

CLEMCO®



Operator Safety Equipment

Protection and Comfort for
Abrasive Blast Operators

Safety Drives Productivity



Wearing Clemco operator safety equipment helps operators concentrate on the job safely and comfortably protected from the job site elements.

Few would argue that abrasive blasting is a dirty business. Blast operators and others working in the area of blasting need protection from the blast environment and the various hazards they confront every day on the job. High-speed abrasive turns paint and rust into a cloud of dust, and the rebounding particles continuously bombard the operator. Clemco helmets, blast suits, comfort vests, breathing-air filters, and related accessories deliver the highest level of protection and comfort money can buy. When your blaster is comfortably shrouded within his protective atmosphere with warming or cooling to his body and breathing air, he is best able to concentrate on doing a good job. That good job is also good for the bottom line of the project.

Assigned Protection Factor 1000

The APF 1000 rating is your assurance that the Apollo helmet will protect your blast operators from airborne hazardous substances found in the dust generated by blasting and the contaminant being removed from the surface.

To obtain this rating, Clemco Apollo helmets underwent third-party testing. Test subjects, wearing Apollo helmets, were put through their paces at various flow settings during rigorous exercise and in positions simulating those assumed during blasting.

Breathing Air Quality

OSHA requires breathing air to be Grade-D or better quality. For the definition of Grade-D air, refer to the Compressed Gas Association commodity specification for air, G-7.1 at www.cganet.com.

Approvals

Clemco Apollo Type-CE Supplied-air Respirators are approved by NIOSH, the National Institute for Occupational Safety and Health, which puts products through rigorous testing to ensure worker safety. The approval number is printed on the label sewn into the cape and in the operation manual.

The Occupational Safety and Health Administration (OSHA) writes and enforces standards and regulations. These are found in the Code of Federal Regulations (CFR) at www.osha.gov. There are numerous regulations and standards that apply to abrasive blasting.

Wearing an Apollo helmet does not preclude the need to monitor the air quality supplied to the respirator, or in the blast area, and does not replace the OSHA requirements for containment ventilation or EPA requirements for dust collection or disposal.

Verification documentation for Clemco's APF 1000 approval is available at www.clemcoindustries.com. See Safety Info/Certifications/ Simulated Workplace Study.

Noise Reduction Rating (NRR) Explained

OSHA demands that workers must be protected from noise. Different jobs expose workers to differing noise levels. Depending upon the noise level in a particular environment, workers are allowed to be exposed to that noise only for specified lengths of time. The noise level from abrasive blasting is about 121 dB, requiring workers to wear primary hearing protection i.e. earplugs. But with Clemco Apollo respirators, employers get a bonus — Clemco Apollo respirators are the only OSHA-compliant, Type-CE supplied-air respirators that provide secondary hearing protection. Following testing by an independent laboratory, results indicating that Apollo respirators provide noise reduction were published. The Apollo 600 with DLX comfort-fit suspension garnered an NRR of 9; other Apollo respirators have an NRR of 8. Clemco website reference: Safety Info/Certifications/Noise Reduction.



The Apollo 600

Rugged, comfortable, durable protection
HP and LP models*

Tight window seal keeps dust and contaminants out
 Only respirator on the market with noise reduction rating as secondary hearing protection
 Multi-lens system with perforated outer or optional economical rectangular lens
 Choice of suspension system: adjustable web-type (NRR 8) or the DLX comfort-fit washable padding system (NRR 9)



The Apollo 20

Premium protection in an economical package
HP and LP models*

Tightly sealed scuba-style window closure with economy-size window
 Web and comfort-fit suspensions provided in the standard package to suit operator preference
 Noise reduction rating (NRR 8)
 Comes standard with both web and DLX comfort-fit suspensions

* HP versus LP Models: HP — models designed for use with compressor to provide breathing air; LP — models designed for use with ambient air pump to provide breathing air.

Air Control Devices

NIOSH-approved Options for HP and LP Respirators

Every Type CE respirator is NIOSH-approved for use with specific air control devices. LP respirators, which operate with ambient air pumps, can use only constant flow connectors, with fixed orifices for a fixed air volume. HP respirators have more options including devices for cooling and warming the incoming compressed air.



