



**AirBoss Defense**  
*The Ultimate Protection*

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# AIRBOSS Moulded Glove

## AMG



### COMMERCIAL SPECIFICATION

Revision 18: October 7<sup>th</sup>, 2016  
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## 1. PRODUCT DESCRIPTION

The AirBoss Moulded Glove (AMG) is butyl rubber protective glove intended for use in both military and first response CBRN environments. The AMG offers superior protection, fit and operational efficiency. Users will be able to maintain their level of efficiency while wearing the glove and be able to carry out fine motor tasks including taking a pulse (wrist and carotid), manipulating small objects and operating touch screen or small keypad devices.

The AMG is made from injected butyl rubber which allows for a uniform thickness throughout the glove. The glove is ambidextrous and features a textured palm and fingertips and corrugated joints for enhanced dexterity and tactility. The wrist is snug enough to ensure no slippage on the hand and the cuff is long to ensure proper integration with a wide variety of protective garments.

The smooth butyl surface provides excellent protection against CBRN threats, including a wide variety of toxic industrial chemicals and is also ideal for easy decontamination. The glove is lightly dusted with a non-irritant, non-toxic mineral powder for a tacky-free finish.

The AMG also include a comfort liner, designed to aid in moisture management and comfort of the user. The liner is made of a seamless, knitted construction and is made from a blend of Coolmax, Lycra and Viscose. This fibre blend is the best combination for moisture management, wicking and elasticity as per study Evaluation of Candidate Glove Liners for Reduction of Skin Maceration in Chemical Protective Glove form 1996. As an optional feature when requested, this liner can be treated with an antimicrobial to avoid bacterial development.

The Design and Fit of the AMG is based on the Canadian Forces Glove Fit Study Volume III: Development of an Integrated Anthropometric Sizing System for Chemical Biological Protective Gloves, DRDC Suffield. 1997 and the Anthropometric Survey of the US Army, 1988.

The gloves are available in 7 sizes to fit more than the 5th through 95th percentile of the population (both male and female). The size breakdown and corresponding liner size is indicated in the table below.

**TABLE A -SIZING CHART**

<b>Size</b>	<b>Hand Length (cm)</b>	<b>Palm Girth (cm)</b>	<b>EC Size</b>	<b>Glove Liner (Colour code)</b>
Small	15.5 to 16.9	16.8 to 19.0	6.5	Small
Medium - Narrow	16.9 to 18.3	17.5 to 19.7	7	Medium
Medium	16.9 to 18.3	19.7 to 21.9	8	Medium
Large - Narrow	18.3 to 19.7	18.2 to 20.4	8.5	Medium
Large	18.3 to 19.7	20.4 to 22.6	9	Medium
Extra-Large - Narrow	19.7 to 21.1	19.5 to 21.7	10	Large
Extra-Large	19.7 to 21.1	21.7 to 23.9	10.5	Large



**2. GLOVE PROPERTIES**

Please refer to Annex A for a list of all relevant standards.

**TABLE B - GLOVE PROPERTIES**

Property	Test Method	Performance
<b>Protection</b>		
Chemical Warfare Agent Resistance (HD, GD, TGD, VX) Challenge: 10 g/m <sup>2</sup>	TOP 8-2-501	< 2.0 µg/cm <sup>2</sup> >24 hrs
	QSTAG 991	< 2.0 µg/cm <sup>2</sup> > 24 hrs
	DEF STAN 93-55	> 24 hrs
Toxic Industrial Chemical (TIC) Resistance	ASTM F739	Resistant to many TICs. List available upon request.
	EN 374	
Biological Warfare Agent Resistance	--	Impermeable to biological warfare agents.
Electrostatic Decay	FTMS 191A Method 5931	0.01 s
Surface Resistivity	EN 1149-1	< 5x10 <sup>10</sup> Ω (Pass)
Cut Resistance	EN 388	Level 0
	ASTM F1790	1.1 N 20 mm cut distance
Puncture Resistance	EN 388	Level 1
	ASTM F1342	16.7 N
Abrasion Resistance	EN 388	Level 2
<b>Functionality</b>		
Thickness (crotch and cuff)	--	0.022" +0.008 -0.006 0.56mm +0.20 -0.15
Dexterity	EN 420	Level 5
<b>Material Properties*</b>		
Hardness	ASTM D2240	60 ± 5
Tensile Strength at Break	ASTM D412	≥ 10.0 MPa
Tear Strength	ASTM D624 (Die C)	≥ 30 kN/m
Elongation at Break	ASTM D412	≥ 420 %
Stiffness at Cold Temperatures	ASTM D1053	Material adequately flexible for use to -45°C
	MIL-STD 810G	

