.S.A. Airline Respirator, BM-1909



Willson Airline Respirator, BM-1912



Cesco No. 602 Healthguard Direct Air Mask, BM-1917

Demand-class



M.S.A. Demand-type Airline Respirator, BM-1922



Scott Demand Respirator, BM-1924

Figure 7. - Type C supplied-air respirators.

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M. S. A. Abrasive Mask,
BM-1907



Pangborn Blast Helmet,
DD-4 BM-1908



Sly Purair Helmet,
BM-1911



Willson Abrasive Blasting Helmet,
No. 31 BM-1914

Figure 8. - Type CE supplied-air respirators.

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Pangborn Blast Helmet,
DF-2 BM-1915



Cesco Healthguard Mask,
No. 602 BM-1918



M.S.A. and McDonald Blastfoe
Abrasive Helmet,
BM-1919



Bullard Abrasive Blasting Helmet,
No. V, BM-1921



Willson Lighweight Abrasive
Blasting Helmet,
BM-1923

Figure 9. - Type CE supplied-air respirators.

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2. Pangborn blast helmet, type DD-4. Approval BM-1908, issued to Pangborn Corp., July 15, 1938.

3. Sly Purair helmet. Approval BM-1911, issued to W. W. Sly Manufacturing Co., July 16, 1938.

4. Willson No. 3L abrasive blasting helmet. Approval BM-1914, issued to Willson Products, Inc., March 10, 1939.

5. Pangborn blast helmet, type DF-2. Approval BM-1915, issued to Pangborn Corp., March 23, 1939.

6. Cesco No. 602 Healthguard mask. Approval BM-1918, issued to Chicago Eye Shield Co., January 4, 1941.

7. M.S.A. Blastfoe abrasive helmet. Approval BM-1919, issued to Mine Safety Appliances Co., October 1, 1946.

8. McDonald Blastfoe abrasive helmet. Extension of approval BM-1919, issued to B. F. McDonald Co., October 3, 1946.

9. M.S.A. abrasive mask. Approval BM-1920, issued to Mine Safety Appliances Co., April 30, 1948.

10. METCO abrasive mask. Extension of approval BM-1920, issued to Metallizing Engineering Co., Inc., April 30, 1948.

11. Bullard abrasive blasting helmet No. V. Approval BM-1921, issued to E. D. Bullard Co., September 9, 1948.

12. Willson No. 51 lightweight abrasive blasting helmet. Approval BM-1923, issued to Willson Products, Inc., July 19, 1949.

Approved type CE supplied-air respirators are shown in figures 8 and 9.

Dispersoid (Dust, Fume, and Mist) Respirators Approved Under Schedule 21

For the purpose of these approvals, the following definitions of the terms "dust," "fume," and "mist" are used:

Dust. - Dispersoids or particulate matter, smaller than about 0.1 mm. or 100 microns, formed by the disintegration of solid materials by such processes as crushing, grinding, and abrading.

Fume. - Solid dispersoids formed by the condensation of vapors such as those from heated metals and other substances.

Mist. - Liquid dispersoids formed by the disintegration of a liquid by such processes as spray-coating and atomizing.

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Pneumoconiosis-Producing and Nuisance Dust Respirators

These respirators are approved only for protection against the inhalation of pneumoconiosis- (silicosis- and asbestosis-) producing dusts, such as free silica and asbestos; and nuisance dusts, such as aluminum, cellulose, cement, charcoal, coal, coke, flour, gypsum, iron ore, limestone, and wood.

1. M.S.A. Comfo respirator.[8/] Approval BM-2101, issued to Mine Safety Appliances Co., January 7, 1935.

2. Willson bag respirator No. 300. Approval BM-2102, issued to Willson Products, Inc., January 21, 1935.

3. Willson bag respirator No. 400. Approval BM-2103, issued to Willson Products, Inc., January 21, 1935.

4. Pulmosan M-15, pouch-type filter respirator. Approval BM-2104, issued to Pulmosan Safety Equipment Corp., February 9, 1935.

5. Biever respirator. Approval BM-2105, issued to Standard Safety Equipment Co., March 5, 1935.

6. Willson bag respirator No. 4. Approval BM-2106, issued to Willson Products, Inc., May 27, 1935.

7. Pulmosan M-1100 pouch-type filter respirator. Approval BM-2109, issued to Pulmosan Safety Equipment Corp., March 23, 1936.

