

DETERMINATION OF ARC RATING AND IGNITION WITHSTAND OF HAND PROTECTIVE PRODUCTS

Requested by:

G.B. Industries SDN. BHD
No. 75-2, Jalan USJ 21/11
Subang Jaya, Selangor 47630
Malaysia, 60-125689031

Test Standard: ASTM F2675 / F2675M-19

Test Report: K-580552-2104G16-R00

Test Date: April 28, 2021

Specimen Description:

Rubber Insulating Gloves, Style 0BK-160/S1-360,
Size 10, Natural Rubber Latex, Thickness: 1.60mm, Black

Thickness of glove measured by Kinectrics are given in Section 3

Results:

Based on the requirements for the Ignition Withstand Test Levels in ASTM F2675/F2675M-19, the following arc rating is assigned to this hand protective product.

Arc Rating: Arc Thermal Performance Value, ATPV = 64 Cal/cm²

No variations to standard method or product.

Prepared by

Approved by

Robert Ferraz
Technologist, HCL
TD Technologies, Kinectrics

Claude Maurice
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TD Technologies, Kinectrics

For questions about the validity of this test report, please contact testing@arcwear.com

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Revision History

Rev	Description		
00	Initial report creation		
	Issue Date	Prepared by	Approved by
	May 7, 2021	Robert Ferraz	Claude Maurice
Rev	Description		
	Issue Date	Prepared by	Verified by

QUALITY MANAGEMENT

The test is performed by Kinectrics Inc. personnel at 800 Kipling Avenue, Toronto, Ontario, M8Z 5G5, Canada to the above mentioned Standard and accredited by the Standards Council of Canada (SCC) to conform to the requirements of ISO/IEC 17025:2017. Accreditation by the Standards Council of Canada (SCC) is a mark of competence and reliability. A copy of Kinectrics' ISO 17025 certificate of registration is available online at <http://www.kinectrics.com/About-Kinectrics/Pages/Quality-Management.aspx> .

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1 Test Standard:

Arc Testing of Hand Protective Products: ASTM F2675 / F2675M-19

The objective of testing hand protective products is to evaluate the material(s), coating and components designed to fit on the hand intended for electric arc flash protection.

This method requires a minimum of 20 data points to determine the thermal characteristic and calculate the Arc Rating ATPV or EBT. In the case where non FR materials are used, an ignition withstand or probability of ignition may be determined and an arc rating limit is applied.

Re-testing of arc rated products is not covered in ASTM F2675-19 but may be performed at the discretion of the manufacturer or producer to confirm continued quality or validate the performance of a rated glove style with minor product enhancements or changes. Any change in the product design or component such as supplier or type of leather, thickness of material or stitching requires a full re-test to determine the new arc rating. The review of this data to verify compliance to the material specification or application shall be performed by the producer or user.

1.1 Test Description:

The test procedure involves installing the hand protective product onto an instrumented hand form and evaluating the material response to an electrical arc flash exposure. Up to four samples are installed on the instrumented test fixture. The test specimen is maintained in a static vertical position and do not involve movement, except that resulting from the exposure. During the tests, the amount of heat energy transmitted through the material or material assembly is measured and compared to the Stoll criteria (an empirical predicted second-degree burn-injury model). The determination of the Arc Rating (ATPV and/or E_{BT}) is done by logistic regression once the break-open (BO) and Stoll responses are recorded. Arc Rating determined by this test method is the amount of energy that predicts a 50% probability of crossing the Stoll curve or break-open (whichever occurs first). Subjective material evaluation for melting, dripping and ignition is also recorded following the arc exposure.

Hand protective products having different number of layers or types of materials on the palm and dorsal side will be evaluated to determine which side provides the lowest level of thermal protection for the Arc Rating. Products having a coated palm are evaluated for ignition of the coating. Added components for impact resistance such as TPR (Thermoplastic Rubber) or extra material not covering the full hand are not considered for thermal protection in determining the Arc Rating of the hand protective products. In such case, the base product is evaluated to determine the arc rating, then the as-sold product with the additional components are evaluated for melting/dripping and ignition above the established Arc Rating of the base glove.

1.2 Limitations of the Test Method:

This method does not evaluate whether the materials are flame resistant. The producer shall verify the protective product is made of materials that meet the material requirement covered in Section 1.2 of ASTM F2675-19: less than 150mm char length and less than 2 second afterflame and no melt and drip when tested in accordance with Test Method D6413. The probability of ignition or ignition withstand may alternatively be used to assign a base arc rating on the finished product. The test performed does not apply to electrical contact or electrical shock hazard. The test samples are tested as received; no test is performed to validate the material content or composition.

1.3 Requirements for Products Exposed to Electrical Arc:

Based on the reference standards, the following parameters in Table 1-1 constitute a general requirement for material response when exposed to an arc. This table is not intended to cover all requirements, additional requirements may be necessary to fully comply with other requisites for protective clothing against the thermal hazards of an electric arc.

Table 1-1: Criteria for Determining the Arc Rating

Parameter		Criterion
1	ATPV/EBT	An iterative test procedure to determine the Arc Rating requiring a minimum of 20 data points for the logistic regression whose response fulfills the data point distribution requirements.
2	Ignition Withstand	A testing protocol for evaluating the ignition withstand or threshold of a material used for arc flash protection. The level for verification of the ignition withstand is based on the values in Table 1 of ASTM F2675-19.
3	Break-open	Evidence of a hole formation which may allow thermal energy to pass through. If break-open of the material or stitching is observed prior to reaching the Stoll criteria, the break-open threshold (EBT) is determined.
4	Ignition	If ignition is observed on any component, the lowest incident energy (E _i) for ignition is reported. The arc rating limit of a hand protective product having ignition is based on the values in Table 1 of ASTM F2675-19
5	Afterflame time	There are no maximum afterflame time specified in ASTM F2675-19, if afterflame is observed, the flame time is reported.
6	Subjective Data	Melting and dripping is reported when observed on any part of the product. Such material shall not be in contact with the skin or body.



