

Technical datasheet

for Personal Protective Equipment: Electricians face shield arc class 2 (7 kA)

<u>Articleno.:</u> GFKES004 / GFKES004-3 / GFKES004-5				<u>Description:</u> Face shield made of polycarbonate, green, 550x200x2,0mm with chin guard used with safety helmet for the protection against electric arcs class 2 (7 kA).	
<u>EN Norms:</u>				<u>CE-Certificate:</u>	
EN 166	EN 168	EN 169	EN 170	C2867.1UHL	
GS-ET-29					
Technical features					
Weight: 460g					
- the face shield is made of polycarbonate - the face shield has no open metal parts and can be used for live works up to 1.000V - the visor is 2,0mm thick and fixed to the U-Profile with a plastic screw joint - the face shield has a flange and seals the shield at the top - the face shield is securely attached to the helmet by a wide, adjustable elastic band				- the face shield has a chin guard with Nomex bib for additional protection - electric arc class 2 (7 kA/ 423kJ/m³) in accordance with GS-ET-29 - VLT class 2 (according to ISO 10527) visible light transmittance (D65) < 50% - mechanical stability in accordance with EN 166 = B (medium impact 120 m/s) - the ATPV is 46 Cal/cm²	
<u>Used materials:</u>					
Visor:		Polycarbonate, green, 2,0mm			
U-profile:		Polycarbonate 2mm			
Elastic band:		Silicone, Para grey ca. 40° Shore, 16mm wide			
Attaching parts:		Polypropylene PP GV 30			
Chin guard:		Polycarbonate			
Bib:		Nomex			
<u>Fields of use:</u>					
live works with high voltage up to 1.000 V				areas is which an electric arc class 2 (7 kA) could occur	
<u>Marking:</u>		1000V 2C-2 UHL 1 B 8-2-2 / 166 8-2 B CE 1883 on the front of the visor, upper right side			

Notified body:

ECS GmbH
Obere Bahnstr. 74
73431 Aalen
Notified Body: 1883

Notified body (audit):

DIN CERTCO Gesellschaft
für Konformitätsbewertung
mbH
Alboinstr. 56
12103 Berlin
Notified Body: 0196

General remarks

The electrician's visor can only be used with a designated electrician's hard hat. The following hard hat models are recommended:
GFKES004: BOP Energy 3000
GFKES004-3: VOSS INAP PCG
GFKES004-5: 3M G3501
All hard hats are tested in accordance with DIN EN 50365.

When approaching the danger zone the face shield has to be flipped down.

The user has to make sure that the electrician's face shield has a sufficient protection class. The maximal expectable arc flash energy has to be determined. This

can be done with the DGUV document BGI 5188.

The operating life of the electrician's face shield depends on the handling at work. The face shield has to be replaced when it shows strong scratches or fractures. Also the elastic band of the plastic carrier has to be checked for fractures or porosity. These parts have to be replaced when necessary. PPE made of plastics has to be replaced after 2 years in principle

Warning!

The safety officer should be contacted to ensure an adequate protection at work.

Eye-protection devices against particles with high velocity could transmit the impact energy, if the device is worn together with standard glasses.

If the eye protection device is composed of a number of individual devices – the maximum level of protection depends on the individual device with the lowest protection level.

Notice relating to the mutual compatibility of the marking (s. DIN EN 166 note d, e and f in table 12).

If protection against mechanical impacts with high velocity in extreme temperatures is needed, the used eye protection device has to be marked with the letter T after the letter for the impact protection, i.e. BT. Otherwise the eye protection device can only be used against impacts with high velocity in room temperature.

Plastic can cause an allergic reaction of the skin of sensitive persons.