CFC

ACV

CCAC

CAT

CCT

CFC – the Constant Flow Connector provides a fixed volume at maximum air flow to the respirator with no adjustment.

ACV – the Air Control Valve features an adjustable flow of incoming compressed air at the temperature generated by the compressor and the ambient environment.

CCAC – the Clem-Cool Air Conditioner, made from polycarbonate, provides up to 50° of cooling of incoming compressor air in an economical tube for those who prefer a no-maintenance device (internal components cannot be replaced).

CAT – the Cool Air Tube also provides up to 50° of cooling in an aluminum tube that allows internal maintenance, offering years of service.

CCT – the Climate Control Tube offers cooling or warming of incoming compressor air, up to 40°, in one convenient device – making it suitable for the changing seasons.

Take no chances with your blast operator's health or life!

Breathing air from both compressed-air and ambient-air sources can be contaminated with carbon monoxide (CO), an odorless, colorless gas that can be deadly in certain concentrations. Oil-lubricated compressors can produce CO as a by-product of combustion; ambient air pumps can draw in air contaminated with CO from an idling vehicle that may park adjacent to the pump's air intake. A Clemco carbon monoxide monitor takes the worry out of providing safe breathing air.

Because the same compressor often is used for both blasting and breathing air, OSHA requires a high temperature alarm or CO monitor, or both to be installed on certain types of compressors.

29 CFR 1910.134

“For oil-lubricated compressors, the employer shall use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. **If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.**”

CLEMCO CO Monitors



CMS-3

Small, lightweight, portable protection for the individual blaster — mounts inside the respirator and provides visual, audible, and vibratory alarms — a warning device that alerts the operator immediately if CO reaches 10 parts per million — Clemco is the only respirator manufacturer with approval to place this unique in-helmet CO monitor inside our NIOSH-approved Apollo respirators (NIOSH issued an extension of approval for our respirators).



CMS-2

Rugged, field-portable, device — set up to monitor air supply for multiple operators.



CMS-1

Wall-mountable unit for fixed installations.

CMS-1 and CMS-2 are used with compressed-air supplies — alarming at 10 parts per million, warning of dangerous CO with lights and high-decibel audible alarms. Optional remote alarms allow monitoring by personnel away from the compressor. Configured for attachment to compressor shutdown device.



CPF-20 breathing-air Filter

CPF Breathing Air Filters Remove Moisture, Oil, and Particulates

CPF-20 for up to two operators and CPF-80 for up to 4 operators, remove moisture, oil, and particulates. When compressed air is used for breathing air to HP respirators, OSHA rules require a sorbent bed filter to clean the incoming air. Clemco CPF filters meet the OSHA requirement for this filtration. The CPF filter has a replaceable cartridge with activated charcoal, desiccant, and fiber pads to trap odor, moisture, and dirt. CPF filters do NOT remove carbon monoxide.



CPF-80 detailed close-up

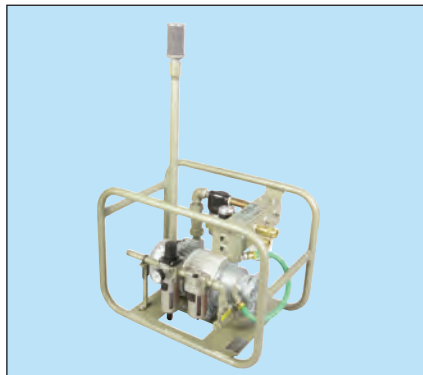
Ambient Air Pumps

An Alternative Breathing Air Source

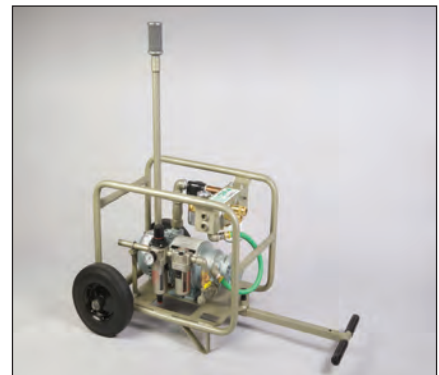
For a number of reasons, some contractors prefer to use a separate air supply for operator breathing air. In these cases, they will use LP-model respirators with ambient air pumps for breathing air. These simple pumps draw in and move air from a location upwind and away from the blasting area to the LP respirator. The pumps are oil-free and can provide clean breathing air when located where clean air can be drawn into the pump.



