

CBRN RESPIRATOR TEST SELECTION GUIDE Draft August 11, 2006 1 of 4

Note: This is a [draft guideline](#) for determining applicable tests and required quantities of respirators and components. Actual testing and respirator quantities can vary based on the individual approval application.

<u>ITEM</u>	<u>RESPIRATOR TYPE</u>	<u>NIOSH Test #</u>	<u>TITLE</u>	<u>MATERIALS NEEDED</u>
1	CBRN self-contained breathing apparatus (SCBA) (open-circuit, pressure-demand, tight-fitting, full-facepiece respirator)	<p>* Approval under NIOSH 42 CFR Part 84, subpart H, and * Compliance to National Fire Protection Association Standard (NFPA) 1981, and,</p> <p>0200 SMARTMAN Test, Sarin (GB) 0201 SMARTMAN Test, Distilled Sulfur Mustard (HD) 0352 LRPL</p>		<p><u>GB Test (Test 0200)</u> 3 complete SCBA assemblies. Each complete SCBA assembly must include: 1 neck cylinder assembly, and 1 cylinder O-ring.</p> <p><u>HD Test (Test 0201)</u> 3 complete SCBA assemblies. Each complete SCBA assembly must include: 1 neck cylinder assembly, and 1 cylinder O-ring.</p> <p><u>LRPL Test (Test 0352)</u> One-size Configuration: 25 facepieces equipped with P100 filters. Two-size Configuration: 29 facepieces (14 S/M, 15 M/L) equipped with P100 filters. Three-size Configuration: 38 facepieces (10 S, 17 M, 11 L) equipped with P100 filters. Additional size configurations are possible. In these cases NIOSH will determine facepiece quantities.</p>
2	CBRN Research and Development	<p>‡ Material or Gasket Swatch Test, Sarin (GB) ‡ Material or Gasket Swatch Test, Mustard (HD)</p> <p>0200 SMARTMAN Test, Sarin (GB)- SCBA 0201 SMARTMAN Test, Distilled Sulfur Mustard (HD)-SCBA 0350 SMARTMAN Test, Sarin (GB)- APR 0351 SMARTMAN Test, Distilled Sulfur Mustard (HD)- APR 0450 SMARTMAN Test, Sarin (GB)- APER 0451 SMARTMAN Test, Distilled Sulfur Mustard (HD)- APER 0448 SMARTMAN Test, Sarin (GB)- SCER 0449 SMARTMAN Test, Distilled Sulfur Mustard (HD)- SCER</p>		<p><u>Gasket Swatch Test, GB</u> ‡ 2 gaskets of each type if not EPDM material (APR only). §</p> <p><u>Gasket Swatch Test, HD</u> ‡ 2 gaskets of each type if not EPDM material (APR only). §</p> <p><u>Material Swatch Test, GB</u> ‡ 1 swatch minimum (5"x 5") (SCBA, APR, APER, SCER).</p> <p><u>Material Swatch Test, HD</u> ‡ 1 swatch minimum (5"x 5") (SCBA, APR, APER, SCER).</p> <p><u>SMARTMAN GB Test</u> (Tests 0200, 0350, 0450, 0448†) 1 complete respirator assembly minimum (SCBA, APR, APER, SCER).</p> <p><u>SMARTMAN HD Test</u> (Tests 0201, 0351, 0451, 0449†) 1 complete respirator assembly minimum (SCBA, APR, APER, SCER).</p>