2 Test Condition:

The following test circuit parameters and conditions were used.

- Electric arc current: 8 kA rms \pm 10%, 60 Hz
- Nominal Heat Flux Density: 2100 kW/m² (50 cal/cm²s).
- Arc duration: Varied to obtain required incident energy
- Electrode gap: 305 mm \pm 5 mm
- Distance from sensor panel to electrode: 305 mm \pm 5 mm

Note: The measurement uncertainty, MU, for the measured values of this test method are well within the requirements of the test standard and are defined on a 95% confidence interval basis over the full test range, as follows:

Temperature:	\pm 2 °C	Incident Energy:	\pm 1.5%
Arc Current:	\pm 2.5%	Voltage:	\pm 2.2%
Time zero reference:	\pm 3 ms		

3 Test Specimen:

The test specimens were received by Kinectrics on April 20, 2021 and inspected to be in good condition. The detailed product information provided by the agency and/or producer is given on the front page of this report. Photographs of the base glove is shown in Figure 3-1. Thickness measurements of the test specimen are made within \pm 0.1 mm in the area of the hand where the calorimeter contacts the dorsal and palm side of the hand protective product. A summary of the product measurements is reported in Table 3-1.

Table 3-1: Thickness Measurements of the Hand Protective Product

Number of Dorsal Measurements:	20
Minimum Dorsal Measurement:	1.5 mm
Maximum Dorsal Measurement:	1.6 mm
Average Dorsal Measurement:	1.5 mm
Number of Palm Measurements:	20
Minimum Palm Measurement:	1.4 mm
Maximum Palm Measurement:	1.6 mm
Average Palm Measurement:	1.5 mm



Figure 3-1: Photograph of tested product as received.

4 Observations and Results:

Measurement of after-flame time or ignition and subjective material evaluation was recorded and given in Table 4-1. Evaluation for probability of ignition and ignition withstand is given in Table 4.2. The comparison of transmitted energy vs Stoll curve criterion was calculated and given in Table 5-1.

A related Annex was also provided containing individual test sheets with the measured values for RMS arc current, peak arc current, arc voltage, arc duration and energy dissipated in the arc. The calorimeter response from each sensor for each of each test shot, photographs of the samples and video are also provided.



4.1 Observations:

There was no observation of breakopen of the base glove. Tests are performed on the dorsal side unless indicated otherwise. There was no evidence of melting, afterflame, dripping or ignition in any of the specimens tested.

Table 4-1: Summary of Test for Arc Rating and Observations

Incident energy for observations:	27 to 70 cal/cm²
Number of samples analyzed:	32
Ignition observed:	NO
Average afterflame time (s):	0
Number of break-open:	0
Shrinkage:	NO
Melting and/or dripping:	NO
Charring (innermost layer):	YES
Embrittlement (innermost layer):	NO

Table 4-2: Summary of Test for Ignition

Tested incident energy range (Ei) for ignition withstand:	74 - 80 cal/cm²
Number of samples in range:	7
Number of Ignitions:	0
Probability of Ignition ₅₀ :	Not Determined
Highest tested incident energy (Ei) not having ignition:	80 cal/cm²



5 Data and Analysis Details:

A summary of the data from each arc exposure is given in Table 5-1. A plot of the logistic analysis with statistical information is given in Figure 5-1.

Table 5-1: Summary of Specimen Response for Each Test Shot

	Test#	Panel	Ei Cal/cm ²	SCD Cal/cm ²	≥ Stoll	BO	Range	AF Sec.
1	K-580552-2352	A	27.10	-1.04	No	N		0
2	K-580552-2352	B	27.13	-1.20	No	N		0
3	K-580552-2352	C	27.48	-1.21	No	N		0
4	K-580552-2352	D	30.04	-1.19	No	N		0
5	K-580552-2353	A	35.84	-0.90	No	N		0
6	K-580552-2353	B	34.81	-1.20	No	N		0
7	K-580552-2353	C	35.35	-0.92	No	N		0
8	K-580552-2353	D	38.58	-0.43	No	N		0
9	K-580552-2354	A	50.84	-0.26	No	N		0
10	K-580552-2354	B	47.45	-1.05	No	N		0
11	K-580552-2354	C	46.39	-0.72	No	N		0
12	K-580552-2354	D	48.23	0.18	Yes	N		0
13	K-580552-2355	A	63.07	-0.06	No	N		0
14	K-580552-2355	B	56.95	-0.83	No	N		0
15	K-580552-2355	C	53.18	-0.27	No	N		0
16	K-580552-2355	D	65.02	0.46	Yes	N		0
17	K-580552-2362	A	69.5	0.7	Yes	N		0
18	K-580552-2362	B	74.1	-0.5	No	N	IW	0
19	K-580552-2362	C	77.9	0.3	Yes	N	IW	0
20	K-580552-2362	D	78.6	0.9	Yes	N	IW	0
21	K-580552-2363	A	80.3	1.0	Yes	N	IW	0
22	K-580552-2363	B	75.4	0.2	Yes	N	IW	0
23	K-580552-2363	C	80.2	0.9	Yes	N	IW	0
24	K-580552-2363	D	78.1	1.1	Yes	N	IW	0
25	K-580552-2364	A	61.9	0.3	Yes	N		0
26	K-580552-2364	B	54.0	-0.3	No	N		0
27	K-580552-2364	C	63.3	-0.1	No	N		0
28	K-580552-2364	D	68.7	0.3	Yes	N		0
29	K-580552-2365	A	46.31	-0.21	No	N		0
30	K-580552-2365	B	43.95	-0.90	No	N		0
31	K-580552-2365	C	52.78	-0.72	No	N		0
32	K-580552-2365	D	54.52	-0.28	No	N		0

Note: Break-Open (BO) includes observation of Shrink-Open if observed.