CALIPSO ambient air pump for a single operator



CAP-4 with protective field-duty frame



CAP-4C mounted on a cart

CALIPSO

The Clemco CALIPSO ambient air pump is a portable, single-operator, oil-less pump with an electric, dust-resistant, fan-cooled motor. It can be lifted and moved with its two robust handles. It is for use with any NIOSH-approved continuous flow hood or helmet-style low-pressure respirator approved to operate with 8 cfm up to 10 psi.

CAP-4

The CAP-4 ambient air pump operates on an air-motor and supplies breathing air to up to four operators using low-pressure respirators.

CAP-4C

The CAP-4C comes mounted on a wheeled cart for easy transport to, from, or around the blast site.

Blast Suits and Gloves

Clemco's industrial and seasonal blast suits protect operators completely

Industrial Blast Suit

With impact resistant leather front, heavy cotton fabric back, double rows of industrial snaps, this suit protects blaster from rebound and keeps out dust and abrasive.

Seasonal Blast Suit

Featuring durable nylon front, heavy cotton back, this suit protects the operator from the impact of rebounding abrasive. It represents a cost-effective alternative to an industrial suit for warm climates, occasional or short-term blasting, and for nearby personnel.

Gloves

Made from supple, durable, split leather, Clemco gloves protect hands from rebounding abrasive and help keep dust and abrasive from entering the blast suit at the wrists.



Industrial Blast Suit



Seasonal Blast Suit

Communication Systems

Enhancing safety and productivity

Clemco Wi-Comm wireless radio communication systems make it possible for workers to seek assistance in an emergency, receive training during the work shift, or coordinate job tasks with others on site, all while *under the helmet*. Easy communication makes the work site a safer and more productive environment. Wi-Comm systems include Motorola radios and custom accessories that give the operator a comfortable, low-profile headset, a chest harness for the radio, and convenient access to the push-to-talk switch.

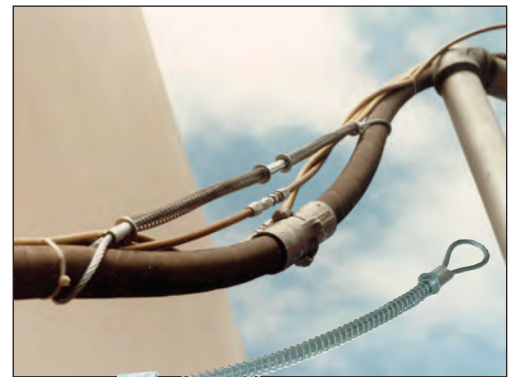
Two system choices, Wi-Comm 50 and Wi-Comm Pro, suit just about every budget. Contractors with their own radios can order accessories to suit particular radio models already in service. Wi-Comm Pro systems are available in an *intrinsically-safe* model when application involves environments where flammable gases, vapors, or combustible dust are present.



Hose Safety Cable

Added security at coupling connections

Safety cables prevent injury or property damage should couplings accidentally disconnect. The cables support hoses running either horizontally across spans or vertically when the blasting takes place on an elevated area or platform. Available in three sizes to suit blast hose or compressor bull hose. The cables install quickly and easily without tools.