Article list**Electrician's face shield 7kA:**

GFKES004 (standard)
GFKES004-2 (anti-fog)
GFKES004-3 (broad form)
GFKES004-5 (round form)

User manual

Electrician's visor for hard hats for
live-working up to 1000 V

**RUDOLF UHLEN GmbH**

Herstellung von Arbeitsschutzartikeln

Am Höfgen 13 – 42781 Haan
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General manager: Volker Fiedler
Steffen Fiedler

Trade registerno.: HRB 17088 Registercourt Wuppertal



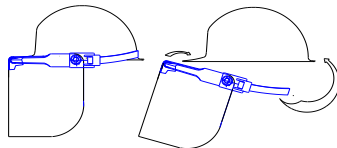
Documentno.:
28.05.2022 / R4

Electrician's visor made of PC, 550x200x2,0mm, with chin guard

- The visor is used in combination with a hard hat.
- According to DIN EN 166 no open metal parts are used.
- The visor is made of Polycarbonate, 2,0mm thick and it has optical class 1.
- The visor complies the special mechanical and thermal demands for work places where arc flashes of class 2 (7kA) can occur.
- The face shield has a flange and seals the visor at the top. It cannot fold below the helmet brim (see picture above).
- The U-profile is used for attaching the face-shield to the hard hat and it is made of Polycarbonate 2mm thick.
- The electrician's visor is securely attached to the hard hat by a wide, adjustable elastic band (3mm thick).
- The face shield is attached to the U-profile with an enforced M6 screwed joint made of PP.

- The face shield has a chin guard made of polycarbonate. An additional bib made of Nomex fabric gives protection to chin and throat.

Manual



- The U-profile of the electrician's visor is slid on the brim of the hard hat (s. picture).
- That followed the elastic band is pulled over the back of the hard hat. The visor has now a firm fit on the hard hat.
- The face shield can be lifted and locked in any position by a thread connector.
- The screws cannot loosen unintentionally.

Storage

Personal protective equipment should be stored in dry rooms. Especially components made of plastics should not be exposed to intense solar radiation.

When not using the face shield, it should be stored in an UV-resistant container/bag.

The face shields should not be stored in areas with high temperatures or humid conditions.

When the face shields are moved in a vehicle, they should be fixed, so no deformations or chafes can occur.

Cleaning / Disinfection

The universal-visor carriers and the face-shields can be cleaned with water and standard detergents as well as with mild disinfectants. However, the face shields should be dried with compressed air (at best with a lintless cloth) to avoid scratches.

Safety checks

Before using the face shield the user should do a safety check. Damaged or scratched face shields or other damaged parts have to be replaced.

Damages are: cracks, fractures, holes, deep notches but also burned areas, milky or darkened surfaces.

Maintenance/repairs

Maintenance has to be conducted on a regular basis.

To be checked in particular:

- Firm fit of the electrician's visor on the hard hat. The elastic band should be checked.
- Folding mechanism of the visor. If necessary the screwed joint has to be tightened.
- Attachment of the face shield to the visor.

- The face shield has to be checked for its transparency and other damages.

Repairs can only be done with the original parts of the manufacturer.

Decay time/aging

All used materials are exposed to environmental impacts like UV-radiation, acid rain and various other impacts. Therefore especially the personal protective equipment made of thermoplastic plastics has to be replaced after 2 years the latest.

Technical features

- Electricians' visor
- **Face shield**
Polycarbonate 2,0mm
- **U-Profile**
Polycarbonate 2mm
- **Mounting parts**
Polypropylen PP GV 20
- **Elastic band**
Silicone, grey
- **Chin guard**
Polycarbonate; Nomex

Marking

The face shield is tested in accordance with DIN EN 166, DIN EN 170 and GS-ET-29 (2019).

Mounting device

UHL 166 8-2 B CE 0196

Face shield

2C-2 UHL 1 B 8-2-2 CE -0196-

Explanation of the marking:

UHL	= manufacturer Rudolf Uhlen GmbH
166	= EN Norm
2C-2	= UV-shade
1	= optical class
B	= mechanical impact with medium energy
8-2	= electric arc class 2 (7kA)
CE	= CE sign
-0196-	= notified body
	= sign for electr. arc

Additional marking according to GS-ET-29

2 = the luminous transmittance $VLT < D65$, which emulates the luminance impression of the human eye (accord. to ISO 10527:2007), is $< 50\%$.

