

CLEMCO®



OPERATOR SAFETY EQUIPMENT



CLEMCO®
INDUSTRIES CORP.

Protection and Comfort for Abrasive Blast Operators



Protection and Comfort for Blast Operators

Abrasive blasting is difficult, dangerous work. Clemco equipment makes it safer and easier.

Safety equipment is necessary for compliant and safe blasting, and Clemco has you covered.

Apollo 600 and Apollo 20 Supplied-Air Respirators offer superior protection, comfort and mobility, and Clemco carbon-monoxide monitor-alarms come in three styles, including the CMS-4, which has a unique, compact design that quickly attaches inside a respirator helmet. Clemco also offers breathing-air filters for use with compressed-air sources, as well as ambient air pumps for use with low-pressure respirators.

The Apollo WiComm 2 Bone-Conduction Radio Headset provides clearer communication than traditional radio headsets, which promotes safety and efficiency, and Clemco blast suits, gloves, and hose safety cable are must haves for blasting operations.

Comfortable operators can focus more intently on their jobs, so Clemco offers temperature-control devices for supplied-air respirators and a comfort vest for keeping operators cool or warm.

When it comes to safety—and comfort—Clemco has you covered.

Apollo 600 Supplied-Air Respirator: HP and LP Models

The Apollo 600 Supplied-Air Respirator (SAR) leads the industry in protection, comfort, performance, convenience, and durability. Its high-pressure (HP) model is for use with a compressed-air supply, and its low-pressure (LP) model is for use with an LP ambient air pump. Following are some of the Apollo 600's major design and safety advantages:

Protection

- NIOSH-approved, Type19C/CE supplied-air respirator.
- ANSI hard hat (Z89) and face (Z87) protection certified.
- OSHA assigned protection factor of 1000 x permissible exposure limit.

Comfort

- Two suspension-system options:
 - The DLX Comfort-Fit Suspension System fits like a motorcycle helmet. It features multiple soft, washable, fabric-covered pads that easily attach to the helmet shell.
 - The Web-Style Suspension System features a six-point, knob-style adjustment system and a replaceable sweatband.
- A crown-mounted air baffle delivers ample air supply to the operator's head and face.
- The silver-gray protective cape reflects the sun's rays, minimizing heat absorption.
- Adjustable chin strap.
- The breathing hose attaches at the helmet's center rear for a balanced fit.



Performance

- Heavy-duty, single-shell helmet.
- Industry's largest view window (180° wide).
- Three-lens window system has an inner lens held in place by a molded gasket and one middle lens. Both lenses seal out dust and abrasive. Up to three perforated, tear-away outer lenses protect the middle lens from pitting. A hinged frame holds the outer lens in place. When the outermost of the three exterior lenses becomes pitted, it can be torn off to expose the next outer lens.

*The Apollo 600
has the industry's
largest view
window.
(180° wide)*

Convenience

- Integral strap for carrying or hanging the helmet.
- Cape attachment band wraps around the bottom rim of the helmet shell and easily fastens or detaches with a ratchet-style buckle. This enables an operator to quickly replace the cape.
 - Zip-in-and-out inner collar can easily be removed for cleaning.

Durability

- Extra-long window frame reduces abrasive wear on the top of the cape.
- The inlet fitting is easily replaced.
- Integral 1" deep visor prevents dust and media from lodging between the lenses.

Apollo 20 Supplied-Air Respirator



Performance and Value

The Apollo 20 is Clemco's most economical supplied-air-respirator and is also one of the lightest respirators in the industry. Its HP model is for use with a compressed-air supply, and its LP model is for use with an LP ambient air pump. The respirator's single-shell helmet comes with the washable DLX Comfort-Fit Suspension System, which surrounds the operator's head with comfortable padding. The rectangular window provides a clear field of view, and lens changeout is quick and easy. An inner lens held in place by a molded gasket and a middle lens seal out dust and abrasive. Up to three lightweight, disposable outer lenses protect the middle lens from pitting. A hinged frame holds the outer lens in place. When the outermost of the three exterior lenses becomes pitted, it can be torn off to expose the next outer lens.

Protection

- NIOSH-approved, Type19C/CE supplied-air respirator.
- ANSI face protection certified (Z87).
- OSHA assigned protection factor of 1000 x permissible exposure limit.

CO Monitor-Alarms

Protect operators with monitors that detect carbon monoxide (CO) in concentrations of at least 10 parts per million (ppm) in respirator air supplies.



CMS-4

Compact, unique design that quickly attaches inside the helmet of an SAR. Enables operators to self-monitor their CO exposure. Unit triggers audible, visual and vibratory alarms, and its threshold can be reset to 5 ppm.