8. Cover No. 24 Dupor respirator. Approval BM-2111, issued to H. S. Cover, September 15, 1936.

9. Cesco No. 90 Healthguard respirator. Approval BM-2113, issued to Chicago Eye Shield Co., December 16, 1936.

10. McDonald Dustfoe respirator. Approval BM-2115, issued to B. F. McDonald Co., October 8, 1937.

11. M.S.A. Dustfoe respirator. Extension of approval BM-2115, issued to Mine Safety Appliances Co., November 23, 1937.

12. Willson bag respirator No. 100. Approval BM-2117, issued to Willson Products, Inc., December 27, 1937.

13. Willson Rotiform respirator No. 200. Approval BM-2118, issued to Willson Products, Inc., December 30, 1937.

14. Willson respirator No. 750.[8/] Approval BM-2119, issued to Willson Products, Inc., January 3, 1938.

8/ This respirator is also approved for protection against the inhalation of pneumoconiosis-producing, chromic acid, and nuisance mists.

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15. Pulmosan D-4100 Duo-filter respirator. Approval BM-2120, issued to Pulmosan Safety Equipment Corp., January 12, 1938.

16. A.O. R1000 respirator. Approval BM-2121, issued to American Optical Co., February 3, 1938.

17. Hygeia Filto-Ring No. 28 respirator. Approval BM-2122, issued to Hygeia Filtering Corp., March 23, 1938.

18. Cover Dupor Skin-A-Cat respirator No. 40. Approval BM-2129, issued to H. S. Cover, July 5, 1939.

19. M.S.A. Comfo respirator.8/ Approval BM-2139, issued to Mine Safety Appliances Co., August 23, 1939.

20. McDonald Dustfoe respirator.8/ Approval BM-2132, issued to B. F. McDonald Co., August 23, 1939.

21. M.S.A. Dustfoe respirator.8/ Extension of approval BM-2132, issued to Mine Safety Appliances Co., August 23, 1939.

22. M.S.A. alkali-dust respirator. Approval BM-2136, issued to Mine Safety Appliances Co., December 1, 1939.

23. A.O. R9100 respirator. Approval BM-2137, issued to American Optical Co., March 6, 1940.

24. Willson respirators Nos. 58/ and 45.8/ Approval BM-2140, issued to Willson Products, Inc., September 28, 1940.

25. DeVilbiss MSD respirator. Approval BM-2141, issued to The DeVilbiss Co., October 3, 1940.

26. Willson respirator No. 10. Approval BM-2146, issued to Willson Products, Inc., September 11, 1941.

27. McDonald Clear-Vue Dustfoe respirator.8/ Approval BM-2147, issued to B. F. McDonald Co., July 16, 1942.

28. M.S.A. Clear-Vue Dustfoe respirator.8/ Extension of approval BM-2147, issued to Mine Safety Appliances Co., July 16, 1942.

29. Pulmosan respirator No. M-500. Approval BM-2150, issued to Pulmosan Safety Equipment Corp., September 22, 1944.

30. Cesco respirator No. 94. Approval BM-2153, issued to Chicago Eye Shield Co., March 23, 1945.

31. Pulmosan S-600 respirator. Approval BM-2158, issued to Pulmosan Safety Equipment Corp., March 1, 1949.

32. Pulmosan Mn 500 respirator. Approval BM-2159, issued to Pulmosan Safety Equipment Corp., April 26, 1949.

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Other respirators approved for protection against pneumoconiosis-producing and nuisance dusts are listed under all-dust respirators and under fume respirators.

Toxic-Dust Respirators

These respirators are approved only for protection against the inhalation of toxic dusts that are not significantly more toxic than lead, such as arsenic, cadmium, chromium, lead, manganese, selenium, vanadium, and their compounds.

1. M.S.A. Comfo respirator. Approval BM-2107, issued to Mine Safety Appliances Co., August 9, 1935.

2. Pulmosan L-2100 pouch-type filter respirator. Approval BM-2110, issued to Pulmosan Safety Equipment Corp., July 17, 1936.

