

# **ADVANTAGE**®

*Respirator Facepiece* **200LS**

## **Instructions**

### **⚠ WARNING**

This booklet, including the warnings and cautions inside, must be carefully read and followed by all persons who use or maintain this product, including those who have any responsibility involving its selection, application, service, or repair. This respirator will perform as designed only if used and maintained according to the instructions. Otherwise, it could fail to perform as designed and persons who rely on this product could sustain serious personal injury or death.

See inside for Instructions, Warnings, and Limitations for Advantage 200LS Respirators.

NIOSH approval information is included as a supplement (P/N 10021588) to these instructions.

For additional information, call 1-800-MSA-2222 during regular working hours.

Patented MultiFlex® System  
U.S. Patent No. 5,592,937



Be Sure,  
Choose MSA.

MINE SAFETY APPLIANCES COMPANY  
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230

## NIOSH APPROVAL INFORMATION

### 1. Protection

P100—Particulate Filter (99.97% filter efficiency level) effective against all particulate aerosols.

N95—Particulate Filter (95% filter efficiency level) effective against all particulate aerosols free of oil; time use restrictions may apply.

R95—Particulate Filter (95% filter efficiency level) effective against all particulate aerosols; time use restrictions may apply.

AM - Ammonia	HS - Hydrogen sulfide
CD - Chlorine dioxide	(escape)
CL - Chlorine	MA - Methylamine
FM - Formaldehyde	MV - Mercury vapor
HC - Hydrogen chloride	OV - Organic Vapor
HF - Hydrogen fluoride	SD - Sulfur dioxide
	SA - Supplied Air

### 2. Cautions and Limitations

- A. Not for use in atmospheres containing less than 19.5 percent oxygen.
- B. Not for use in atmospheres immediately dangerous to life or health.
- C. Do not exceed maximum use concentrations established by regulatory standards.
- H. Follow established cartridge and canister change schedules or observe ESLI to ensure that cartridges and canisters are replaced before breakthrough occurs.
- J. Failure to properly use and maintain this product could result in injury or death.
- K. The Occupational Safety and Health Administration regulations require gas-proof goggles be worn with this respirator when used against formaldehyde.
- L. Follow the manufacturer's Users Instructions for changing cartridges and/or filters.
- M. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations.
- N. Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified

by the manufacturer.

- O Refer to User's Instructions and/or maintenance manuals for information on use and maintenance of these respirators.
- P. NIOSH does not evaluate respirators for use as surgical masks.
- S. Special or critical user's instructions and/or specific use limitations apply. Refer to User's Instructions before donning.

### S - SPECIAL OR CRITICAL USER INSTRUCTIONS

1. NIOSH allows this respirator to be used for protection against a mixture of contaminants that are present simultaneously or used alternately against one contaminant then another (using the same cartridges or filters) if the mixture meets the following conditions:
  - a. The cartridge/filter must be approved for all contaminants present.
  - b. Contaminants present simultaneously must be below IDLH levels for the specific contaminants. If any one contaminant in the mixture exceeds the IDLH concentration, then the entire mixture must be treated as IDLH and the respirator cannot be used (except for escape from particulates with appropriate filter).
2. Special Instructions for Mersorb-P100/Mersorb Cartridges —
  - a. Mersorb-P100/Mersorb® cartridges can be used against a mixture of chlorine and mercury that are both present simultaneously, but cannot be used if alternating between mercury-contaminated atmospheres and chlorine-contaminated atmospheres.
  - b. Service Life Indicator - The Mersorb-P100 respirator utilizes an End of Service Life Indicator (ESLI) for use against metallic mercury vapor. The ESLI must be readily visible to the wearer of this respirator without manipulation of either the respirator, cartridges, facepiece or the indicator. If you can not readily see the indicator, do not wear the respirator. The ESLI band around the side of each Mersorb-P100/Mersorb cartridge con-

sists of chemically treated paper. In use, as the paper is exposed to metallic mercury vapor, it changes from orange to brown. When the indicator color changes to brown, the cartridge is beginning to lose its effectiveness against metallic mercury vapor and must be replaced. Thus, the wearer has a constant, positive check on the condition of his cartridge.

- c. Do not enter any atmospheres with this respirator unless you know that; you are not colorblind and can distinguish between the beginning and ending colors of the end-of-service-life indicator (when using Mersorb-P100/Mersorb respirators only).