CMS-1

Industrial-use, wall-mounted unit that triggers a warning light and audible alarm. Optional remote alarm. Unit's threshold can be reset to 5 ppm.



CMS-2

Field-portable unit in a rugged case that triggers a warning light and audible alarm. Optional remote alarm.

CPF-20 / CPF-80 Breathing-Air Filters

The CPF-20 and CPF-80 are in-line filters for breathing air supplied from a compressed-air source. They remove water, oil, and particulates larger than 0.5 micron. They also meet OSHA requirements and feature a NIOSH-mandated point of attachment.

CPF-20

For one or two operators.

CPF-80

For up to four operators.



Apollo Ambient Air Pumps

Cost-Effective Alternatives to Breathing-Air Compressors

Convey breathing air from a clean-air environment outside the work area to low-pressure SARs worn by operators inside the blast environment. These portable, oil-free units pump air to respirators without introducing CO, oil, or other contaminants from the pumps.

CALIPSO

Single-operator pump with a totally enclosed, fan-cooled electric motor. For SARs that operate at 8 cfm up to 10 psi.



CAP-4

Supplies air for one to four blast operators wearing TypeC/CE helmets or for up to six operators wearing full face masks. For SARs that operate at 9 cfm up to 10 psi. Uses compressed air for power; works where no electric power is available. Protective cage shields critical components from damage.

CAP-4C

Same as the CAP-4 but features an integral, two-wheel cart with an extendable handle.

Operator Safety and Comfort



Air-Flow Devices

NIOSH-Approved for Respirators

- 1. Constant Flow Connector (CFC)**
Supplies a fixed volume of air at maximum flow. For use with a Clemco LP, Type19C/CE respirator.
- 2. Air Control Valve (ACV)**
Enables operators to control air volume to a Clemco HP, Type19C/CE respirator within a preset range of 7 to 15 cfm.

Temperature-Control Devices

NIOSH-Approved for Clemco HP, Type19C/CE Respirators

- 3. Cool Air Tube (CAT) or Clem-Cool Air Conditioner (CCAC)**
Enables operators to cool incoming air by as much as 50° F. CCAC is disposable; CAT has replaceable parts.
- 4. Climate Control Tube (CCT)**
Enables operators to cool or warm incoming air by as much as 40° F. This unit has replaceable parts.

Apparel

- 5. Comfort Vest:**
Keep Operators Warm or Cool
Lightweight, one-size-fits-most garment that can be worn underneath a blast suit. For cooling, attach a Clemco CCAC or CAT. For cooling and warming, attach a Clemco CCT.
- 6. Blast Suits with Gloves**
Protect operators from the impact of rebounding abrasive. **Traditional Heavy-Duty** and **Seasonal Lightweight** blast suits available.

Safety Cable

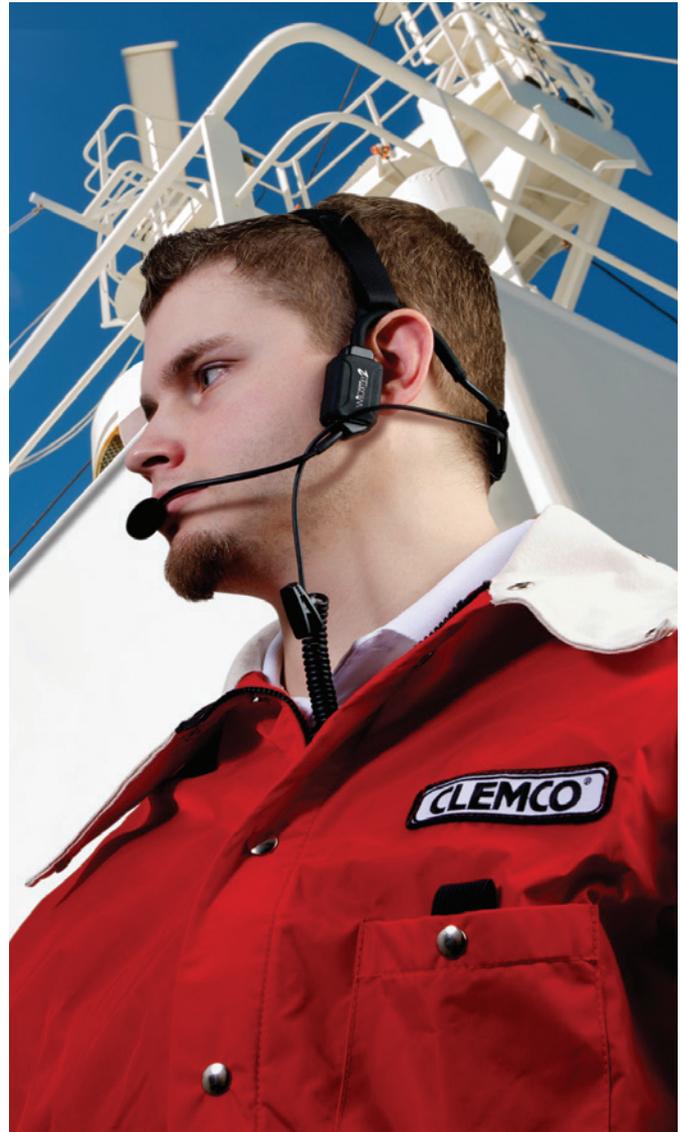
- 7. For Blast Hose**
Help prevent operator injury if couplings disconnect. Offered in three sizes to go with blast hose or compressor bull hose. Quickly and easily installs without tools.

