



SC420 CBRN PAPR

CBRN Powered Air Purifying Respirator

Product Specification Sheet

I. Purpose

To establish minimum standards for a Powered Air Purifying Respirator (PAPR) used for Chemical, Biological, Radiological and Nuclear (CBRN) applications.

II. Type

The CBRN PAPR is a blower assisted air purifying respirator that filters out CBRN chemicals. The CBRN PAPR is engineered for individuals working in first response situations, law enforcement and industrial environments that are considered not be immediately dangerous to life and health (non-ILDH), including atmospheres containing less than 19.5% oxygen.

III. Approvals

The CBRN PAPR shall be certified by the National Institute for Occupational Safety and Health (NIOSH) under NIOSH 42 CFR Part 84.63(c). The system shall have a CAP 1 (15 minute) rating.

IV. Tight Fitting Facepiece

The tight fitting facepiece shall:

A. Be available in black butyl rubber in three sizes to fit various facial shapes and sizes. The facepiece shall have a mask skirt sealing area of not less than 1½" in width. A letter (S, M, or L) shall be molded into the top of the skirt to denote the size.

B. Have two headgear options.

An adjustable 5-strap silicone rubber headband assembly or kevlar mesh headnet assembly, both held in place by buckles designed to prevent inadvertent loosening. It shall be necessary to tighten the chin straps and the temple straps to secure the Headnet to the face. The top strap shall be stationary. All straps for both the silicone rubber headband assembly and the Kevlar headnet shall be attached to the rim of the facepiece, rather than the butyl rubber skirt, to reduce distortion of the sealing surface when tightened.

C. Contain a replaceable, non-shatter-type, polycarbonate, conical-shaped lens located to provide a satisfactory field of vision. The lens shall be coated on the outside surface to help prevent abrasion. The lens shall be secured in the facepiece by a durable plastic retainer. The lens shall be approved for use with anti-fog dry wipes or anti-fog solution.

D. Allow air to enter the facepiece in a manner that will reduce the possibility of moisture accumulation on the lens.

E. The breathing hose shall be attached to one of two side port connector options; right side or left side, by means of 90 degrees RD40 threaded elbow. The elbow shall have four broad finger tabs.

F. Contain an easily removable exhalation module which employs a neoprene exhalation valve designed for easy cleaning.

G. Have field-replaceable components throughout.

H. Employ a factory-installed, removable nose cup. The nosecup shall be able to be removed and re-installed without special tools. The nosecup shall be available in three sizes and shall have a letter (S, M, or L) molded into the right side to denote the size.

I. Have provision for mounting corrective lenses inside the facepiece. The corrective lens kit shall not require tools for installation and two kit options shall be available.

J. The facepiece shall have an optional NATO spec hydration tube.

V. PAPR Blower Unit

A. The blower unit shall be triangular in shape and made of Polyphenylene oxide (PPO) Noryl plastic. The blower unit is to be resistant to HD blister agent and G series nerve agent permeation for a minimum of 24 hours.

B. The blower unit shall be made of an upper and lower housing. Screws that hold the upper and lower housing pieces together shall be mounted to protect the unit from dirt and fluids.

C. There shall be an on/off toggle switch recessed on the bottom of the unit so that there is not a possibility of the blower unit being accidentally turned on or off.

D. The PAPR blower unit shall have three 40-mm openings. Two of the openings shall have a 40-mm 'female' thread to accommodate the canister. At the bottom of each of the female threaded openings shall be a black 40- mm EPDM gasket. At the top of the blower unit there shall be a 40-mm 'male' threaded opening for use as a point of attachment for the breathing tube.

E. The blower unit shall be protected from radio interference per military standards, MIL-STD-461C, Part 4, RE02.

F. The life expectancy of the blower unit shall have a MTTF > 1,000 hours.

G. The PAPR blower unit shall deliver at minimum, four cubic feet per minute (4 cfm) of air flow for 4 hours with 2 cartridges installed. The flow rate shall be a minimum of 115 liters per minute and a maximum of 140 liters per minute.