Range: AR – Arc Rating, IW- Ignition Withstand

5.1 Results of logistic regression:

When sufficient data points are available, the logistic regression analysis is applied. The ATPV or EBT is the value of incident energy corresponding to the 50% probability of exceeding the Stoll criteria or breakopen. The calculated ATPV or EBT is only informative and shall not be considered an Arc Rating unless indicated on the front page of this report. Arc Rating values below 10 cal/cm² are reported to the nearest 0.1 cal/cm², above 10 cal/cm² are reported to the nearest 1 cal/cm².

For determination of ATPV

Points above Stoll: 11
 Points above mix zone: 6
 Points in mix zone: 14
 Points below mix zone: 12
 Points within 20% of ATPV: 13

For determination of E_{BT}

Points with BO: 0
 Points above mix zone: 0
 Points in mix zone: 0
 Points below mix zone: 0
 Points within 20% of E_{BT}: 0

Based on the analysis: ATPV = 63.7 cal/cm²

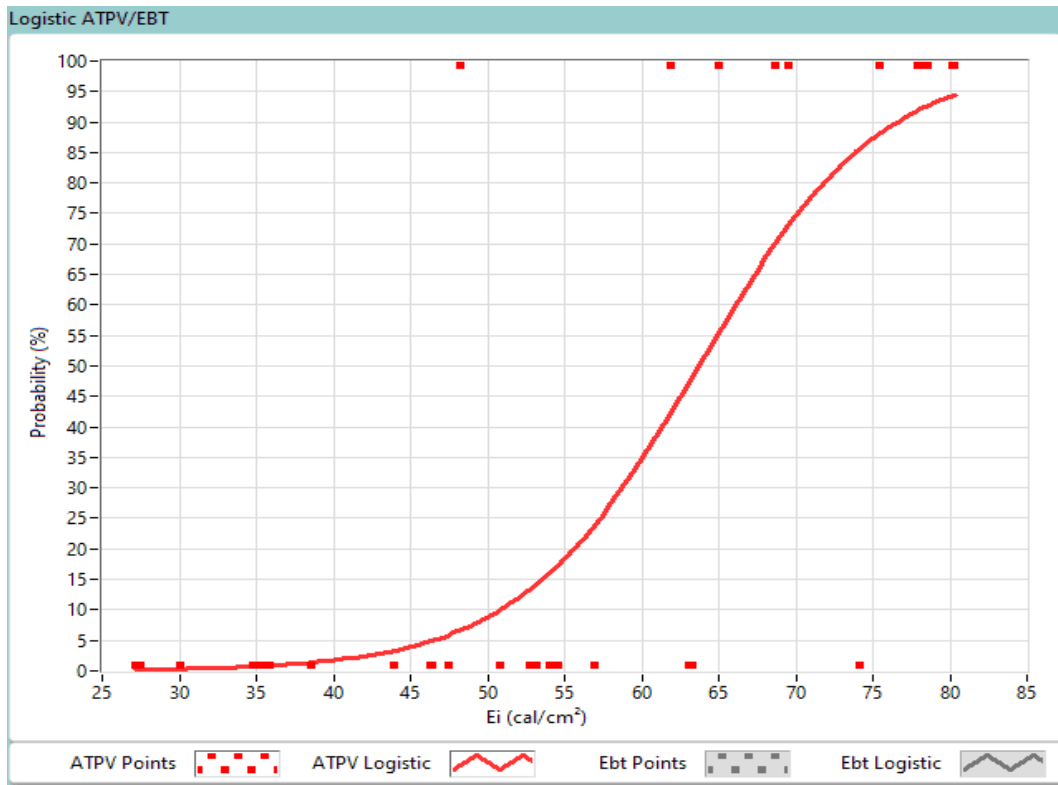


Figure 5-1: Plot of incident energy data points vs. probability with logistic regression for determination of ATPV and/or E_{BT}.

6 Photographs:

Selected photographs of the samples are shown in Figures 6-1.



Figure 6-1: Photograph of a specimen before and after arc exposure.

Note: arc exposure incident energy level near the Arc Rating of the material.



Revision History

Rev	Description		
00	Initial report creation		
	Issue Date	Prepared by	Approved by
	May 7, 2021	Robert Ferraz	Claude Maurice
Rev	Description		
	Issue Date	Prepared by	Verified by

QUALITY MANAGEMENT

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1 Test Standard:

Arc Testing of Hand Protective Products: ASTM F2675 / F2675M-19

The objective of testing hand protective products is to evaluate the material(s), coating and components designed to fit on the hand intended for electric arc flash protection.

This method requires a minimum of 20 data points to determine the thermal characteristic and calculate the Arc Rating ATPV or EBT. In the case where non FR materials are used, an ignition withstand or probability of ignition may be determined and an arc rating limit is applied.

Re-testing of arc rated products is not covered in ASTM F2675-19 but may be performed at the discretion of the manufacturer or producer to confirm continued quality or validate the performance of a rated glove style with minor product enhancements or changes. Any change in the product design or component such as supplier or type of leather, thickness of material or stitching requires a full re-test to determine the new arc rating. The review of this data to verify compliance to the material specification or application shall be performed by the producer or user.

1.1 Test Description:

The test procedure involves installing the hand protective product onto an instrumented hand form and evaluating the material response to an electrical arc flash exposure. Up to four samples are installed on the instrumented test fixture. The test specimen is maintained in a static vertical position and do not involve movement, except that resulting from the exposure. During the tests, the amount of heat energy transmitted through the material or material assembly is measured and compared to the Stoll criteria (an empirical predicted second-degree burn-injury model). The determination of the Arc Rating (ATPV and/or E_{BT}) is done by logistic regression once the break-open (BO) and Stoll responses are recorded. Arc Rating determined by this test method is the amount of energy that predicts a 50% probability of crossing the Stoll curve or break-open (whichever occurs first). Subjective material evaluation for melting, dripping and ignition is also recorded following the arc exposure.