Hose Safety Cable

Clemco Comfort Vest

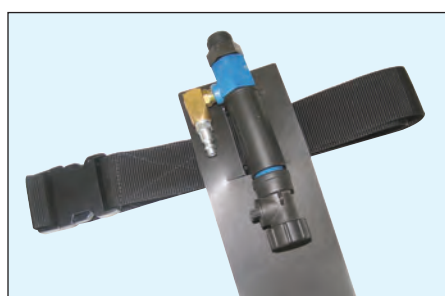
Cools or warms operators on the job

The Clemco Comfort Vest is a lightweight, one-size-fits-most personal protection garment for warming or cooling industrial workers exposed to stressful hot or cold environments, indoors or out.

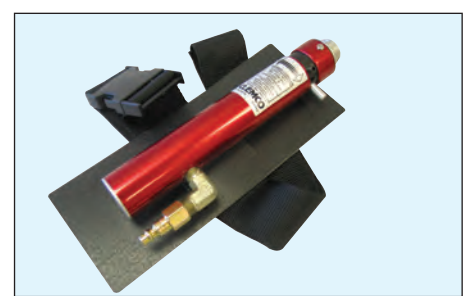
For cooling only, the Clem-Cool Air Conditioner attaches to the vest's air-supply tubing. The Clem-Cool Air Conditioner cools incoming air as much as 50° F. For cooling or warming, use a Clemco Climate-Control Tube, which warms or cools incoming air temperatures by as much as 40° F.



Clemco Comfort Vest



Clemco Clem-Cool Air Conditioner



Clemco Climate-Control Tube

The Clemco Comfort Vest is washable and made from Banox certified 100% flame-resistant fabric, making it suitable for welding operations, foundries and other job environments where sparks may be present.

Replacement Parts

Keep safety equipment in good working order

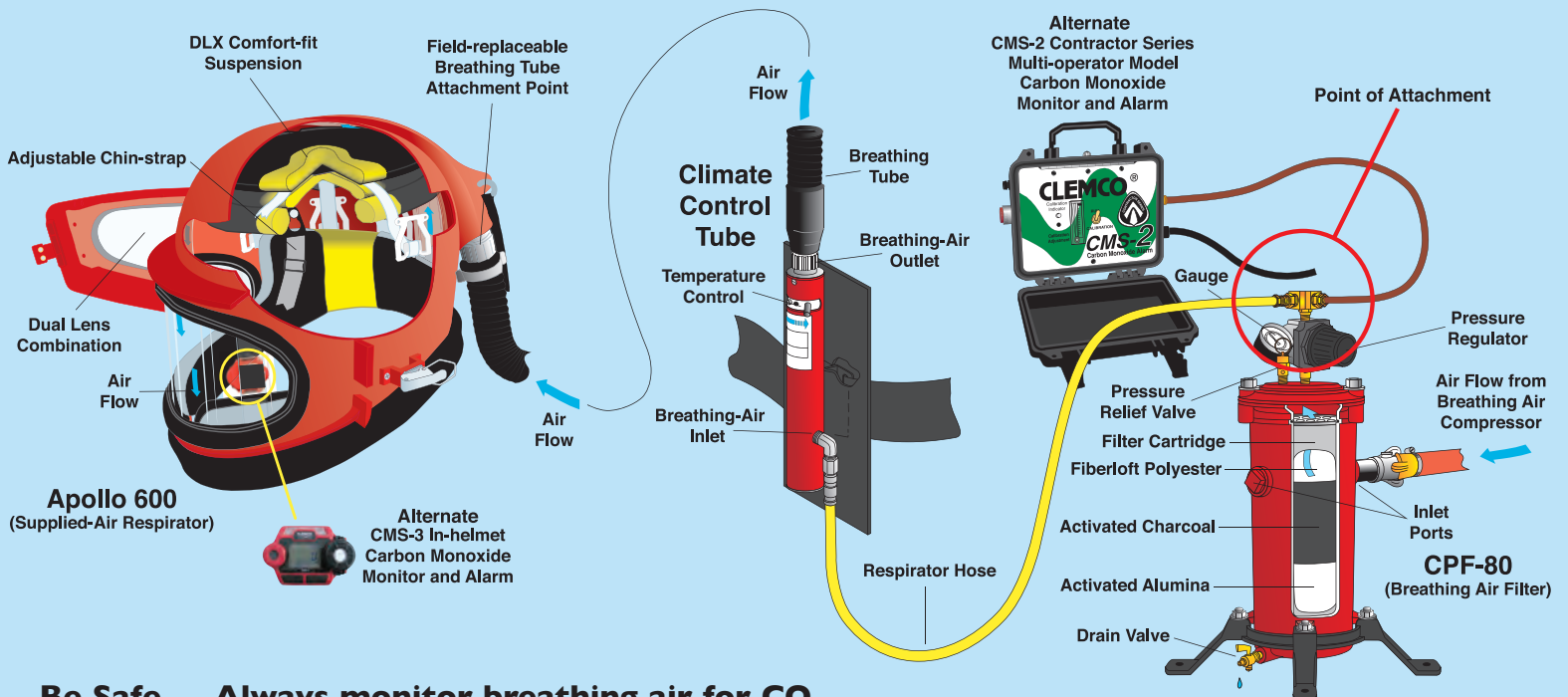
Maintaining critical safety equipment requires that worn parts be replaced in a timely and consistent manner. This is especially true when maintaining breathing air respirators, filters and CO monitors. There is no short cut to safety!