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ITEM	RESPIRATOR TYPE	NIOSH Test #	TITLE	MATERIALS NEEDED
3	CBRN air-purifying respirator (APR) (tight-fitting, full-facepiece) (15, 30, 45, or 60 minute gaslife test)	0003 0004 0007 0014 0051 0064 0301 0302 0303 0304 0305 0306 0307 0308 0309 0310 0311 0312 0313 0314 0316 0350 0351 0352 0353	Exhalation Resistance Exhalation Valve Leakage Inhalation Resistance Drinking Tube Leakage (If Equipped) DOP P100 plus DOP P100 Following Cyclohexane Exposure (6 additional canisters are tested under 0051 following the cyclohexane test 0301) Machine Breathing Gas Test (Simulated Inhaled CO ₂) ^{††} Cyclohexane Cyanogen Chloride Hydrogen Cyanide Phosgene Hydrogen Sulfide Sulfur Dioxide Ammonia Nitrogen Dioxide Phosphine Formaldehyde Durability (Environmental Conditioning Test) Field Of View Communications Low Temperature Fogging Lens Abrasion Resistance SMARTMAN Test, Sarin (GB) SMARTMAN Test, Distilled Sulfur Mustard (HD) LRPL and MLRPL Canister Weight and Dimensional Initial Compliance Examination	<p><u>All Tests to Left (Excluding 0352 LRPL Test)</u></p> <p>62 complete respirator assemblies, 3 exhalation valve assemblies, 125 canisters, 4 gaskets of each type if not EPDM, 3 drink tube assemblies, 3 abraded lenses, and 3 un-abraded lenses.</p> <p><u>LRPL Test (Test 0352)</u></p> <p>One-size Configuration: 25 facepieces equipped with P100 filters.</p> <p>Two-size Configuration: 29 facepieces (14 S/M, 15 M/L) equipped with P100 filters.</p> <p>Three-size Configuration: 38 facepieces (10 S, 17 M, 11 L) equipped with P100 filters.</p> <p>Additional size configurations are possible. In these cases NIOSH will determine facepiece quantities.</p>
4	CBRN SCBA Upgrade Kits (upgrade to an existing CBRN approval) (open-circuit, pressure-demand, tight-fitting, full-facepiece respirator)	0200 0201	SMARTMAN Test, Sarin (GB) SMARTMAN Test, Distilled Sulfur Mustard (HD)	<p><u>GB Test (Test 0200)</u></p> <p>1 complete SCBA assembly which must include: 1 aged neck cylinder assembly, and 1 aged cylinder O-ring.</p> <p><u>HD Test (Test 0201)</u></p> <p>1 complete SCBA assembly which must include: 1 aged neck cylinder assembly, and 1 aged cylinder O-ring.</p>

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ITEM	RESPIRATOR TYPE	NIOSH Test #	TITLE	MATERIALS NEEDED
5	CBRN air-purifying escape respirators (APER) (15, 30, 45, or 60 minute gaslife test)	0003 0004 0007 0051 0064 0312 0401 0402 0403 0404 0405 0406 0407 0408 0409 0410 0411 0413 0414 0417 0450 0451 0452 0454 0456 0499	Exhalation Resistance Exhalation Valve Leakage (If Equipped) Inhalation Resistance DOP P100 Machine Breathing Gas Test (Simulated Inhaled CO ₂) ^{††} Field Of View Cyclohexane Cyanogen Chloride Hydrogen Cyanide Phosgene Hydrogen Sulfide Sulfur Dioxide Ammonia Nitrogen Dioxide Phosphine Formaldehyde Durability (Escape Environmental Conditioning Test) Carbon Monoxide Low Temperature Fogging Flammability And Heat Resistance SMARTMAN Test, Sarin (GB) SMARTMAN Test, Distilled Sulfur Mustard (HD) LRPL Human Subject Breathing Gas Test Practical Performance (Human Interface) Donning Time	<u>Estimated Hood Quantity Based on Size Configuration (Includes all Tests Listed to Left)</u> One-size Configuration: 255 actual units (for applications with CO protection), 236 actual units (for applications without CO protection), and 91 training devices. Two-size Configuration: 263 actual units (52 S/M, 211 M/L) (for applications with CO protection), 244 actual units (52 S/M, 192 M/L) (for applications without CO protection), and 99 training devices (44 S/M, 55 M/L). Three-size Configuration: 276 actual units (36 S, 193 M, 47 L) (for applications with CO protection), 257 actual units (36 S, 174 M, 47 L) (for applications without CO protection), and 112 training devices (31 S, 39 M, 42 L). Additional size configurations are possible. In these cases NIOSH will determine actual unit and training device quantities.
6	CBRN self-contained escape respirator (SCER) (15, 30, 45, or 60 minute stated duration of breathing gas supply)	0004 0064 0312 0411 0414 0417 0448 0449 0453 0455 0456 0499	Exhalation Valve Leakage (If Equipped) Machine Breathing Gas Test (Simulated Inhaled CO ₂) ^{††} Field of View Durability (Escape Environmental Conditioning Test) Low Temperature Fogging Flammability and Heat Resistance SMARTMAN Test, Sarin (GB) SMARTMAN Test, Distilled Sulfur Mustard (HD) LRPL Human Subject Breathing Gas Test Practical Performance (Human Interface) Donning Time	<u>Estimated Hood Quantity Based on Size Configuration (Includes all Tests Listed to Left)</u> One-size Configuration: 115 actual units, and 91 training devices. Two-size Configuration: 123 actual units (52 S/M, 71 M/L), and 99 training devices (44 S/M, 55 M/L). Three-size Configuration: 136 actual units (36 S, 53 M, 47 L), and 112 training devices (31 S, 39 M, 42 L). Additional size configurations are possible. In these cases NIOSH will determine actual unit and training device quantities.