Replacement Parts Use Clemco Parts

To keep operators safe and to stay compliant with OSHA regulations, safety equipment must be properly maintained. Note that using non-Clemco replacement parts in a Clemco SAR voids its OSHA approval. For safety's sake, use genuine Clemco replacement parts.



Apollo WiComm 2



Clearer Communication with Blast Operators Promotes Safety and Efficiency

Police officers, firefighters, military personnel, and increasingly blast operators are using bone-conduction radio headsets.

These devices transmit incoming messages as mild vibrations through the jawbone—not through headsets that cover the ears. So blast operators who wear the Wicomm 2 Bone-Conduction Radio Headset can use their choice of hearing protection, which promotes safety, efficient communication, and longer work shifts.

Apollo 600/20: Safety Regulations

NIOSH Approval: Clemco Apollo Type19C/CE, Supplied-Air Respirators are approved by the National Institute for Occupational Safety and Health (NIOSH), which puts products through defined testing standards to ensure worker safety. The approval number is printed on the label sewn into the cape and in the operations manual.

Assigned Protection Factor (APF) 1000: Clemco Apollo Respirators have an APF 1000 rating, which means they protect operators 1000 times beyond the Occupational Safety and Health Administration's (OSHA) mandated permissible exposure limit for (1) airborne hazardous substances in the dust generated by abrasive blasting and (2) from contaminants being removed from surfaces being blasted. OSHA is the primary reference for safety standards. It incorporates other regulations and consensus standards. OSHA regulations can be found at www.osha.gov.

To obtain APF 1000 rating, Apollo Respirators underwent third-party testing. Test subjects wearing Apollo Respirators performed rigorous exercise in positions simulating those assumed during blasting while various respirator flow settings were tested.

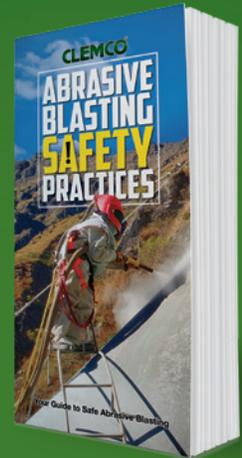
Wearing an Apollo Respirator does not preclude the need to monitor the air quality supplied to the respirator or in the blast area, and OSHA requirements for containment ventilation and EPA requirements for dust collection or disposal still must be followed.

Verification documentation for Clemco's APF 1000 approval is available at http://clemcoindustries.com/images/pdfs/Clemco_SWPF_Study.pdf.

Noise Reduction Rating (NRR) Explained: OSHA demands that workers 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 for specified lengths of time. The noise level from abrasive blasting is about 121 dBA, requiring workers to wear primary hearing protection, such as earplugs. However, Clemco Apollo Respirators are the only OSHA-compliant, Type19C/CE, supplied-air respirators that provide secondary hearing protection. Testing by an independent laboratory showed that the Apollo 600 Respirator with DLX Comfort-Fit Suspension provided an NRR of 9; other Apollo Respirators provided an NRR of 8. For more information about these studies, go to the following Clemco web page and see the "Noise Reduction Rating Certification" section: <https://clemcoindustries.com/safety/certifications/>.

Breathing Air Quality: OSHA requires breathing air to be Grade-D and have no noticeable odor. For the definition of Grade-D air, refer to the Compressed Gas Association commodity specification for air, G-7.1 at www.cganet.com.

Clemco Safety Publications



Available free of charge. Contact Clemco Customer Service at 636-239-4300 or at custserv@clemcoindustries.com. Order by stock number.