3. Willson Rotiform respirator No. 200L. Approval BM-2123, issued to Willson Products, Inc., April 18, 1938.

4. Willson respirator No. 750L. Approval BM-2125, issued to Willson Products, Inc., October 19, 1938.

5. McDonald Dustfoe respirator. Approval BM-2126, issued to B. F. McDonald Co., March 10, 1939.

6. M.S.A. Dustfoe respirator. Extension of approval BM-2126, issued to Mine Safety Appliances Co., March 10, 1939.

7. Willson respirators Nos. 5L and 45L. Approval BM-2143, issued to Willson Products, Inc., December 19, 1940.

8. A.O. R9100T respirator. Approval BM-2144, issued to American Optical Co., May 19, 1941.

9. Hygeia Reef No. 12 respirator. Approval BM-2145, issued to Hygeia Filtering Corp., July 15, 1941.

Other respirators that are approved for protection against toxic dusts are listed under all-dust respirators and under fume respirators.

All-dust Respirators

These respirators formerly were designated "Type A and lead dust." Approval has been extended to cover all dusts. They are approved only for protection against the inhalation of dusts that are not significantly more toxic than lead, such as arsenic, asbestos, cadmium, chromium, lead, manganese, selenium, silica, vanadium, and their compounds, and nuisance dusts.

1. Willson bag respirator No. 400L. Approval BM-2108, issued to Willson Products, Inc., September 5, 1935.

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2. Pulmosan ML-3100 pouch-type filter respirator. Approval BM-2112, issued to Pulmosan Safety Equipment Corp., November 30, 1936.

3. Cesco Healthguard No. 91 respirator. Approval BM-2114, issued to Chicago Eye Shield Co., August 6, 1937.

4. Cesco Healthguard No. 92 respirator. Approval BM-2116, issued to Chicago Eye Shield Co., November 8, 1937.

5. Cover Dupor No. 46 respirator. Approval BM-2124, issued to H. S. Cover, October 3, 1938.

6. Willson respirator No. 752L. Approval BM-2127, issued to Willson Products, Inc., March 10, 1939.

7. M.S.A. Comfo respirator. Approval BM-2133, issued to Mine Safety Appliances Co., October 13, 1939.

8. McDonald Dustfoe respirator. Approval BM-2134, issued to B. F. McDonald Co., October 13, 1939.

9. M.S.A. Dustfoe respirator. Extension of approval BM-2134, issued to Mine Safety Appliances Co., October 13, 1939.

10. A.O. R1000T respirator. Approval BM-2138, issued to American Optical Co., March 16, 1940.

11. Cesco Healthguard No. 94 respirator. Approval BM-2142, issued to Chicago Eye Shield Co., October 3, 1940.

12. McDonald Clear-Vue Dustfoe respirator. Approval BM-2148, issued to B. F. McDonald Co., July 21, 1942.

13. M.S.A. Clear-Vue Dustfoe respirator. Extension of approval BM-2148, issued to Mine Safety Appliances Co., July 21, 1942.

14. Willson respirator No. 750D.8/ Approval BM-2151, issued to Willson Products, Inc., October 5, 1944.

15. Willson respirators Nos. 5D8/ and 45D.8/ Approval BM-2152, issued to Willson Products, Inc., October 19, 1944.

16. A.O. P-2000 respirator. Approval BM-2154, issued to American Optical Co., January 2, 1947.

17. A.O. R-5050 respirator. Approval BM-2156, issued to American Optical Co., June 23, 1948.

Other respirators that are approved for protection against all dusts are listed under fume respirators.

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Fume Respirators

These respirators are approved for protection against the inhalation of fumes (solid dispersoids or particulate matter formed by the condensation of vapors such as those from heated metals and other substances).

1. Willson respirator No. 770. Approval BM-2128, issued to Willson Products, Inc., April 15, 1939.

2. M.S.A. Comfo respirator. Approval BM-2139, issued to Mine Safety Appliances Co., March 27, 1940.

3. Willson respirators Nos. 570 9/ and 780. 9/ Approval BM-2149, issued to Willson Products, Inc., August 8, 1942.

4. Willson WHG-DFM respirator. 9/ Approval BM-2155, issued to Willson Products, Inc., March 1, 1948.

5. Willson 750F respirator. Approval BM-2157, issued to Willson Products, Inc., August 12, 1948.

Mist Respirators

Respirators for protection against pneumoconiosis-producing, chromic acid, and nuisance mists are listed under pneumoconiosis-producing and nuisance-dust respirators, under all-dust respirators, and under fume respirators and are identified by footnotes 8 (8/) and 9 (9/).

Approved dispersoid respirators are shown in figures 10, 11, 12, and 13.

Nonemergency-Gas Respirators (Chemical Cartridge Respirators) Approved Under Schedule 23

Type B: Organic Vapor Respirators

These respirators are approved for respiratory protection in atmospheres not immediately dangerous to life or containing not more than one-tenth (0.1) percent organic vapors by volume.