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ITEM	RESPIRATOR TYPE	NIOSH TITLE Test #	MATERIALS NEEDED
7	CBRN powered-air purifying respirator (PAPR) - Step 1 -	<p>-PAPR Performance Criteria from 42 CFR Part 84 (as applicable)-</p> <p>0001 Initial DOP -- HE protection (if applicable)</p> <p>0003 Exhalation resistance with blower off (tight-fitting)</p> <p>0004 Exhalation valve leakage (if applicable)</p> <p>0005/5A/6 IAA fit test</p> <p>0007 Inhalation resistance with blower off (tight-fitting)</p> <p>0012 PAPR Air Flow (115 lpm, tight-fitting; 170 lpm loose-fitting)</p> <p>0014 Drinking Tube Leakage (If Equipped)</p> <p>0025 Silica Dust (for resistance)</p> <p>0030 Sound Level (if applicable)</p> <p>0033-48, 0050 or 0062 Gas and Vapor (as applicable)</p> <p>0060 ESLI visibility (if applicable)</p> <p>0061 ESLI damage resistance (if applicable)</p> <p>0063 CO2 and O2 for tight fitting PAPR w/ blower on (note: 063 also used to test loose-fitting PAPR w/ blower on)</p> <p>0064 CO2 and O2 for tight fitting PAPR w/ blower off</p> <p>0065 Airflow resistance of breath responsive PAPR's</p> <p>0066 ESLI indicator (note: tested where used)</p> <p style="text-align: center;">- Plus Special CBRN Tests -</p> <p>0311 Durability (Environmental Conditioning Test)</p> <p>0501 Cyclohexane</p> <p>0502 Cyanogen Chloride</p> <p>0503 Hydrogen Cyanide</p> <p>0504 Phosgene</p> <p>0505 Hydrogen Sulfide</p> <p>0506 Sulfur Dioxide</p> <p>0507 Ammonia</p> <p>0508 Nitrogen Dioxide</p> <p>0509 Phosphine</p> <p>0510 Formaldehyde</p> <p>(Note: For procedures 0501-10, test parameters differ between tight and loose-fitting PAPR)</p> <p>0550 SMARTMAN Test, Sarin (GB)</p> <p>0551 SMARTMAN Test, Distilled Sulfur Mustard (HD)</p> <p>0051 DOP P100 plus DOP P100 Following Cyclohexane Exposure (6 additional canisters are tested under 0051 following the cyclohexane test 0501)</p> <p>(Note: This is a loading test which differs from the initial DOP penetration test 0001)</p> <p>0552 LRPL</p>	<p><u>Example 1. Tight-fitting PAPR with 3 canisters and 3 facepiece sizes (S, M, & L)</u></p> <p>102 Canisters 10 complete PAPR assemblies w/ Small facepieces 28 complete PAPR assemblies w/ Med facepieces 11 complete PAPR assemblies w/ Large facepieces</p> <p><u>Example 2. Loose-fitting PAPR with 3 canisters and a one-size hood</u></p> <p>90 Canisters 43 Complete PAPR assemblies with one-size hood</p> <p>Note: Other size configurations and canister number options are possible. Contact NIOSH to obtain the required sample quantities for submission.</p>

- * Prerequisite to beginning CBRN Standard Test Procedures.
- ‡ STP maintained by U.S. Army Research, Development & Engineering Command (RDECOM).
- § Gaskets made of EPDM material do not require swatch testing.
- †† Test criteria for CBRN protection differs from an approval for industrial protection.