Hand protective products having different number of layers or types of materials on the palm and dorsal side will be evaluated to determine which side provides the lowest level of thermal protection for the Arc Rating. Products having a coated palm are evaluated for ignition of the coating. Added components for impact resistance such as TPR (Thermoplastic Rubber) or extra material not covering the full hand are not considered for thermal protection in determining the Arc Rating of the hand protective products. In such case, the base product is evaluated to determine the arc rating, then the as-sold product with the additional components are evaluated for melting/dripping and ignition above the established Arc Rating of the base glove.

1.2 Limitations of the Test Method:

This method does not evaluate whether the materials are flame resistant. The producer shall verify the protective product is made of materials that meet the material requirement covered in Section 1.2 of ASTM F2675-19: less than 150mm char length and less than 2 second afterflame and no melt and drip when tested in accordance with Test Method D6413. The probability of ignition or ignition withstand may alternatively be used to assign a base arc rating on the finished product. The test performed does not apply to electrical contact or electrical shock hazard. The test samples are tested as received; no test is performed to validate the material content or composition.

1.3 Requirements for Products Exposed to Electrical Arc:

Based on the reference standards, the following parameters in Table 1-1 constitute a general requirement for material response when exposed to an arc. This table is not intended to cover all requirements, additional requirements may be necessary to fully comply with other requisites for protective clothing against the thermal hazards of an electric arc.

Table 1-1: Criteria for Determining the Arc Rating

Parameter		Criterion
1	ATPV/EBT	An iterative test procedure to determine the Arc Rating requiring a minimum of 20 data points for the logistic regression whose response fulfills the data point distribution requirements.
2	Ignition Withstand	A testing protocol for evaluating the ignition withstand or threshold of a material used for arc flash protection. The level for verification of the ignition withstand is based on the values in Table 1 of ASTM F2675-19.
3	Break-open	Evidence of a hole formation which may allow thermal energy to pass through. If break-open of the material or stitching is observed prior to reaching the Stoll criteria, the break-open threshold (EBT) is determined.
4	Ignition	If ignition is observed on any component, the lowest incident energy (Ei) for ignition is reported. The arc rating limit of a hand protective product having ignition is based on the values in Table 1 of ASTM F2675-19
5	Afterflame time	There are no maximum afterflame time specified in ASTM F2675-19, if afterflame is observed, the flame time is reported.
6	Subjective Data	Melting and dripping is reported when observed on any part of the product. Such material shall not be in contact with the skin or body.



2 Test Condition:

The following test circuit parameters and conditions were used.

- Electric arc current: 8 kA rms \pm 10%, 60 Hz
- Nominal Heat Flux Density: 2100 kW/m² (50 cal/cm²s).
- Arc duration: Varied to obtain required incident energy
- Electrode gap: 305 mm \pm 5 mm
- Distance from sensor panel to electrode: 305 mm \pm 5 mm

Note: The measurement uncertainty, MU, for the measured values of this test method are well within the requirements of the test standard and are defined on a 95% confidence interval basis over the full test range, as follows:

Temperature:	\pm 2 °C	Incident Energy:	\pm 1.5%
Arc Current:	\pm 2.5%	Voltage:	\pm 2.2%
Time zero reference:	\pm 3 ms		

3 Test Specimen:

The test specimens were received by Kinectrics on April 20, 2021 and inspected to be in good condition. The detailed product information provided by the agency and/or producer is given on the front page of this report. Photographs of the base glove is shown in Figure 3-1. Thickness measurements of the test specimen are made within \pm 0.1 mm in the area of the hand where the calorimeter contacts the dorsal and palm side of the hand protective product. A summary of the product measurements is reported in Table 3-1.

Table 3-1: Thickness Measurements of the Hand Protective Product

Number of Dorsal Measurements:	20
Minimum Dorsal Measurement:	1.5 mm
Maximum Dorsal Measurement:	1.6 mm
Average Dorsal Measurement:	1.5 mm
Number of Palm Measurements:	20
Minimum Palm Measurement:	1.4 mm
Maximum Palm Measurement:	1.6 mm
Average Palm Measurement:	1.5 mm



Figure 3-1: Photograph of tested product as received.

4 Observations and Results:

Measurement of after-flame time or ignition and subjective material evaluation was recorded and given in Table 4-1. Evaluation for probability of ignition and ignition withstand is given in Table 4.2. The comparison of transmitted energy vs Stoll curve criterion was calculated and given in Table 5-1.

A related Annex was also provided containing individual test sheets with the measured values for RMS arc current, peak arc current, arc voltage, arc duration and energy dissipated in the arc. The calorimeter response from each sensor for each of each test shot, photographs of the samples and video are also provided.



4.1 Observations:

There was no observation of breakopen of the base glove. Tests are performed on the dorsal side unless indicated otherwise. There was no evidence of melting, afterflame, dripping or ignition in any of the specimens tested.

Table 4-1: Summary of Test for Arc Rating and Observations

Incident energy for observations:	27 to 70 cal/cm²
Number of samples analyzed:	32
Ignition observed:	NO
Average afterflame time (s):	0
Number of break-open:	0
Shrinkage:	NO
Melting and/or dripping:	NO
Charring (innermost layer):	YES
Embrittlement (innermost layer):	NO

Table 4-2: Summary of Test for Ignition

Tested incident energy range (E _i) for ignition withstand:	74 - 80 cal/cm²
Number of samples in range:	7
Number of Ignitions:	0
Probability of Ignition ₅₀ :	Not Determined
Highest tested incident energy (E _i) not having ignition:	80 cal/cm²



5 Data and Analysis Details:

A summary of the data from each arc exposure is given in Table 5-1. A plot of the logistic analysis with statistical information is given in Figure 5-1.