1. M.S.A. twin cartridge type respirator, G. M. A. Approval BM-2301, issued to Mine Safety Appliances Co., June 4, 1945.

2. Willson No. 701 chemical cartridge respirator. Approval BM-2302, issued to Willson Products, Inc., August 27, 1945.

3. Willson No. 731 chemical cartridge respirator. Approval BM-2303, issued to Willson Products, Inc., July 30, 1946.

9/ This respirator is also approved for protection against the inhalation of all dusts that are not significantly more toxic than lead, and of pneumoconiosis-producing, chromic acid, and nuisance mists.

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M. S. A. Comfo
BM-2101* - 1-7-35
FP - I° - Fl°
BM-2130* - 8-23-39
P - I° - Fl°



Willson No. 300
BM-2102 - 1-21-35
F - I - Fl°



Willson No. 400
BM-2103 - 1-21-35
F - I - Fl°



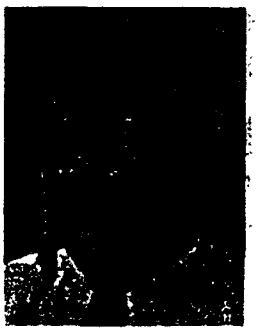
Pulmosan M-15
BM-2104 - 2-9-35
F - I - Fl°



Willson No. 4
BM-2106 - 5-27-35
F - I - Fl°



Pulmosan M-1100
BM-2109 - 3-23-36
F - I - Fl°



Cover No. 24
BM-2111 - 9-15-36
F - Fl°



McDonald and M. S. A.
Dustfoe
BM-2115 - 10-8-37
FP - I - Fl°
BM-2132* - 8-23-39
P - I - Fl°



Willson No. 100
BM-2117 - 12-27-37
F - Fl



Willson No. 200
BM-2118 - 12-30-37
F - I - Fl°



Willson No. 750
BM-2119* - 1-3-38
P - I - Fl°

*These respirators are also approved for pneumoconiosis-producing, chromic acid, and nuisance mists.

CODE: F = felt filter; P = paper; and FP = felt + paper. I = inhalation valves.
Fl = facelet. ° = use of indicated part is optional.

Figure 10. - Dispersoid respirators. Pneumoconiosis-producing and nuisance dust respirators.

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Pulmosan D-4100
BM-2120 - 1-12-38
F - Fl°



A. O. R1000
BM-2121 - 2-3-38
F - I - Fl°



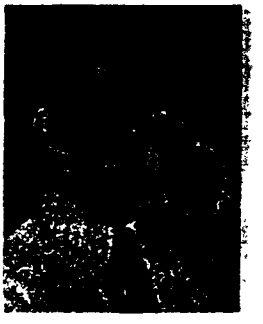
Hygeia No. 28
BM-2122 - 3-23-38
F



Cover No. 40
BM-2129 - 7-5-39
F - I - Fl°



A. O. R9100
BM-2137 - 3-6-40
F - Fl°



Willson No. 5
BM-2140* - 9-28-40
P - I - Fl°



DeVilbiss MSD
BM-2141 - 10-3-40
F - I



Pulmosan S-600
BM-2158 - 3-1-49
F - I - Fl°



Willson No. 10
BM-2146 - 9-11-41
F - I - Fl°



McDonald and M.S.A.
Clear-Vue Dustfoe
BM-2147* - 7-16-42
P - I



Pulmosan M-500
BM-2150 - 9-22-44
F - I - Fl°



Pulmosan MM-500
BM-2159 - 4-26-49
F - I - Fl°

*These respirators are also approved for pneumoconiosis-producing, chromic acid, and nuisance mists.

CODE: F = felt filter; P = paper; and FP = felt + paper. I = inhalation valves.
Fl = facelet. ° = use of indicated part is optional.

Figure 11. - Dispersoid respirators. Pneumoconiosis-producing and nuisance dust respirators.