#### **INSTRUCTIONS FOR USE AND CARE BY PROPERLY TRAINED AND QUALIFIED PERSONNEL**

##### **⚠ WARNING**

1. **This device does NOT supply oxygen, and must only be used in adequately ventilated areas containing at least 19.5 percent oxygen.**
2. **This respirator must be used in conjunction with the proper chemical or particulate cartridges for protection against specific contaminants.**
3. **Do not use when concentrations of contaminants are unknown or immediately dangerous to life or health (IDLH).**
4. **Do not use when appropriate exposure limit (OSHA PEL, NIOSH REL, ACGIH TLV, etc.) is not known.**
5. **Leave area immediately if:**
  - A. **Breathing becomes difficult.**
  - B. **Dizziness or other distress occurs.**
  - C. **You taste or smell contaminant.**
  - D. **You experience nose or throat irritation.**
6. **Use strictly in accordance with instructions, labels, and limitations pertaining to this device.**
7. **This respirator may not provide a satisfactory seal with certain facial characteristics, such as beards or large sideburns, that prevent direct contact between the skin and the sealing surface of the facepiece. Do not use this**

8. **Never alter or modify this device.**
9. **This respirator is for use by trained, qualified personnel only.**

**Failure to follow the above warnings can result in serious personal injury or death.**

##### **⚠ WARNING**

**Do not use for urethane paints or other paints containing diisocyanates unless an appropriate cartridge change-out schedule is developed. Due to their poor warning properties, over exposure can occur without user awareness and result in severe permanent damage to the respiratory system. If unable to develop an appropriate change-out schedule, use an air-supplied respirator or SCBA.**

#### **RESPIRATOR USE LIMITATIONS**

The wearer must comply with the following respirator use limitations:

1. **MAXIMUM USE CONCENTRATION** — Do not exceed any of the following:
  - A. 10 times the exposure limit for the contaminants present.
  - B. Immediately dangerous to life or health (IDLH) concentration for any contaminant present.
2. The limitations outlined in the applicable NIOSH approval.
3. For respirators with class N or R filters: Replace filters after no more than 8 (eight) hours of use (continuous or intermittent) or sooner if excessive breathing resistance occurs while inhaling. [Service time can be extended by performing an evaluation in the specific workplace setting that demonstrates (a) that the extended use will not degrade the filter below the efficiency level for which it is approved, or (b) that the total mass loading of the filter is less than 200 mg.]
4. For respirators with class P filters: Replace filters when excessive breathing resistance occurs while inhaling.
5. For respirators with chemical cartridges:
  - a. Users must follow an appropriate cartridge change-out schedule developed by a qualified professional. The change-out schedule must take into

account all factors that may influence respiratory protection including specific work practices and other conditions unique to the works environment. Cartridges equipped with an end-of-service-life indicator for a specific contaminant present must be replaced when the indicator changes to the specified color or sooner if using the respirator against a mixture and the cartridge change-out schedule specifies an earlier replacement.

- b. If using the respirator against substances having poor warning properties, over exposure can occur without user awareness. Take appropriate precautions to prevent overexposure, which may include an earlier cartridge change-out, or using an air-supplied respirator or SCBA. For further information refer to MSA's *Response Respirator Selector*.
  - c. Replace cartridges every shift, or sooner if indicated by change-out schedule or end-of-service-life indicator. Use beyond one shift could result in shorter than expected service time and over exposure due to contaminant desorption and migration through the cartridge when not in use.
  - d. If using the respirator for escape, replace cartridges after each escape. Once the user breathes through the respirator in a contaminated atmosphere, the cartridges may not provide adequate protection for additional escapes. Additionally, once the cartridges are initially placed into service or carried by the user in anticipation of escape, they must be replaced based on an appropriate cartridge change-out schedule. Extended exposure of the cartridges to nuisance levels (below the PEL) of the contaminant may prevent the cartridges from providing adequate escape protection.
6. For respirators with combination cartridges (chemical cartridges with filters): The limitations specified above for chemical cartridges as well as the applicable filter class apply for combination cartridges.
  7. Applicable respirator use requirements as

specified in the OSHA Respiratory Protection Regulation 29 CFR Part 1910.134 (or other requirements established by the Regulatory Agency with jurisdiction over the wearer). Additional OSHA Regulations may also apply for certain contaminants (See MSA's *Response Respirator Selector*).