Table 5-1: Summary of Specimen Response for Each Test Shot

	Test#	Panel	Ei Cal/cm ²	SCD Cal/cm ²	≥ Stoll	BO	Range	AF Sec.
1	K-580552-2352	A	27.10	-1.04	No	N		0
2	K-580552-2352	B	27.13	-1.20	No	N		0
3	K-580552-2352	C	27.48	-1.21	No	N		0
4	K-580552-2352	D	30.04	-1.19	No	N		0
5	K-580552-2353	A	35.84	-0.90	No	N		0
6	K-580552-2353	B	34.81	-1.20	No	N		0
7	K-580552-2353	C	35.35	-0.92	No	N		0
8	K-580552-2353	D	38.58	-0.43	No	N		0
9	K-580552-2354	A	50.84	-0.26	No	N		0
10	K-580552-2354	B	47.45	-1.05	No	N		0
11	K-580552-2354	C	46.39	-0.72	No	N		0
12	K-580552-2354	D	48.23	0.18	Yes	N		0
13	K-580552-2355	A	63.07	-0.06	No	N		0
14	K-580552-2355	B	56.95	-0.83	No	N		0
15	K-580552-2355	C	53.18	-0.27	No	N		0
16	K-580552-2355	D	65.02	0.46	Yes	N		0
17	K-580552-2362	A	69.5	0.7	Yes	N		0
18	K-580552-2362	B	74.1	-0.5	No	N	IW	0
19	K-580552-2362	C	77.9	0.3	Yes	N	IW	0
20	K-580552-2362	D	78.6	0.9	Yes	N	IW	0
21	K-580552-2363	A	80.3	1.0	Yes	N	IW	0
22	K-580552-2363	B	75.4	0.2	Yes	N	IW	0
23	K-580552-2363	C	80.2	0.9	Yes	N	IW	0
24	K-580552-2363	D	78.1	1.1	Yes	N	IW	0
25	K-580552-2364	A	61.9	0.3	Yes	N		0
26	K-580552-2364	B	54.0	-0.3	No	N		0
27	K-580552-2364	C	63.3	-0.1	No	N		0
28	K-580552-2364	D	68.7	0.3	Yes	N		0
29	K-580552-2365	A	46.31	-0.21	No	N		0
30	K-580552-2365	B	43.95	-0.90	No	N		0
31	K-580552-2365	C	52.78	-0.72	No	N		0
32	K-580552-2365	D	54.52	-0.28	No	N		0

Note: Break-Open (BO) includes observation of Shrink-Open if observed.

Range: AR – Arc Rating, IW- Ignition Withstand

5.1 Results of logistic regression:

When sufficient data points are available, the logistic regression analysis is applied. The ATPV or EBT is the value of incident energy corresponding to the 50% probability of exceeding the Stoll criteria or breakopen. The calculated ATPV or EBT is only informative and shall not be considered an Arc Rating unless indicated on the front page of this report. Arc Rating values below 10 cal/cm² are reported to the nearest 0.1 cal/cm², above 10 cal/cm² are reported to the nearest 1 cal/cm².

For determination of ATPV

Points above Stoll: 11
 Points above mix zone: 6
 Points in mix zone: 14
 Points below mix zone: 12
 Points within 20% of ATPV: 13

For determination of E_{BT}

Points with BO: 0
 Points above mix zone: 0
 Points in mix zone: 0
 Points below mix zone: 0
 Points within 20% of E_{BT}: 0

Based on the analysis: ATPV = 63.7 cal/cm²

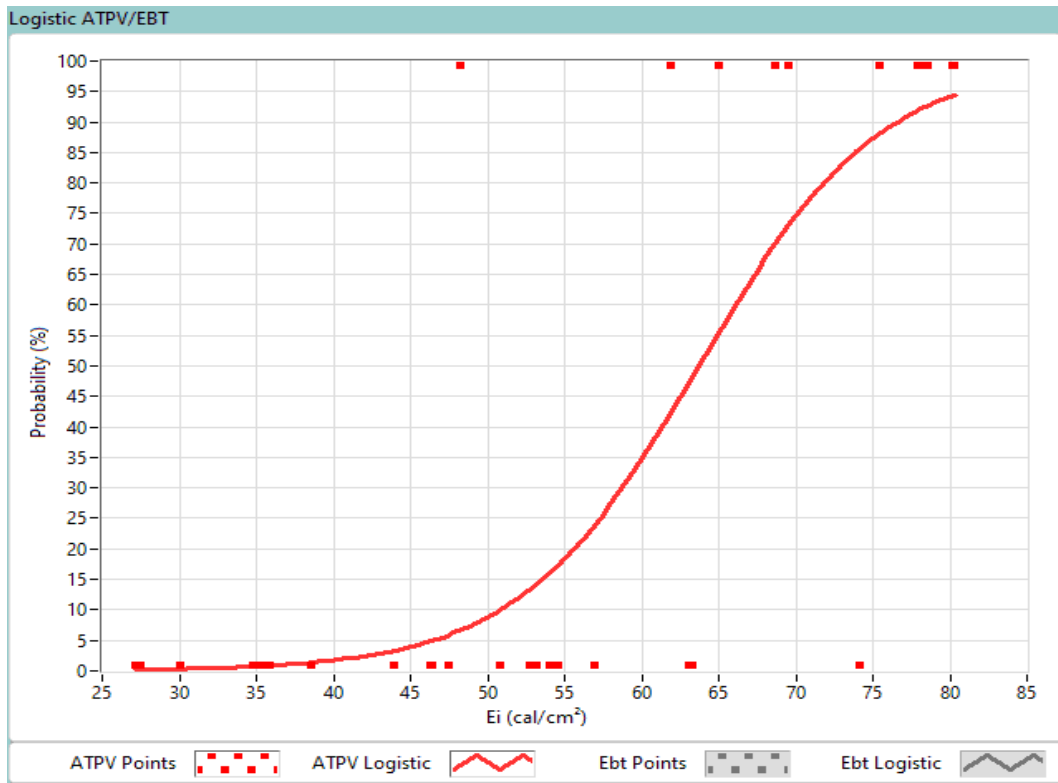


Figure 5-1: Plot of incident energy data points vs. probability with logistic regression for determination of ATPV and/or E_{BT}.

