

INTERTEK TEST REPORT

3933 US ROUTE 11

CORTLAND, NEW YORK 13045

Order No. G100960861

Page 1 of 4

Date: December 6, 2012

**PERFORMANCE VERIFICATION
TO
ASTM F739-12
TEST METHOD FOR PERMEATION OF LIQUIDS AND GASES
THROUGH PROTECTIVE CLOTHING MATERIALS UNDER CONDITIONS
OF CONTINUOUS CONTACT**

**(8 HOUR EXPOSURE AT ≥ -70 C AS PER CUSTOMER REQUEST)
(CHALLENGE CHEMICALS: CHLORINE AND AMMONIA GAS)**

REPORT NO.: G100960861CRT-002A

RENDERED TO:

**LAKELAND INDUSTRIES, INC
202 PRIDE LANE
SW DECATUR, AL 35603**

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INTRODUCTION:

This report describes the results of liquefied chemical permeation testing, with 8 hour exposure at greater than or equal to – 70 degrees Celsius, conducted in accordance with ASTM F739-12, Test Method for Permeation of Liquids and Gases Through Protective Clothing Materials Under Conditions of Continuous Contact, on one fabric utilizing two different challenge chemicals. Samples for testing were received on November 5, 2012. Per the Clients request, the samples were not conditioned. Samples were tested at Intertek located in Cortland, NY on December 4th and 5th, 2012. Details of instrument calibrations are maintained in laboratory records.

SPECIMEN DESCRIPTION:

The tests were performed on specimens identified by the client as Interceptor Fabric.

AUTHORIZATION:

Testing of the above fabric was authorized by Quote Number 500417364. This testing was requested and outlined by Ms Amy Dobbins of Lakeland Industries, Inc.

CONCLUSION:

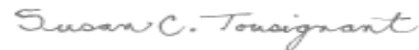
Chemical permeation as outlined above was completed according to ASTM F739-12, Test Method for Permeation of Liquids and Gases Through Protective Clothing Materials Under Conditions of Continuous Contact. Please see documented results in Appendix A (two pages following).

Report Written By:



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**Appendix A
ASTM F739-12
CHEMICAL PERMEATION TESTING**

Specimens Name: Interceptor Fabric		Sample Conditioning Before Testing: Per Client's Request – No Prior Conditioning	
Challenge Chemical : Ammonia Gas (99.9%)		Collection Medium : 10 mL DI with 1 LPM Flow Rate	
Cas Number: 7664-41-7		Detection Method and Sampling Technique: Impinger tube and Conductivity	
Chemical Source: Air Gas		Sampling Frequency: 15 min for first hour, 30 min thereafter	
Test Temperature: - 70 Degrees Celsius (range recorded :- 70 to -75 C)		Minimum Detection Limit : 0.10 PPM	Minimum Detectable Rate: 0.05 ug/cm ² /minute

PRODUCT TESTED (8 HOUR TEST DURATION):	Ammonia Gas (99.9%) Test Data				
Interceptor Fabric	Cell 1	Cell 2	Cell 3	Average	Standard Deviation
Actual Breakthrough Time (Minutes)	> 480	> 480	> 480	> 480	N/A
Normalized Breakthrough Time (Minutes) Note 1	> 480	> 480	> 480	> 480	N/A
Breakthrough Detection Time (Minutes) Note 2	> 480	> 480	> 480	> 480	N/A
Maximum Permeation Rate (ug/cm²/minute)	< 0.05	< 0.05	< 0.05	< 0.05	N/A
Total Cum. Permeation (ug/ cm²) Notes 3	6.5	17.4	11.1	11.7	3.78
Unit Area Weight (g/m²)	323.64	332.77	320.19	325.53	6.50
Sample Thickness (mils) Note 4	24	23.5	24.5	24	0.50

Note 1: Using Breakthrough Criterion of 0.1 ug/cm²/minute

Note 2: Using Breakthrough Criterion of 1.0 ug/cm²/minute

Note 3: Total Cumulative Permeation Reported at End of 8 Hour Test Period

Note 4: Average of Three Readings

Appendix A
ASTM F739-12
CHEMICAL PERMEATION TESTING

Specimens Name: Interceptor Fabric		Sample Conditioning Before Testing: Per Client's Request – No Prior Conditioning	
Challenge Chemical : Chlorine (99.5%)		Collection Medium : 10 mL DI with 1 LPM Flow Rate	
Cas Number: 7782-50-5		Detection Method and Sampling Technique: Impinger tube and Conductivity	
Chemical Source: Air Gas		Sampling Frequency: 15 min for first hour, 30 min thereafter	
Test Temperature: - 70 Degrees Celsius (range recorded :- 70 to -75 C)		Minimum Detection Limit : 0.10 PPM	Minimum Detectable Rate: 0.05 ug/cm2/minute

PRODUCT TESTED (8 HOUR TEST DURATION):	Chlorine (99.5%) Test Data				
	Cell 1	Cell 2	Cell 3	Average	Standard Deviation
Interceptor Fabric					
Actual Breakthrough Time (Minutes)	> 480	> 480	> 480	> 480	N/A
Normalized Breakthrough Time (Minutes) Note 1	> 480	> 480	> 480	> 480	N/A
Breakthrough Detection Time (Minutes) Note 2	> 480	> 480	> 480	> 480	N/A
Maximum Permeation Rate (ug/cm ² /minute)	< 0.05	< 0.05	< 0.05	< 0.05	N/A
Total Cum. Permeation (ug/ cm ²) Notes 3	5.5	6.2	12.4	11.7	5.48
Unit Area Weight (g/m ²)	319.50	324.04	320.24	321.26	2.44
Sample Thickness (mils) Note 4	23	25	24.5	24.17	1.04

Note 1: Using Breakthrough Criterion of 0.1 ug/cm2/minute

Note 2: Using Breakthrough Criterion of 1.0 ug/cm2/minute

Note 3: Total Cumulative Permeation Reported at End of 8 Hour Test Period

Note 4: Average of Three Readings