

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

U.S. ARMY PROTECTIVE EQUIPMENT TEST BRANCH  
Research Development Engineering Command  
Edgewood Chemical Biological Center – Engineering Directorate  
RDCB-DET-P, BLDG. E5100  
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CHEMICAL

Valid to: August 31,2016

Certificate Number:0298.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests:

Analysis of various sample matrices for chemical agents and other hazardous chemicals  
Resistance of full system gas masks/respirators to penetration/permeation by chemical agents  
Physical and chemical testing of impregnated carbon and other adsorbents  
Resistance to chemical agent permeation /penetration  
Absorption/desorption of chemical agents  
Performance of chemical agent decontaminates  
Determination of physical characteristics of liquids and solids

Using the following technologies:

**Technology: General**

Method Number	Method Title
PET 175	Determination of the Percent Concentration of Sodium Hypochlorite, NaOCl, & Calcium Hypochlorite, Ca(OCl) <sub>2</sub> , in Liquid Bleach and Granular DCDMH & HTH by Volumetric Titration

**Permeation Testing Methods**

Method Number	Method Title
PET 110	Permeation Testing of Hoses by Agents HD and GB
MIL-STD-282, 282A,282B(Test Methods 204,205,206,208,209)	DoD Test Method for Filter Units, Protective Clothing, Gas Mask Components And Related Products: Performance Test Method
EA-DTL-1878,1878BW,AM2, 1878C,EA-L1381C	Lenses Outsert and Primary Lenses for Protective Chemical Biological Mask
TOP 8-2-501 Modified	Permeation and Penetration of Air-Permeable, Semi-Permeable and Impermeable Materials with Chemical Agents of Simulants (Swatch Testing)
MIL-STD-14506H & J	Hose, Air duct for Filter Units
CRDC-SP-84010 Section 2.1&2.2	Laboratory Methods for Evaluating Protective Clothing System Against Chemical Agents

**Carbon Testing Methods per MIL-DTL-32101A Carbon, Activated Impregnated Copper-Silver-Zinc-Molybdenum-Triethylenediamine(ASZM-TEDA)**

Method Number	Method Title
PET 136	Gas-Life Testing of Charcoal for Penetration by Cyanogen Chloride(CK), Hydrogen Cyanide(AC), and Phosgene(CG)
PET 168	Inductively Coupled Plasma-Optical Emission Spectrometer(ICP-OES) for Metals
PET 174	Testing for Ammonia Content of Impregnated Carbon
PET 176	GasLife Testing of Carbon for Penetration by Dimethyl Methylphosphonate
PET 177	Determination of Triethylenediamine(TEDA) Content using Gas Chromatography Flame Ionization Detector(FID)
ASTM D2862	Standard Test Method for Particle Size Distribution of Granular Activated Carbon
ASTM D2862	Standard Test Method for Apparent Density of Activated Carbon
ASTM D2862	Standard Test Method for Ball-Pan Hardness of Activated Carbon
MIL-DTL-32101A	Moisture Content of ASZM-TEDA Carbon

**Carbon Testing Methods for 20x40 Mesh Carbon (ASZM-TEDA) per Detailed Specification-Activated Impregnated Carbon Grade ASZM-TEDA 20x40**

Method Number	Method Title
PET 136	Gas-Life Testing of Charcoal for Penetration by Cyanogen Chloride(CK), Hydrogen Cyanide(AC), and Phosgene(CG)
PET 176	Gas Life Testing of Carbon for Penetration by Dimethyl Methylphosphonate

**Impregnated Carbon Testing Methods and Procedures for End Items such as M12A1,M18A2,M13A2, M61,M53,MW,Mu,C2A1,M48A1 and M98 Gas Particulate Filters**

Method Number	Method Title
PET 136	Gas-Life Testing of Charcoal for Penetration by Cyanogen Chloride(CK), Hydrogen Cyanide(AC), and Phosgene(CG)
PET 176	Gas Life Testing of Carbon for Penetration by Dimethyl Methylphosphonate
ENG-089	CK and CG Testing of Loose Carbon on the Q95 All Purpose Gas Life Testing Apparatus
ENG-082	CK Testing of Charcoal Filters on the Q223 Gas Life Tester
PET 154	Installation, Operation and Maintenance of Twelve CFM Filter Life Tester, Q223
SB 740-94-6, NOR 980-0177-11	Filter Units, Gas Particulate and Ancillary Items
SB 740-94-5	Filter Units, Gas Particulate and Ancillary Items

**Mask Testing Methods**

Method Number	Method Title
STP-0200, 0201	Determination of Open Circuit, Self-Contained Breathing Apparatus(SCBA) Performance During Dynamic Testing Against Chemical Agents of Sarin(GB) Vapor an Distilled Sulfur Mustard(HD) Vapor and Liquid Standard Testing Procedure(STP)
STP-0350	Determination of Full Face-Piece, Tight Fitting, Negative Pressure, Air Purifying Respirator(APR) Performance During Dynamic Testing Against the Chemical Agent Sarin(GB) Vapor CBRN Standard Testing Procedure(STP)