\* Tested on the rubber compound



The table below shows the change in physical properties following an aging simulation conducted according to ASTM D573, which requires conditioning for 48 hrs at 100 °C. While actual ageing of the product will depend significantly on storage conditions, this data provides an indicator of the expected ageing properties of the rubber over time.

**TABLE C - PHYSICAL PROPERTIES AFTER AGEING (ASTM D573)**

Property	Test Method	Performance
Hardness	ASTM D2240	≤ 70
Tensile strength at break	ASTM D412	≥ 9.6 MPa
Elongation at break	ASTM D412	≥ 350 %

### 3. **PROTECTION**

**Chemical Agent Protection** – The AMG protects against vapour, liquid and aerosol chemical warfare agents (CWAs). Extensive testing has been conducted at several test facilities around the world (Batelle, ProQares, DRDC Suffield) using many different chemical agents. Under standard test conditions and concentrations, the AMG offers more than 24 hours of protection against traditional CWAs. In addition, the AMG protects against a wide range of toxic industrial chemicals (TICs). The complete list of protection against TICs is available upon request.

**Biological Agent Protection** – The AMG is impermeable to biological warfare agents. The smooth, injected butyl rubber surface allows for easy decontamination from biological contaminants.

**Nuclear Fallout Protection** – The AMG is impermeable to nuclear fallout. The smooth surface is easily decontaminable from the dust particles.

**Integration** – The AMG is designed to be close-fitting at the wrist and has a long gauntlet in order to integrate with many protective ensembles. The excellent integration of the AMG with multiple suits (including the JSLIST and the MKIVa) has been demonstrated through the Man-In-Simulant-Test (TOP 10-2-022, VAPRO) conducted at both the Royal Military College of Canada and North Carolina State University.

### 4. **USAGE CHARACTERISTICS**

**Dressing and Undressing with Uncontaminated Clothing** – The AMG is designed for easy donning and doffing. The ambidextrous design aids in quick dressing (under 30 seconds for complete dressing). The Coolmax liner also facilitates donning and doffing.

**Changing Protective Regimes** – The AMG is designed to integrate into the full protective ensemble at both Dress Stage 3 (MOPP III) and Dress Stage 4 (MOPP IV). The AMG will not interfere with transition from MOPP III to MOPP IV.



**Removing Contaminated Clothing** – The gloves are the last equipment to doff when contaminated. Finger tips of both gloves must be pulled off first. Each hand must be completely released from the glove’s wrist. Then the gloves are removed by shaking each hand.

**Magnetic Properties** – The AMG will not interfere with any magnetic components or equipment.

**5. DURABILITY**

**Durability** – The AMG is designed to be worn for 30 days without losing any physical properties or chemical resistance. Durability has been validated through intensive user trials. (reference JB2GU nFR June 2013, Table II, paragraphs 3.6.6 and 4.7)

**Climate** – The AMG will remain functional at a temperature range from -45°C to 70°C (-49°F to 158°F).

**Petroleum, Oil and Lubricant (POL) Resistance** – The AMG should be cleaned immediately after coming into contact with POLs and at a minimum, excess POL should be removed from the glove. The AMG is resistant to many non-NBC contaminants including many commonly encountered petroleums, oils and lubricants without significant loss of physical properties. A complete list of POL protection is available upon request.

**Antifungal and Antimicrobial Properties** – With proper care and maintenance, the AMG will not support bacterial or fungal growth. In order to further enhance the antimicrobial properties, an optional antimicrobial treatment can be applied to the Coolmax liner.