H. The unit shall be supplied with an airflow indicator for pre-operational flow check.

I. The unit shall have a waist mounted DECON belt made of black nylon web with a clear chemical resistant coating. The waist belt shall be 2 inches wide x .06 inches thick. The waist belt shall be fully adjustable and have a plastic buckle assembly. The waist belt shall attach to the blower unit by threading it through the rectangular openings on either side of the housing.

J. The unit shall be NIOSH approved to use D-Rings on the DECON waist belt.

VI. CBRN PAPR Power Supply

The CBRN PAPR unit shall be made available with three battery/power options for use. A lithium sulfur dioxide battery, nickel metal hydride battery, and a D Cell battery pack.

A. A lithium sulfur dioxide (LiSO₂) battery shall have a minimum operational time of 8 hours. The LiSO₂ battery is not rechargeable and shall have a shelf life of 10 years. Each LiSO₂ battery system shall have both the positive and negative terminal on one end. Each cell shall be sealed with a pressure release vent.

B. A nickel metal hydride battery (NiMH) shall have a minimum operational time of 4 hours. The NiMH battery is rechargeable and may be used a minimum of 500 times when properly charged and maintained. The battery charger shall be a 120/230V AC power adapter.

C. An external D cell battery holder pack shall have a minimum operational time of 10 hours. The external D cell battery holder pack shall have a belt mounted clip. The battery holder pack cable shall be enhanced for strain relief, include a grommet to eliminate cable twisting and facilitate ease of installation of the power module. The battery holder pack has unlimited uses with an undamaged pack. (Note: D Cell batteries not included).

D. The power supplies/batteries shall be packaged in a NIOSH approved, environmental battery storage box that has the capacity for 2 LiSO₂ batteries or 2 NiMH batteries or 4 D cell alkaline batteries.

VII. Canisters

One (1) type of canister shall be available for use with the PAPR. The canister shall have a 40-mm male thread to attach directly to the PAPR blower unit.

The canister shall have an anodized aluminum housing. It shall be black in appearance (without a coating). This canister shall provide respiratory protection against gases and vapors associated with Nuclear, Biological and Chemical (NBC) incidents, e.g. Sarin gas and CS/CN. In addition, the canister shall have a High Efficiency Particulate Air (HEPA) filter built in to protect against dusts, mists, fumes and other airborne particulates that are 0.3 microns in diameter or larger. This canister shall be individually packaged in a foil pouch and shall have a screw cap covering the exhalation area and a plug covering the inhalation area. This canister shall have a 10 year expiration date from the date of manufacture.

VIII. Breathing Tube

The black breathing tube shall be made from EPDM and a rubber blend. It shall be thirty-eight inches in length with a 40-mm 'male' and 'female' threaded connector attached. The 'female' threaded connector will attach to the top of the SC420 blower unit. The male threaded connector shall attach directly to the 40-mm full facepiece adapter positioned either on the right or the left side for user preference. The 'male' threaded connector shall have a swivel assembly to allow it to be placed over the right or left shoulder when donned.

IX. Accessories

There shall be NIOSH approved accessories made available for the PAPR unit.

- D-Ring Kit
- Cartridge Shower Covers
- Spectacle Kits, 2 types
- Survivair Opti-Fit Neck Strap Kit
- Hard Plastic Storage Case
- Tinted & Clear Lens Covers
- Anti-Fog Wipes & Solution
- Survivair Opti-Fit Nose Cup Kits (S, M, L)
- Survivair Opti-Fit Kevlar Headnet Retro-Fit Kit
- Survivair Opti-Fit 5-Point Silicone Rubber Headband Retro-Fit Kit
- Environmental Battery Storage Box

XI. Warranty

The PAPR blower unit shall have a one year warranty period for manufacture defects. The battery components shall have a 90 day warranty period against manufacture defects.