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Pulmosan ML-3100
BM-2112 - 11-30-36
F - I - FI°



Cesco No. 91
BM-2114 - 8-6-37
F - I



Cesco No. 92
BM-2116 - 11-8-37
F - I°



Cover No. 46
BM-2124 - 10-3-38
F - I - FI°



M. S. A. Comfo
BM-2133 - 10-13-39
P - I° - FI°



A. O. R1000T
BM-2138 - 3-16-40
F - I - FI°



Cesco No. 94
BM-2142 - 10-3-40
P



McDonald and M. S. A.
Clear-Vue Dustfoe
BM-2148 - 7-21-42
P - I



Willson No. 750D
BM-2151* - 10-5-44
P - I - FI°



Willson No. 5D
BM-2152* - 10-19-44
P - I - FI°



A. O. R-2000
BM-2154 - 1-2-47
F - I - FI°



A. O. R-5050
BM-2156 - 6-23-48
F - I - FI°

*These respirators are also approved for pneumoconiosis-producing, chromic acid, and nuisance mists.

CODE: F = felt filter; P = paper; and FP = felt + paper. I = inhalation valves.
FI = facelet. ° = use of indicated part is optional.

Figure 12. - Dispersoid respirators. All-dust respirators.

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TOXIC DUST RESPIRATORS



M.S.A. Comfo
BM-2107 - 8-9-35
FP - I° - FI°



Pulmosan L-2100
BM-2110 - 7-17-36
F - I



Willson No. 200L
BM-2123 - 4-18-38
F - I - FI°



Willson No. 750L
BM-2125 - 10-19-38
P - I - FI°



McDonald and M.S.A.
Dustfoe
BM-2126 - 3-10-39
FP - I - FI°



Willson No. 5L
BM-2143 - 12-19-40
P - I - FI°



A. O. R9100T
BM-2144 - 5-19-41
F



Hygeia No. 12
BM-2145 - 7-15-41
P - I

FUME RESPIRATORS



M.S.A. Comfo
BM-2139 - 3-27-40
P - I°



Willson No. 570
BM-2149* - 8-7-42
P - I - FI°



Willson WHG-DFM
BM-2155* - 3-1-48
P - I



Willson No. 750F
BM-2157 - 8-12-48
P - I

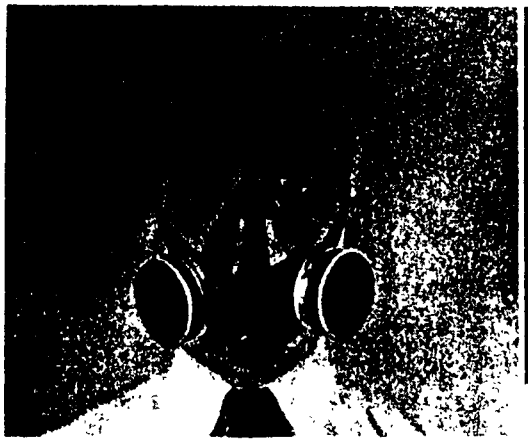
*This respirator is also approved for all dusts and for pneumoconiosis-producing, chromic acid, and nuisance mists.

CODE: F = felt filter; P = paper; and FP = felt + paper. I = inhalation valves. FI = facelet. ° = use of indicated part is optional.

MIST RESPIRATORS - (See footnotes for all-dust respirators, pneumoconiosis-producing and nuisance dust respirators, and fume respirators.)

Figure 13. - Dispersoid respirators. Toxic dust respirators, fume respirators, and mist respirators.

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M.S.A. Twin Cartridge Respirator, G.M.A. BM-2301



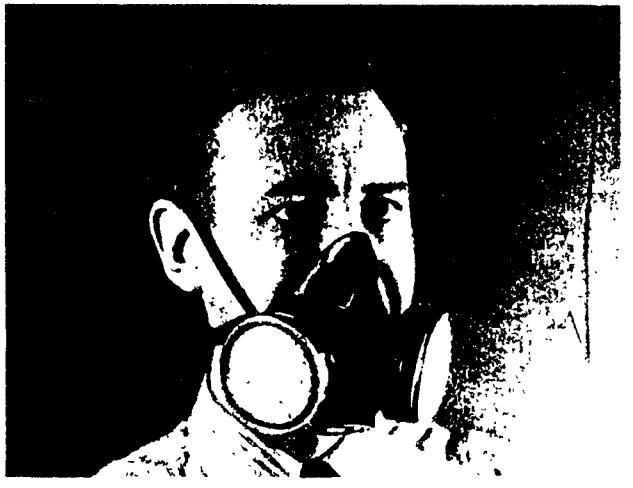
Willson No. 701 Chemical Cartridge Respirator, BM-2302



Willson No. 731 Chemical Cartridge Respirator, BM-2303



A. O. R-5051 Chemical Cartridge Respirator, BM-2304



A. O. R-5055 Dusts* and Organic Vapor Chemical Cartridge Respirator, BM-2305
*Also approved for protection against dusts.