**6. MAINTENANCE, STORAGE AND DISPOSAL**

**Immediate Decontamination** – When contaminated by Chemical Agents the AMG can be fully decontaminated to a safe level using Individual Decontamination Kits (95% to 99% in accordance with Def Stan 93-55/2 Annex B). This procedure must be conducted prior to the doffing of the equipment to avoid cross-contamination. After this decontamination procedure, the AMG should be destroyed.

**Maintenance and Repair** – The AMG should be washed regularly with soap and water to remove dirt and other non-NBC contaminants. The AMG cannot be repaired by the end user. Any tear or leak in the glove indicates that the integrity of the product has been compromised and the glove should be disposed of appropriately.

**Storage** – The AMG has a storage life of 15 years when stored in original packaging out of direct sunlight between -50°C to 60°C (-58°F to 140°F).

**Disposal** – Contaminated gloves should be incinerated for disposal in appropriate facilities and in accordance with local regulations. Uncontaminated gloves may be disposed of through the appropriate local channels.



**7. CERTIFICATION**

The AMG complies with the EEC Directive for Personal Protective Equipment (89/686/EEC) and is CE certified. Reference: SAI Global notified body number 2056.

**8. MARKING**

As per end user requirements (most in stock items are identified with standard marking including: manufacturer name, NSN, size and lot number/date of manufacture). Special marking may require minimum order quantity.

**9. PACKAGING**

Gloves are vacuum-packed (flat) in an easy-to-open, clear plastic bag. Each package contains one pair of gloves and one pair of CoolMax Liners. Gloves are bulk-packaged in corrugated cardboard boxes for shipping.

Package Volume (Large) ..... 365 cm<sup>3</sup> (0.0128 ft<sup>3</sup>)

Package Weight (Large)..... 203 g (7.2 oz)

Note: Special packaging requests can be accommodated and should be made at the time of order. Minimum order quantities may apply.

**10. QUALITY ASSURANCE**

The AirBoss Moulded Glove is 100% inspected for leaks and other defects at multiple stages in the production process. Deficient product is rejected. All production follows a Quality Assurance Plan and a Test Inspection Plan. AirBoss Defense' Quality Assurance System is certified to ISO 9001:2008.

**11. SPECIFICATION AUTHORITY**

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Additional test data and product information is available upon request.



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## **Annex A: Relevant Standards**

DEF STAN 93-55/2, Annex A.....	Method of Test for Penetration of Mustard Gas.
DEF STAN 93-55/2, Annex B.....	Method of Test for Penetration of Mustard Gas Decontamination
QSTAG 991.....	Standard Tests for Measuring the Penetration of CW Agents through Protective Clothing
TOP 8-2-501.....	Permeation and Penetration Testing of Materials with Chemical Agents or Simulants (Swatch Testing)
TOP 10-2-022.....	Chemical Vapor and Aerosol System Level Testing of Chemical/ Biological Protective Suits
EN 374-1: 2003.....	Protective Gloves against Chemicals and Microorganisms (Terminology and Performance Requirements)
EN 374-2: 2003.....	Protective Gloves against Chemicals and Microorganisms (Determination of Resistance to Penetration)
EN 374-3: 2003.....	Protective Gloves against Chemicals and Microorganisms (Determination of Resistance to Permeation)
EN 388: 2003.....	Protective Gloves against Mechanical Risks
EN 420: 1994.....	Protective Gloves: General Requirements and Test Methods
EN 1149-1.....	Electrostatic Properties (Protective Clothing)
ASTM D412.....	Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D624.....	Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
ASTM F739.....	Permeation of Liquids and Gases through Protective Materials
ASTM D1053.....	Stiffening at Low Temperatures: Flexible Polymers and Coated Fabrics
ASTM F1342.....	Test Method for Protective Clothing Material Resistance to Puncture



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ASTM F1790.....	Test Method for Measuring Cut Resistance of Materials used in Protective Clothing
ASTM D2240.....	Rubber Property, Durometer Hardness
FTMS 191A Method 5931.....	Electrostatic Decay of Fabrics