#22090

Abrasive Blasting Safety Practices

#22931

Practicas de Seguridad para el Chorreado con Abrasivo

#09294

Blast Off 2

#23398

Blast Off 2 (en Español)

#24677

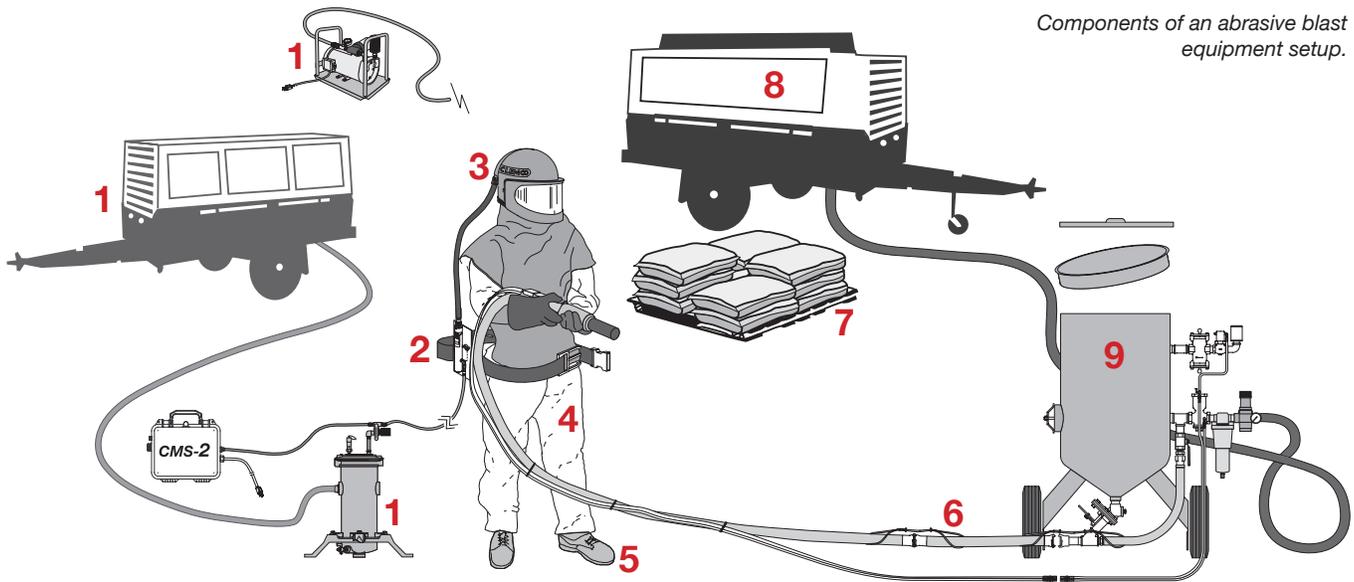
Use of PPE and Regulations Affecting Safe Abrasive Blasting

#24680

Understanding Respiratory Protection in Abrasive Blasting

#25995

Environmental Health & Safety Regulations (poster)



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

1	2	3	4	5	6	7	8	9
<ul style="list-style-type: none"> • 1910.94 / .134 • 1915.34 / .154 • 1926.57 / .103 • 42CFR, Part 84.14 / .149 / .155 • ANSI/CGA G-7.1 	<ul style="list-style-type: none"> • 1910.94 / .132 / .138 • 1915.152 / .157 • 1926.57 / .95 / .102 	<ul style="list-style-type: none"> • 1910.94 / .95 / .132 / .133 / .134 / .135 • 1915.34 / .152 / .153 / .154 • 1926.34 / .57 / .95 / .100 / .102 / .103 • 42CFR Part 84 • ANSI S 3.19 / Z87.1 / Z89.1 	<ul style="list-style-type: none"> • 1910.94 / .132 • 1915.152 / .157 • 1926.57 / .95 	<ul style="list-style-type: none"> • 1910.94 / .136 • 1915.153 / .157 • 1926.57 / .95 / .96 • ANSI Z41.4 	<ul style="list-style-type: none"> • 1910.307 • 1915.34 • 1926.302 / .407 • NFPA 77 	<ul style="list-style-type: none"> • 1910 Subpart Z • 1915 Subpart Z • 1926 Subpart Z 	<ul style="list-style-type: none"> • 1910.169 • 1015.172 • 1926.306 	<ul style="list-style-type: none"> • ASME Sec II (A), (B), (C) • ASME Sec VIII Div. 1 • ASME Sec IX • NBIC (RC & RD)

AUTHORITY	REGULATORY REF.	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

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