Figure 14. - Nonemergency gas respirators (chemical cartridge respirators) for organic vapors.

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4. Binks twin-cartridge respirator, type No. 8. Extension of approval BM-2301, issued to Binks Manufacturing Co., June 18, 1948.

5. A.O. R-5051 chemical cartridge respirator. Approval BM-2304, issued to American Optical Co., July 19, 1949.

Type BE: Dust and Organic Vapor Respirators

These respirators are approved for respiratory protection in atmospheres not immediately dangerous to life and which contain either dusts that are not significantly more toxic than lead or not more than one-tenth (0.1) percent organic vapors by volume, or both.

1. A.O. R-5055 chemical cartridge respirator. Approval BM-2305, issued to American Optical Co., February 3, 1950.

Approved nonemergency gas respirators are shown in figure 14.

APPROVAL LABELS

To provide purchasers and users with a means for identifying approved devices and for procuring the approved parts when making repairs and replacements, the Bureau requires that all devices marketed under the provisions of the approval system of the Federal Bureau of Mines must have an approval label on which is reproduced the seal of the Bureau, the approval number, the name of the manufacturer to whom the approval is issued, and the conditions for which approval is granted. Essential parts of the devices are marked with the approval number. The markings also obligate the manufacturer to maintain the quality of the product and to construct each device, in all its parts, in exact accordance with specifications of the device that the Bureau examined and approved. Any device that exhibits changes in design or includes any parts that were not in the device approved, regardless of whether the change is made by the manufacturer or the consumer, is not permissible and may not bear the Bureau of Mines approval label.

The approval label (metal plate) is affixed to self-contained breathing apparatus. Canister-type gas masks bear a label on the case and on each canister, and the approval number is marked on the facepiece and canister harness, for example, "BM-1400." Type A (hose mask) and type B (special hose mask without blower) supplied-air respirators have the approval label on their cases or containers, and the approval number is marked on the air-supply arrangement, air-supply line, facepiece, and harness. Type C (air-line respirator) and type CE (abrasive-blasting respirator) have the approval label on their cases (if any) or on a special sheet with instructions for use of the device; and the approval number is marked on the air-supply line, respiratory-inlet covering (facepiece, hood, or helmet), air-regulating valve, and harness. The containers of dispersoid respirators and the replacement-filter units bear approval labels, and the approval number is marked on the facepiece and each filter unit. The filter units also bear a marking that designates the type of particulate matter for which they are approved, as pneumoconiosis-producing and nuisance dusts, toxic dusts, and fumes.

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NAMES AND ADDRESSES OF COMPANIES TO WHICH APPROVALS HAVE BEEN GRANTED

Acme Protection Equipment Co., 3037 West Lake Street, Chicago 12, Ill.

American-LaFrance & Foamite Industries, Inc., Elmira, N. Y.

American Optical Co., Southbridge, Mass.

Binks Manufacturing Co., 3114 Carroll Avenue, Chicago 12, Ill.

E. D. Bullard Co., 275 Eighth Street, San Francisco 3, Calif.

Chicago Eye Shield Co., 2300 Warren Boulevard, Chicago 12, Ill.

H. S. Cover, Station A, South Bend, Ind.

Davis Emergency Equipment Co., Inc., 45 Halleck Street, Newark 4, N. J.

The DeVilbiss Co., Toledo, Ohio.

Draegerwerk, Lübeck, Germany.

Hygeia Filtering Corp. (formerly the Hygeia Respirator Co.), 129 East 8th Street, New York 3, N. Y.

B. F. McDonald Co., 5112 South Hoover Street, Los Angeles 37, Calif.

Metallizing Engineering Co., Inc., 38-14 30th Street, Long Island City 1, N. Y..

Mine Safety Appliances Co., Braddock, Thomas, and Meade Streets, Pittsburgh 8, Pa.

Pangborn Corp., Hagerstown, Md.

Pulmosan Safety Equipment Corp., 644 Pacific Street, Brooklyn 17, N. Y.

Scott Aviation Corp., Lancaster, N. Y.

Siebe, Gorman & Co., Ltd., London, England.

W. W. Sly Manufacturing Co., 4735 Train Avenue, Cleveland 2, Ohio.

Standard Safety Equipment Co., 232 W. Ontario Street, Chicago 10, Ill.

Willson Products, Inc., Reading, Pa.

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