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Final Report

2/8/2016

ASTM D120 Rubber Insulating Gloves
ASTM D412 Vulcanized Rubber and Thermoplastic Elastomers - Tension
Area Swell Measurements

ELTEK Labs Project #: 151118-1-CW

SUBMITTED TO

R&R Lotion

15547 North 77th Street
Scottsdale, AZ 85260
USA

Attn: R. Fletcher Rich



ELTEK International Labs

ELTEK Project #: 151118-1-CW

Lab Technician: Aaron Wilson

Technician Signature: *Aaron Wilson*

Company: R&R Lotion

Contact: R. Fletcher Rich

Address: 15567 North 77th Street
Scottsdale, AZ 85260
USA

REPORT

Industrial Insect Repellant was contacted with rubber lineman's gloves (Type 1, Class 2, ANSI/ASTM D120) to determine if any significant changes occur in the tested properties of the gloves.

PROCEDURE

Tensile Properties

The outer-surface of the glove was rubbed with a liberal amount of insect repellant, wiped off, allowed to stand thusly for 4 hours and then washed with mild soap and warm water. The above procedure was repeated once a day for 3 days. On the fourth day, samples were cut from the cuff areas of the gloves and tested as reported.

Area Swell

Test samples were measured after 24-hour soaks at 75°F in the insect repellant.

AC Electrical Proof Tests

Glove samples exposed to the insect repellant as per tensile property samples but were not cut up. Test was performed at 20 KV @ 3 minutes, maximum proof test current was recorded during the last 20 seconds of the test. Pass/Fail criteria is based on a maximum proof test current of 18 mA as dictated by the Class 2 and 16" glove length. Clearance from cuff to water line was set at 3 inches. Test was repeated after 16 hour soak in distilled water.

RESULTS

Tensile Properties (ASTM D412, Avg. of 5)

	Control	Insect Repellant
<u>Tensile Strength, psi</u>		
Initial	<u>1322.3</u>	
After 3 day insect repellant exposure		<u>1457</u>
% Change from initial		<u>+10%</u>
Initial aged 7 days @ 158°F	<u>1204.2</u>	
After 3 day insect repellant exposure and 7 day aging @ 158°F		<u>1407.9</u>
% Change from initial	<u>-9%</u>	<u>+6%</u>
<u>Ultimate Elongation %</u>		
Initial	<u>743.6</u>	
After 3 day insect repellant exposure		<u>800.0</u>
% Change from initial		<u>+7.6%</u>
Initial aged 7 days @ 158°F	<u>658.3</u>	
After 3 day insect repellant exposure and 7 day aging @ 158°F		<u>752.5</u>
% Change from initial	<u>-11.5%</u>	<u>+1.2%</u>

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	Control	Industrial Insect Repellant
<u>500% Modulus, psi</u>		
Initial	<u>573.76</u>	
After 3 day insect repellent exposure		<u>590.04</u>
% Change from initial		<u>+3%</u>
Initial aged 7 days @ 158°F	<u>672.65</u>	
After 3 day insect repellent exposure and		
Aged 7 days @ 158°F		<u>587.20</u>
% Change from initial	<u>+17%</u>	<u>+2%</u>
<hr/>		
<u>Area Swell, % (ASTM D471, Avg. of 3)</u>		
24 hour soak		<u>0 %</u>
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AC Electrical Proof Test (ASTM D120)

Initial – Glove	#1	#2
Leakage at 20 KV, mA	<u>12.77</u>	<u>12.75</u>
Pass/Fail	<u>Pass</u>	<u>Pass</u>
(ASTM D-149) Breakdown voltage, KV	<u>36.4 (FO)</u>	<u>34.4 (FO)</u>
3 day insect repellent exposure –	#1	#2
Leakage at 20 KV, mA	<u>13.09</u>	<u>12.97</u>
Pass/Fail	<u>Pass</u>	<u>Pass</u>
(ASTM D-149) Breakdown voltage, KV	<u>35.3 (FO)</u>	<u>36.1 (FO)</u>
16 hour distilled water soak test	#1	#2
Leakage at 20 KV, mA	<u>14.05</u>	<u>13.89</u>
Pass/Fail	<u>Pass</u>	<u>Pass</u>
(ASTM D-149) Breakdown voltage, KV	<u>32.7 (FO)</u>	<u>33.4 (FO)</u>
3 day insect repellent exposure – Followed	#1	#2
by 16 hour distilled water soak test		
Leakage at 20 KV, mA	<u>13.89</u>	<u>14.05</u>
Pass/Fail	<u>Pass</u>	<u>Pass</u>
(ASTM D-149) Breakdown voltage, KV	<u>33.4(FO)</u>	<u>33.1 (FO)</u>

Note: (FO) Flashover indicates that the arc occurred over, but not through, the glove.

ELTEK International Labs Project Test Equipment Record Sheet

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Number	ELTEK Equipment Name	Manufacturer's Information			Function	Range	Last Calibration	Next Calibration
		Name	Model	Serial No.				
526	Vernier Caliper	Mitutoyo	CD- 12"	7017194	Measures thickness	0 - 12 inches	5/11/2015	5/11/2016
562	Phenix High Voltage Tester	Phenix Technologies	6TC150-30	99-500	AC Proof and Breakdown Strength Tests	0 - 150kV	10/23/2015	10/23/2016
600	Micrometer	Mitutoyo	293-761-30	1067963	Measure thicknesses	0-1inch	3/12/2015	3/12/2016
61	Oven 838-A-	Fisher Scientific	838F	114	Aging test specimens - samples	30°C - 280°C	5/18/2015	5/18/2016
661	Insight 30kN Test	MTS	SYNST001		Tensile strength, compressive strength, flexural strength		4/15/2015	4/15/2016
748	Temperature & Humidity Wi-Fi Data Logger	Lasca Electronics	EL-WiFi-TH	98:8B:AD:10:18:4E	Measure and log temperature and humidity in lab, and transmit to logging computer for data storage.	- 20C to 60C; 0%RH to 100%RH	6/16/2014	6/16/2016

This report contains the data obtained by the test performed. These are the actual results for the test which ELTEK International Laboratories conducted for:

R&R Lotion

The test results are accurate for the specimens tested. These specific values may not be duplicated in all cases.

Report Submitted By: Aaron Wilson

Reviewed By:

Aaron Wilson
Laboratory Technician

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