6 Photographs:

Selected photographs of the samples are shown in Figures 6-1.



Figure 6-1: Photograph of a specimen before and after arc exposure.

Note: arc exposure incident energy level near the Arc Rating of the material.

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G.B. INDUSTRIES SDN. BHD.
198701008047 (166764-T)



CERTIFIED TO ISO 9001:2015
CERT. NO.: QMS00484



CERTIFIED TO ISO 14001:2015
CERT. NO.: EMS00651

FACTORY: LOT 3850 – 3855,
CHEMBONG PHASE II INDUSTRIAL ESTATE,
CHEMBONG 71300 REMBAU,
NEGERI SEMBILAN DARUL KHUSUS, MALAYSIA.
TEL: 606-685 1000 FAX: 606 – 685 1488

EU DECLARATION OF CONFORMITY

(PPE Regulation (EU) 2016/425, Article 15 and Annex IX)

PPE - NOVAX INSULATING RUBBER GLOVES

Manufacturer's Name: **GB INDUSTRIES SDN. BHD.** 198701008047 (166764-T)
Manufacturer Address: Lot 3850 – 3855, Chembong Phase II Industrial Estate,
Chembong, 71300 Rembau,
Negeri Sembilan Darul Khusus, Malaysia
Tel: 606 685 1000 Fax: 606 685 1488
Email: gdept@gb-intl.com, Sales@novax-intl.com
Website: <http://www.novax-intl.com>

European Authorized Representative's Name: Obelis S.A
European Authorized Representative's Address:
Boulevard Général Wahis 53, B-1030 Brussels,
BELGIUM.
Tel: 32 (0) 2 732 5954 Fax: 32 (0) 2 732 60 03

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Declares that the new PPE describe hereafter:

NOVAX Insulating Rubber Gloves

is complied with: Regulation (EU) 2016/425 of the European Parliament and the
Council

Technical specifications to which conformity is declared:

EN 60903:2003

IEC 60903:2014

Harmonised standard to which conformity is declared:

EN 420:2003+A1:2009

The notified body INSPEC International B.V., Notified Body 2849, performed the EU type-examination
(Module B) and issued the EU type-examination certificate;

Certificate Number: PPE21162147

EU TYPE-EXAMINATION CERTIFICATE

This is to certify that INSPEC International B.V., Notified Body 2849, has evaluated the Personal Protective Equipment type(s) in respect of the product detailed on this certificate and deemed it(them) to be in compliance with Annex V (Module B) of the Personal Protective Equipment Regulation (EU) 2016/425 and the applicable Essential Health & Safety Requirements.

Manufacturer: **G.B. Industries Sdn Bhd**
Lot 3850 - 3855, Phase II Industrial Estate,
Chembong, 71300 Rembau,
Negeri Sembilan Darul Khusus,
Malaysia

Authorised Representative: Obelis s.a.
Bld General Wahis 53,1030 Brussels,
Belgium

Compliance with the applicable Essential Health & Safety Requirements has been demonstrated as above, including examination in accordance with the harmonised standard(s)/technical specification below:

EN 420:2003 + A1:2009

Technical specifications

EN 60903:2003

IEC 60903:2014

Product description: Electrical protective gloves

Models: see below

Date of initial certification: 25 July 2022
Date of current issue: 13 October 2023
Period of validity: 25 July 2022 - 25 July 2027


Certificate Signatory

Product details

Model identification: Electrical protective gloves – STROM and NOVAX brands. See table below for model and performance details.

Technical file reference: TF21162147

Test reports: 1.10.09.121, 1.10.09.123, 1.11.11.37, 1.12.06.40, 1.14.07.21a, 1.14.08.58, 1.16.03.48
SPC01023-0619-1-pjd-nw, SPC01023-0619-2-pjd-nw, SPC01023-0619-3-pjd-nw, SPC82270-0635-pjd-nw, SPC82834-0638-pjd-nw, SPC0175135-0922, SPC0175186-0922, SPC0175187-0922, SPC0177830-0935, SPC0184680-1018, SPC0184681-1018, SPC0184683-1018, SPC0184685-1018, SPC0184686_1018, SPC0187283-1032, SPC0192108_1108, SPC0200553_1202, SPC0204248-1220, SPC0206342-1231, SPC0240791-1549A, SPC0240791-1549B, SPC0243931_1612, SPC0273772-1831-1, SPC0273772-1831-2, SPC0273772-1831-3, SPC0273772-1831-4, SPC0273772-1831-5, SPC0273772-1831-6, SPC0273772-1831-7, SPC0273772-1831-8, SPC0273772-1831-9, SPC0273772-1831-10
20160401011224, SPC0307077 /2102 /1 Issue 5, SPC0307077-2102-2 Issue 5 Class 2 composite, SPC0333746 -2227 Class 0 AZC Blk, SPC0333746 Class 0 AZC Blk

Category: III (three)