This product is assigned to Light transmittance class 2 (LT Class 2). Additional lighting is required under normal working conditions. In any case, check your ability to detect color in the work environment before using this product.

Artificial lighting can interfere with the tint of the face shield and impair colour perception, especially when using fluorescent or LED lamps as illuminants. It must be ensured that all cable codes used at the workplace can be safely distinguished under actual lighting conditions.

Check your colour perception prior to starting work by performing the following steps:

1. Gather a sampling of cable pieces having the same colour coding as the cables used at your workplace.
2. Ensure that you are in a safe location, but with the same lighting (type and intensity) as anticipated at your workplace.
3. Clean the face shield and check it for damage (do not hesitate to replace the face shield if necessary - refer to the User information).
4. Don the face shield as described in the User information.
5. Quickly sort through the bundled cable samples. If you have difficulty distinguishing between the various cable codes or are mistaken in sorting them, then the lighting is insufficient and/or the face shield is too dark. This could cause an accident at work, such as electric fault arcing.

The arc flash symbol is a shield with an explosion and a lightning bolt.

The face shield has been tested with the following hard hat types:

Model: G3501
Manufacturer: 3M
Distance visor-face: 50mm
Model: INAP PCG
Manufacturer: Voss-Helme
Distance visor-face: 65mm

EU-Baumusterprüfbescheinigung

C2867.1UHL

Antragsteller	Rudolf Uhlen GmbH Am Höfgen 13 42781 Haan Deutschland
Kennbuchstabe	UHL
Produktart	Elektrikerschutzschirm, Visier zum Schutz gegen Störlichtbogen
Modellname	GFKES004
Prüfgrundlage	Grundlegende Anforderungen nach Anhang II der PSA-Verordnung (EU) 2016/425 EN 166 : 2001, EN 170 : 2002, GS-ET-29 : 2019
Prüfnummer / Prüfbericht	1384-ECS-19 / MR 13841-ECS-19 INNOGY 19_327-1, 19_327-2
Werkstoffe	Polycarbonat, Nomex
Optische und mechanische Eigenschaften	Lichttransmission NA: 43% Optische Klasse: 1 UV-Schutzfilter mit Farberkennung (C) Schutz gegen Teilchen hoher Geschwindigkeit (B) Schutz gegen Störlichtbogen (8), Klasse 2, Transmissionsklasse 2
Kennzeichnung	2C-2 UHL 1 B 8-2-2 - 166 8-2 B CE 1883

Augenschutzprodukte gegen Risiken der Elektrizität und für Arbeiten unter Spannung unterliegen als Kategorie-III-Produkte gemäß PSA-Verordnung der Überwachung (Modul C2) durch eine notifizierte Stelle. Diese EU-Baumusterprüfbescheinigung ist bis zum **31. Dezember 2024** gültig.

ECS bestätigt, dass das oben bezeichnete Augenschutzgerät die grundlegenden Anforderungen für Gesundheitsschutz und Sicherheit der Verordnung der Europäischen Gemeinschaft für persönliche Schutzausrüstungen (EU) 2016/425 erfüllt. Der Antragsteller stimmt den Allgemeinen Geschäftsbedingungen der ECS GmbH und weiteren, im Antrag auf Konformitätsbewertung genannten Vereinbarungen zu.

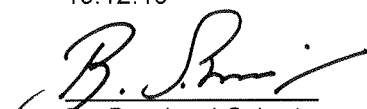
Das Augenschutzprodukt ist wie oben angegeben zu kennzeichnen. Tragen Tragkörper und Sichtscheiben unterschiedliche Kennzeichnungen, so ist die jeweils geringste Schutzstufe anzugeben.