STP-0351	Determination of Full Face-Piece, Tight Fitting, Negative Pressure, Air Purifying Respirator(APR) Performance During Dynamic Testing Against the Chemical Agent Distilled Sulfur Mustard(HD) Vapor and Liquid CBRN Standard Testing Procedure(STP)
STP-0450	Determination of Chemical Agent Permeation and Penetration Resistance Performance Against Sarin(GB) Vapor of the Chemical, Biological, Radiological ,and Nuclear(CBRN) Air-Purifying Escape Respirator(APER) Standard Test Procedure(STP)
STP-0451	Determination of Chemical Agent Permeation and Penetration Resistance Performance Against Sulfur Mustard(HD) Liquid and Vapor of the Chemical, Biological,Radiological ,and Nuclear(CBRN) Air-Purifying Escape Respirator(APER) Standard Test Procedure(STP)
STP-0551	Determination of CBRN, Powered Air-Purifying Respirator(PAPR) Performance During Dynamic Testing Against Chemical Agent Distilled Sulfur Mustard(HD) Vapor and Distilled Sulfur Mustard(HD) Liquid CBRN Standard Testing Procedure(STP)
STP-0550	Determination of CBRN Powered Air-Purifying Respirator(PAPR) Performance During Dynamic Testing Against the Chemical Agent Vapor Sarin(GB) CBRN Standard Testing Procedure(STP)
(BSI) BS 8468-1:2006	Respiratory Protective Devices For Use Against Chemical, Biological, Radiological and Nuclear(CBRN) Agents(GB/HD)

'This includes the following revisions of MIL-DTL-32101A:

MIL-DTL-32101A 28 Dec 2006 with NOR 258-0011-001 dated 27 Jan 11; MIL-DTL-32101A w/Amendment 1 16 Feb 2001 ; MIL-DTL-32101A w/Amendment 2 12 Jan 12.

Preceding alphanumeric nomenclature could change based on NIOSH and CDC approving groups.

On the following products and chemical agent protective materials: Full mask respirator systems,permeacle, Semi-permeable and impermeable, ophthalmic lenses, rubberized hoses, rubber slabs, rubber gloves, Plastic sheeting, impregnated carbon, protectice filters and detector paper.

SAMHOON ENGINEERING CO.,LTD

Quality Control Management

NBC Mask filter, final tests Form

product type : NBC Mask filter

Lot Number: 92F003036

Qty:640

Production date: March 12,2016

Sampling date: March 16,2016

Test Date: March 16,2016

Item Number	Test Name	Standard	Uncertainty	Result	Considerations
1	Hepa filter performance test	More than 99.975%		Pass	
2	Hepa filter performance(DOP) test after Vibration	More than 99.95%		Pass	
3	Pressure drop	less than 600Pa in 85 lit/min airflow		430	
4	Pressure drop after Vibration	less than 600Pa in 85 lit/min airflow		430	
5	Filter Leakage	less than 4000Pa in 20000Pa and 30s duration		Pass	
6	Filter weight	less than 295gr		285	
7	connection pitch test	be closed and opened easily in connection seat		Pass	
8	Filter's carbon dust diffusion	less than 2mgr		0.1	
9	filter's carbon humidity	less than 4%		1.5	
10	Hydrochloric resistance time test	Resistance time more than 25min, Absorption amount more than 7.46gr		37.97	
11	DMMP resistance time test	More than 59min		97.88	
12	DMMP resistance time test after Vibration	More than 59min		99.6	
13	Appearance & Dimension control	Without Problem		Pass	

Control view of point during production:

The above results are approved.%

Signature

Result	Approved	√
	rejection	

Result	Approved	√	Product release
	rejection		not usable

Signature of the Laboratory supervisor

Signature of the quality control manager

SAMHOON ENGINEERING CO.,LTD

Quality Control Management

Mask final tests Form

product type : IM2	Lot Number: 94M017002
Qty:400	Production date: October 31,2015
Sampling date: November 04,2015	Test Date: November 05,2015

Item Number	Test Name	Standard	Result	Considerations
1	Complete Mask Leakage	without leakage	Zero	
2	Exhalation system Leakage	less than 15 ml/min Airfloe in 225Pa	Zero	
3	Water drinking valve Leakage	less than 0.5 ml/min Airfloe in 225Pa	Zero	
4	Exhalation resistance	less than 314pa in 85 lit/min airflow	155pa	
5	Inhalation Resistance	less than 130pa in 85 lit/min airflow	50pa	
6	Airflow in water drinking valve	more than 2 lit/min Airflow in 550Pa	2.3	
7	Speech device Leakage	less than 314Pa in 1600Pa	Zero	
8	Fracture of the Lens	Without Fracture	Pass	
9	mask weight with Polymer lens(size1)	≤530gr	525gr	
10	sound intensity reducing	≤10db	Pass	
11	Mask Packing(primary&secondary)	According to IDS046	Pass	
12	Marking(mask,primary&secondary packing)	According to IDS046	Pass	

Control view of point during production:

The above results are approved.%

Signature

Result	Approved	√
	rejection	

Result	Approved	√	Product release
	rejection		not usable

Signature of the Laboratory supervisor

Signature of the quality control manager