NOVAX Brand gloves

Product Code	Class	Length	Size	Colour	Cuff	Dexterity
XOG-050/S1-280	00	280	7-12	Orange	Rolled	5
XOG-050/S1-360	00	360	7-12	Orange	Rolled	5
XOG-110/S1-280	00 AZC	280	8-12	Orange	Rolled	5
XOG-110/S1-360	00 AZC	360	8-12	Orange	Rolled	5
0OG-100/S1-280	0	280	7-12	Orange	Rolled	5
0OG-100/S1-360	0	360	7-12	Orange	Rolled	5
0OG-100/S2-410	0	410	8-12	Orange	Rolled	5
0OG-100/S2-460	0	460	8-12	Orange	Rolled	5
0OG-160/S1-280	0 AZC	280	8-12	Orange	Rolled	3
0OG-160/S1-360	0 AZC	360	8-12	Orange	Rolled	3
0OG-160/S2-410	0 AZC	410	8-12	Orange	Rolled	3
0OG-160/S2-460	0 AZC	460	8-12	Orange	Rolled	3
0BK-160/S1-360	0 AZC	360	8-12	Black	Rolled	3
0OB-100/S1-280	0	280	7-12	Orange/Black	Rolled	5
0OB-100/S1-360	0	360	7-12	Orange/Black	Rolled	5
0OB-100/S2-410	0	410	8-12	Orange/Black	Rolled	5
0OB-100/S2-460	0	460	8-12	Orange/Black	Rolled	5
0OG-230-CP/S1-280	0	280	8-12	Orange	Rolled	3
0OG-230-CP/S1-360	0	360	8-12	Orange	Rolled	3
0OG-230-CP/S2-410	0	410	8-12	Orange	Rolled	3
0OG-230-CP/S2-460	0	460	8-12	Orange	Rolled	3
0OB-230-CP/S1-280	0	280	8-12	Orange/Black	Rolled	3
0OB-230-CP/S1-360	0	360	8-12	Orange/Black	Rolled	3
0OB-230-CP/S2-410	0	410	8-12	Orange/Black	Rolled	3
0OB-230-CP/S2-460	0	460	8-12	Orange/Black	Rolled	3
0OG-160-RC/S1-280	0RC	280	8-12	Orange/Black	Rolled	3
0OG-160-RC/S1-360	0RC	360	8-12	Orange/Black	Rolled	3
1OG-150/S1-360	1	360	7-12	Orange	Rolled	3
1OG-150/S2-410	1	410	8-12	Orange	Rolled	3
1OG-150/S2-460	1	460	8-12	Orange	Rolled	3
1OG-210/S1-360	1 RC	360	8-12	Orange	Rolled	1
1OG-210/S2-410	1 RC	410	8-12	Orange	Rolled	1
1OG-210/S2-460	1 RC	460	8-12	Orange	Rolled	1
1OB-150/S1-360	1	360	7-12	Orange/Black	Rolled	3
1OB-150/S2-410	1	410	8-12	Orange/Black	Rolled	3
1OB-150/S2-460	1	460	8-12	Orange/Black	Rolled	3
1BK-150/S1-360	1	360	8-11	Black	Rolled	3
1BK-150/S2-410	1	410	8-11	Black	Rolled	3
1BK-150/S2-460	1	460	8-11	Black	Rolled	3
1BO-150/S1-360	1	360	7-12	Black/Orange	Rolled	3
1BO-150/S2-410	1	410	8-12	Black/Orange	Rolled	3
1BO-150/S2-460	1	460	8-12	Black/Orange	Rolled	3
2OG-230/S1-360	2	360	8-11	Orange	Rolled	2
2OG-230/S2-410	2	410	8-11	Orange	Rolled	2
2OG-230/S2-460	2	460	8-11	Orange	Rolled	2
2OB-230/S1-360	2	360	8-11	Orange/Black	Rolled	2
2OB-230/S2-410	2	410	8-11	Orange/Black	Rolled	2
2OB-230/S2-460	2	460	8-11	Orange/Black	Rolled	2
2OB-230/B3-360	2	360	8-11	Orange/Black	Bell	2
2OB-230/B3-410	2	410	8-11	Orange/Black	Bell	2
2OB-230/B3-460	2	460	8-11	Orange/Black	Bell	2
2OG-230-CP/S1-360	2	360	8-12	Orange	Rolled	0

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This certificate has been issued in accordance with our standard terms and conditions and is subject to INSPEC Regulations and Conditions of Use. This certificate remains the property of INSPEC and may be withdrawn if any of the conditions attached to its issue are not complied with by the certified company.

Product Code	Class	Length	Size	Colour	Cuff	Dexterity
2OG-230-CP/S2-410	2	410	8-12	Orange	Rolled	0
2OG-230-CP/S2-460	2	460	8-12	Orange	Rolled	0
2OB-230-CP/S1-360	2	360	8-12	Orange/Black	Rolled	0
2OB-230-CP/S2-410	2	410	8-12	Orange/Black	Rolled	0
2OB-230-CP/S2-460	2	460	8-12	Orange/Black	Rolled	0
2OG-290/S1-360	2 RC	360	9-12	Orange	Rolled	0
2OG-290/S2-410	2 RC	410	9-12	Orange	Rolled	0
2OG-290/S2-460	2 RC	460	9-12	Orange	Rolled	0
3OG-290/S1-360	3 RC	360	8-12	Orange	Rolled	0
3OG-290/S2-410	3 RC	410	8-12	Orange	Rolled	0
3OG-290/S2-460	3 RC	460	8-12	Orange	Rolled	0
3OB-290/S1-360	3 RC	360	8-12	Orange/Black	Rolled	0
3OB-290/S2-410	3 RC	410	8-12	Orange/Black	Rolled	0
3OB-290/S2-460	3 RC	460	8-12	Orange/Black	Rolled	0
3OB-290/B3-410	3 RC	410	8-12	Orange/Black	Bell	0
3OB-290/B3-460	3 RC	460	8-12	Orange/Black	Bell	0
4OG-356/S2-410	4 RC	410	9-12	Orange	Rolled	0
4OG-356/S2-460	4 RC	460	9-12	Orange	Rolled	0
4OB-356/S2-410	4 RC	410	9-12	Orange/Black	Rolled	0
4OB-356/S2-460	4 RC	460	9-12	Orange/Black	Rolled	0