USE GENUINE CLEMCO SPARE PARTS

Clemco manufactures safety equipment using the finest materials available. From the optical clarity of the lenses to the filtering efficiency of the CPF cartridge, quality is continuously monitored by our in-house technicians. This is your assurance that Clemco parts and accessories meet the rigid standards for the performance, reliability, and safety you deserve from your respirator system.

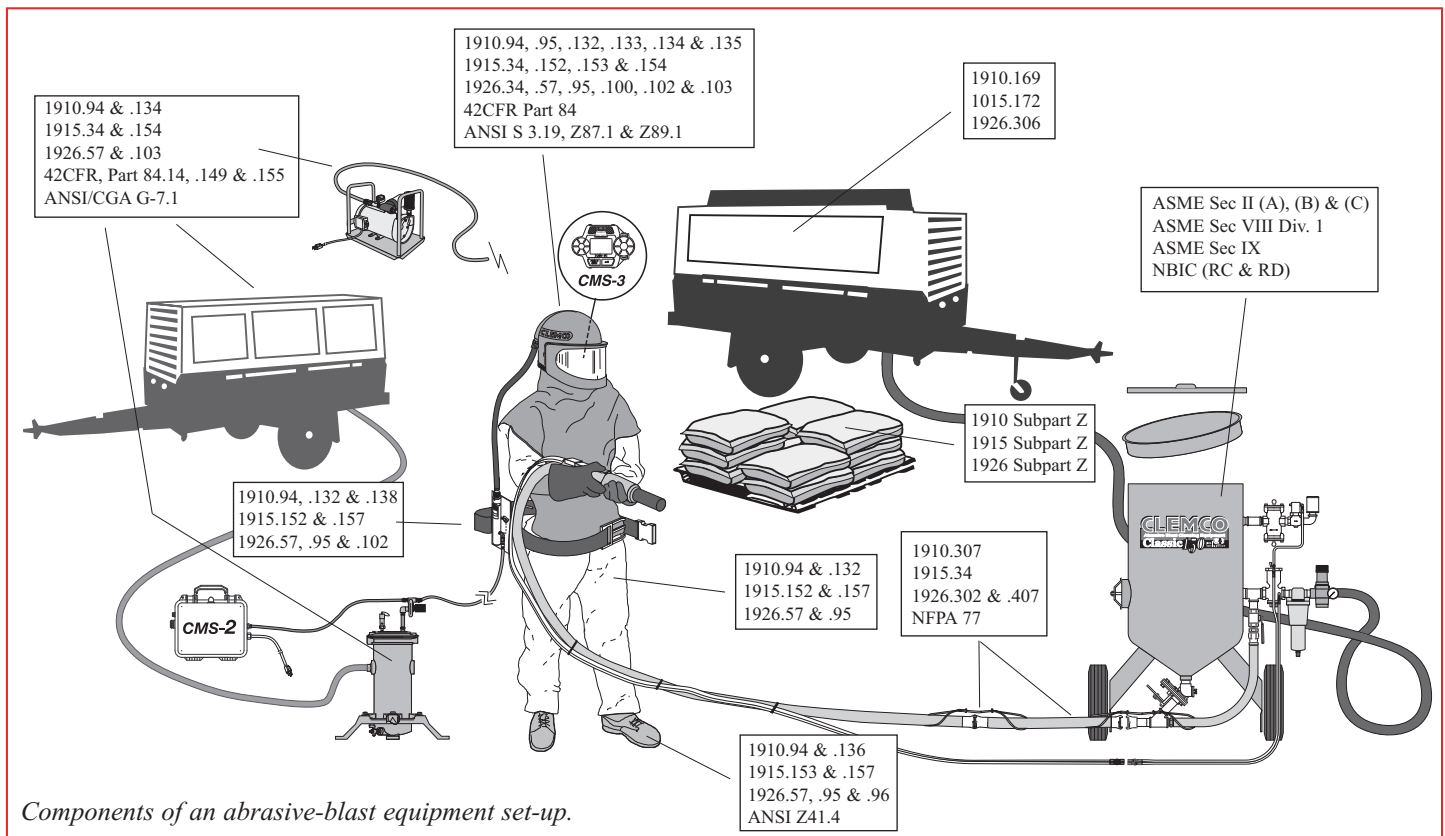
To gain NIOSH approval, Clemco submits samples of each respirator in all its variations and with all its optional equipment. Any change in material, manufacturing process, or supplier requires a new submittal to NIOSH. Substituting respirator components or parts voids the NIOSH approval.



