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

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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Report Approved 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 :** **Minimum Detectable Rate:** **0.10 PPM** **0.05 ug/cm2/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/cm^2/minute)	< 0.05	< 0.05	< 0.05	< 0.05	N/A
Total Cum. Permeation (ug/ cm^2) Notes 3	6.5	17.4	11.1	11.7	3.78
Unit Area Weight (g/m^2)	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 :** **Minimum Detectable Rate:** **0.10 PPM** **0.05 ug/cm2/minute**

PRODUCT TESTED (8 HOUR TEST DURATION):	**Chlorine (99.5%) 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/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