#### EXPOSURE LIMITS

A listing of acceptable exposure limits from the following sources is provided in MSA's *Response® Respirator Selector*:

- American Conference of Governmental Industrial Hygienists (ACGIH)
- Occupational Safety and Health Administration (OSHA)
- National Institute for Occupational Safety and Health (NIOSH)
- American Industrial Hygiene Association (AIHA)

#### Exposure Limits for Mixtures

The American Conference of Governmental Industrial Hygienists (ACGIH) publishes the following information to determine the TLV of a mixture.

First determine the total concentration of the chemical mixture ( $C_{\text{Mixture}}$ ) from the individual contaminant concentrations ( $C_1, C_2, C_3...$ ) using the following formula:

$$C_{\text{Mixture}} = C_1 + C_2 + C_3 + \dots$$

The TLV of the mixture is found by using the following formula where  $T_1, T_2, T_3, \dots$  are the individual contaminant TLVs and  $C_1, C_2, C_3...$  are the individual contaminant concentrations:

$$T_{\text{Mixture}} = \frac{C_{\text{Mixture}}}{\frac{C_1}{T_1} + \frac{C_2}{T_2} + \frac{C_3}{T_3}}$$

Only use these equations if the contaminants present are actually mixed. Some substances do not mix and may be present separately, for example, in pockets or at different levels. In that case, the lowest TLV of the substances present must be used to determine the appropriate respirator category for protection against all contaminants present. See MSA's

*Response Respirator Selector* for additional information.

### **RESPIRATOR FIT TEST**

A qualitative or quantitative respirator fit test must be carried out for each wearer of this respirator to determine the amount of protection it will provide.

Respirator fit tests are explained fully in the *American National Standard for Respiratory Protection*, ANSI Z88.2, which is published by the American National Standards Institute, 11 West 42nd Street, New York, New York, 10036.

**QUANTITATIVE TEST** – If a Quantitative Fit Test is used, a fit factor that is at least 100 shall be obtained before that respirator is assigned to an individual.

**QUALITATIVE TEST** - If a Qualitative Fit Test is used, only validated protocols are acceptable. The individual must pass a test designed to assess a fit factor of at least 100.

Regardless of facial dimensions and respirator sizing charts, respirator fit testing, either qualitative or quantitative, must be performed to ensure the respirator selected provides an adequate fit.

### **⚠ WARNING**

**The user must perform a respirator fit test and follow all warnings and limitations specified. Failure to do so can result in serious personal injury or death.**

### **PREPARATIONS FOR USE**

The following inspection points must be checked before donning the respirator. A respirator that fails the inspection must not be used. The respirator must be repaired or replaced.

- 1. Neck strap/Headband:** Check to see that the headband and neck strap still have their elasticity. Inspect for breaks or tears and make sure all adjusters are in place and working properly.
- 2. Facepiece:** Check facepiece for dirt, cracks, tears, or holes. Inspect the shape of the facepiece for possible distortion

that may occur from improper storage and make sure the rubber is flexible, not stiff. Also check the yoke for cracks.

- 3. Inhalation and exhalation valves:** Check for cracks, tears, distortion, dirt, build-up of material between valve and valve seat.
- 4. Cartridge connectors:** Check to make sure connectors are in place and check for cracks and damage.
- 5. Cartridges and filters:** Make sure cartridges and filters are clean. Never try to clean a cartridge or filter by washing it or using compressed air. Inspect cartridges for scratches, cracks, or other damage, particularly the sealing bead around the bottom.

**CARTRIDGE ATTACHMENT:** Carefully attach cartridges to facepiece connectors by first aligning the cutouts on the cartridges with the lugs on the facepiece connectors and then turning the cartridge clockwise by hand until tight. Align the small lug on the connector with the match-mark located on the cartridge body (see Replacing Cartridges).

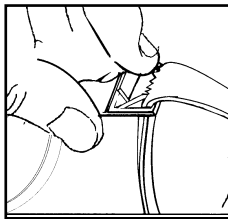
### **DONNING THE RESPIRATOR**

To don the Advantage 200LS Respirator, follow the outlined steps:

1. Loosen all the straps by pulling the tab back on the latch with your finger.
2. Pull the neck strap over your head and place it around your neck. The neck strap must lay flat against your neck, not twisted.
3. Place the top portion of the facepiece on the bridge of your nose and swing the bottom of the facepiece inward. The facepiece should fit comfortably around your nose, mouth and chin.
4. Pull the cradle headband over your head until it straddles the crown of your head. The cradle headband must lay flat, not twisted.
5. Pull the ends of the cradle headband straps to tighten the cradle around the crown of your head.
6. Pull the ends of the neck strap to tighten the neck strap around your neck.
7. Adjust the cradle headband and neck straps for a comfortable and secure fit. The straps should be just snug enough so that no air leaks around the facepiece.