STROM Brand gloves

Product Code	Class	Length	Size	Colour	Cuff	Dexterity
XLO-050/S1-280	00	280	7-12	Light Orange	Rolled	5
XLO-050/S1-360	00	360	7-12	Light Orange	Rolled	5
XLO-110/S1-280	00 AZC	280	8-12	Light Orange	Rolled	5
XLO-110/S1-360	00 AZC	360	8-12	Light Orange	Rolled	5
OLO-100/S1-280	0	280	7-12	Light Orange	Rolled	5
OLO-100/S1-360	0	360	7-12	Light Orange	Rolled	5
OLO-100/S2-410	0	410	8-12	Light Orange	Rolled	5
OLO-100/S2-460	0	460	8-12	Light Orange	Rolled	5
OLO-160/S1-280	0 AZC	280	8-12	Light Orange	Rolled	3
OLO-160/S1-360	0 AZC	360	8-12	Light Orange	Rolled	3
OLO-160/S2-410	0 AZC	410	8-12	Light Orange	Rolled	3
OLO-160/S2-460	0 AZC	460	8-12	Light Orange	Rolled	3
1LO-150/S1-360	1	360	7-12	Light Orange	Rolled	3
1LO-150/S2-410	1	410	8-12	Light Orange	Rolled	3
1LO-150/S2-460	1	460	8-12	Light Orange	Rolled	3
1LO-210/S1-360	1 RC	360	8-12	Light Orange	Rolled	1
1LO-210/S2-410	1 RC	410	8-12	Light Orange	Rolled	1
1LO-210/S2-460	1 RC	460	8-12	Light Orange	Rolled	1
2LO-230/S1-360	2	360	8-11	Light Orange	Rolled	2
2LO-230/S2-410	2	410	8-11	Light Orange	Rolled	2
2LO-230/S2-460	2	460	8-11	Light Orange	Rolled	2
2LO-290/S1-360	2 RC	360	9-12	Light Orange	Rolled	0
2LO-290/S2-410	2 RC	410	9-12	Light Orange	Rolled	0
2LO-290/S2-460	2 RC	460	9-12	Light Orange	Rolled	0
3LO-290/S1-360	3 RC	360	8-12	Light Orange	Rolled	0
3LO-290/S2-410	3 RC	410	8-12	Light Orange	Rolled	0
3LO-290/S2-460	3 RC	460	8-12	Light Orange	Rolled	0
4LO-356/S2-410	4 RC	410	9-12	Light Orange	Rolled	0
4LO-356/S2-460	4 RC	460	9-12	Light Orange	Rolled	0

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Certificate amendment record

Date	Description
25/07/2022	Initial Issue
13/10/2023	Addition of glove product codes 0BK-160/S1-360, 0OG-230-CP/S1-280, 0OG-230-CP/S1-360, 0OG-230-CP/S2-410, 0OG-230-CP/S2-460, 0OB-230-CP/S1-280, 0OB-230-CP/S1-360, 0OB-230-CP/S2-410, 0OB-230-CP/S2-460, 2OG-230-CP/S1-360, 2OG-230-CP/S2-410, 2OG-230-CP/S2-460, 2OB-230-CP/S1-360, 2OB-230-CP/S2-410, 2OB-230-CP/S2-460, 0OG-160-RC/S1-280 and 0OG-160-RC/S1-360 plus associated test reports.

Conditions attached to the issue of this certificate:

1. This certificate alone, if Category II (two) PPE, forms INSPEC's permission to the manufacturer to use the 'CE' conformity mark for compliant products to be placed on the European Union internal market. In this case, the manufacturer may affix the conformity mark to each PPE or on a document supplied with the PPE, and draw up a written EU declaration of conformity for each PPE model referencing this certificate as per Article 17.
2. The manufacturer / authorised representative shall undertake to fulfil the obligations arising out of the Personal Protective Equipment Regulation (EU) 2016/425, and with INSPEC's Regulations governing this Module.
3. The manufacturer / authorised representative shall inform INSPEC without delay of any planned changes to the product, technical file or manufacturer information which may affect the validity of this certificate, before any such change is made.
4. Marking and instructions have been assessed in the English language only. It is the manufacturer's / authorised representative's responsibility to obtain and supply language versions acceptable to the country where the product is to be sold.
5. For category III product, the manufacturer must obtain and maintain an approval decision to Module C2 or Module D prior to placing product on the European Union internal market.
6. This certificate remains the property of INSPEC and may be withdrawn if any of the conditions attached to its issue are not complied with.
7. This certificate may be copied or reproduced by the certificate holder, complete and without omissions or additions, and in accordance with INSPEC's terms of business.
8. The manufacturer shall not use its product certification in any manner as to bring INSPEC into disrepute, nor make any statements regarding the product certification that INSPEC considers misleading or unauthorised.
9. Upon suspension, withdrawal or termination of this certificate, the manufacturer must discontinue all advertising matter that references the product certification and take action to cease production of products.

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TEL: 606-685 1000 FAX: 606 – 685 1488


The PPE is subject to the conformity assessment set out in Module D of PPE Regulation (EU) 2016/425 under the surveillance of the:

Notified Body: INSPEC International B.V.

Notified Body 2849

Beechavenue 54-62, 1119 PW, Schiphol-Rijk, Netherlands

Signed for and on behalf of GB Industries Sdn. Bhd.

Signature : 
Name : N. Kala Devi
Designation : GM Operations
Date : 28th July 2022