Be Safe — Always monitor breathing air for CO

Abrasive Blasting Safety Regulations

Federal regulations that apply to protecting employees and the public during commercial activities, such as surface preparation and coating.



Authority	Regulatory Reference	Regulation Description
OSHA	Title 29, Parts 1910, 1915, 1926	Occupational Safety and Health Administration: Standards related to pressure vessels, electrical classification, personal protective equipment (PPE), hazardous substances et al. www.osha.gov
NIOSH	Title 42, Part 84	National Institute of Occupational Safety and Health: Approval of respiratory devices. www.cdc.gov/niosh
CGA	G7.1	Compressed Gas Association: Commodity specification for breathing air (Grade D or higher quality) www.cganet.com
EPA	Title 40	Environmental Protection Agency: Sets standards relating to emission controls, solid waste control and disposal during surface preparation and coating operations. www.epa.gov
DOT	Title 49	Department of Transportation: States requirements for the control of activities on public highways. www.dot.gov
ANSI	S 3.19 Z87.1 & Z89.1	American National Standards Institute: S 3.19: Hearing conservation; noise reduction rating (NRR). Z87.1: Eye and Face Protection; Z89.1: Head Protection. www.ansi.org
ASME		American Society of Mechanical Engineers: Guide to design of pressure vessels. www.asme.org
NBIC	RC & RD	National Board of Boiler and Pressure Vessel Inspectors (accredited by ANSI): Sets standards for repair of pressure vessels. www.nationalboard.org
NFPA	77	National Fire Protection Association: States recommended practices that apply to identification, assessment, and control of static electricity for purposes of preventing fires and explosions. www.nfpa.org

Additional Clemco publications available free of charge

Stock No.	Title	Stock No.	Title
22090.....	Abrasive Blasting Safety Practices	23398.....	Blast Off! 2 (Su Guía para un Chorro con Abrasivo Eficiente y Seguro)
22931.....	Practicas de Seguridad para el Chorreado con Abrasivo	24677.....	Use of PPE and Regs Affecting Safe Abrasive Blasting
09294.....	Blast Off! 2 (Your Guide to Safe and Efficient Abrasive Blasting)	24680.....	Understanding Respiratory Protection in Abrasive Blasting
		25995.....	Environmental Health and Safety Regulations (poster)

ISO 9001:2008 certified. Clemco is committed to continuous product improvement. Specifications are subject to change without notice.