The straps should not be pulled so tight that the respirator digs into your face. Be careful not to over-tighten.

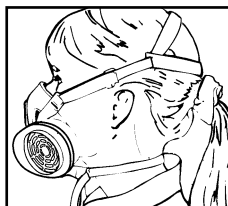
- a. Adjust the cradle head straps and the neck strap. If the fit is too tight unlock the strap by pulling back on the tab on the latch. Then, pull to desired comfort.



NECK STRAP LOCK



ADJUST THE STRAPS

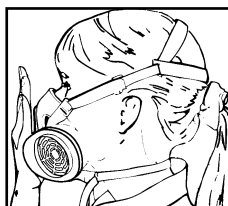


OBTAIN A COMFORTABLE FIT

### TEST FOR TIGHTNESS



NEGATIVE PRESSURE METHOD



POSITIVE PRESSURE METHOD

#### Test for Tightness Before Each Use By One of the Following Methods:

- Negative Pressure Method — Place your palms over cartridges lightly. Gently inhale so that the facepiece collapses slightly and hold breath for ten seconds. The facepiece will remain collapsed while the breath is held unless there is a leak in the seal.
- Positive Pressure Method — Place your palm lightly over exhalation valve cover and gently exhale.

If any leakage is detected around the facial seal, readjust head harness straps and repeat test until there is no leakage. If other than facial seal leakage is detected, the condition must be investigated and corrected before another test is made. The respirator must pass one of the above tightness tests before the respirator is used.

### ⚠ WARNING

Do not enter any atmosphere with this respirator unless you know that:

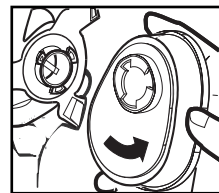
1. You have read, understood and followed all instructions and warnings pertaining to the respirator.
2. The respirator and conditions meet the requirements outlined.
3. The cartridges are the proper type for the contaminant or contaminants present.
4. The amount of oxygen is sufficient to support life (that is, at least 19.5 percent oxygen by volume at sea level). Do not use if oxygen concentration sufficient to support life is questionable.
5. Respirator has passed a tightness test. (See Test for Tightness.)
6. Filters/Cartridges do not need to be replaced. Discard exhausted cartridges.
7. You are not colorblind and can distinguish between the beginning and ending colors of the end-of-service-life indicator (when using Mersorb or Mersorb-P100 respirators only).

Failure to follow the above warnings can result in serious personal injury or death.

#### To replace cartridges:

- A. Remove the expended cartridges and dispose of properly.
- B. Remove the replacement cartridges from storage bags.
- C. Place cartridges on connectors carefully.

Line up match-mark on cartridge with small lug on facepiece connector. Make sure cartridge connector lugs align with the cartridge opening. Push down and tighten cartridge clockwise until the stops are engaged. To ensure a good seal against the facepiece, tighten each cartridge by gripping as much of the circumference of the cartridge as possible and then slowly turning the cartridge until tight.



#### To replace snap-on filters:

- A. Remove snaptight filter covers and dis-

card used filter.

- B. Replace with a new filter into each filter cover; NEVER load filters into the receptacles.
- C. Replace filters with CAUTION as to prevent damage to the filters.

#### **CLEANING AND DISINFECTING**

If the facepiece is to be cleaned, remove the cartridges. The facepiece should be cleaned and disinfected after every use with MSA non-sudsing Confidence Plus™ Cleaner (P/N 10009971). Rinse thoroughly in plain warm water (110°F to avoid possible overheating and distortion of parts) and then air dry. ANSI suggests that users should be trained in cleaning procedure.

#### **▲ CAUTION**

**Cleaning and Disinfecting at or below 110°F temperature will avoid possible overheating and distortion of parts which would require replacement.**

#### **MAINTENANCE**

This respirator must be kept in good condition to function properly. When any respirator shows evidence of excessive wear or damage, it must be replaced immediately. Refer to the Preparations for Use section for proper inspection of the respirator. This respirator, when not in use, should be stored in a clean, dry location, such as its storage bag. Do not distort rubber facepiece during storage. When disposing of the respirator or its components, do so in accordance with local, state and federal regulations.



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