Diese EU-Baumusterprüfbescheinigung verliert ihre Gültigkeit, wenn der Antragsteller / Hersteller sicherheitsrelevante Produkteigenschaften gegenüber dem geprüften Baumuster verändert oder wenn die sicherheitsrelevanten Anforderungen in der zugrunde gelegten Prüfnorm verschärft bzw. revidiert werden.

Name, Anschrift und Kennnummer der benannten Stelle ECS sind in der Produktinformation zu nennen.

ECS GmbH
Notifizierte Stelle 1883
19.12.19




Dr. Bernhard Schmitz
ECS-Zertifizierer

ECS GmbH – European Certification Service
Augenschutz und Persönliche Schutzausrüstung
Laserschutz und Optische Messtechnik
Hüttfeldstraße 50
73430 Aalen, Germany

Anhang zu einer EU-Baumusterprüfbescheinigung

Antragsteller: Rudolf Uhlen GmbH, 42781 Haan, Deutschland

Nummer der EU-Baumusterprüfbescheinigung: C2867.1UHL vom 19.12.2019

Diese EU-Baumusterprüfbescheinigung gilt für folgende Varianten:

Modellname	Messprotokoll	Kennzeichnung
GFKES004	13841-ECS-19	2C-2 UHL 1 B 8-2-2 - 166 8-2 B CE 1883
GFKES004-3		
GFKES004-5		

Werden die Kennzeichnungen von Schutzscheibe und Tragkörper getrennt aufgebracht, so sind folgende Kennzeichnungen zu verwenden:

Schutzscheibe: 2C-2 UHL 1 B 8-2-2 CE 1883

Tragkörper: UHL 166 8-2 B CE 1883

Report # K-352232-1911F01-R00		Test Report Kinectrics Inc., 800 Kipling Avenue, Unit 2 Toronto, Ontario, Canada Tel: 416-207-6000, www.kinectrics.com 
Samples Received: Nov-21-19	Samples Tested: Nov-21-19 & Feb-20-20	

<u>Tested for</u> ArcWear.com 3018 Eastpoint Parkway Louisville, KY 40223 ArcTesting@ArcWear.com <u>Test item description</u> Rudolf Uhlen GmbH, Faceshield, Model GFKES004-3, Lens: Mfg. Rudolf Uhlen, Polycarbonate, Green, Thickness 2 mm , Hard Hat: MSA V-Gard, Fabric Interface: 2 Layers of Ikena Style 8075 7.1 oz/yd² 240 g/m², 75% Nomex 13% Modacrylic 10.5% Cotton, 1.5% Carbon Fiber, Royal Blue, ArcWear# 1911F01 FABRIC ARC RATING ATPV = 46 cal/cm² Aitex Report No. 2015EP1469, 2015 <u>Reference Standard</u> ASTM F2178-17b Standard Test Method for Determining the Arc Rating and Standard Specification for Eye or Face Protective Products	<u>Contact information for item tested:</u> Rudolf Uhlen GmbH Am Höfgen 13 Haan, NRW 42781 Germany 0049-2129-1444
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<u>Test Parameters:</u> Test current: 8 kA Arc Gap: 30 cm Distance to Fabric: 30 cm	Number of samples analysed: 26 Incident Energy Range: 24 to 115 cal/cm²
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Faceshield System Arc Rating, ATPV = 46 Cal/cm²

Heat Attenuation Factor, HAF = 96%

Testing was performed to determine the thermal protection of the lens used in the face protective product. Based on the data obtained, the arc thermal protection level of the lens is above the Arc Rating given by the producer for the fabric components. Based on ASTM F2178, the Arc Rating of the entire system is assigned the lower Arc Rating of either the lens or the fabric component. As a result, the system Arc Rating was downgraded to that of the base fabric.

CAUTION: This Arc Rating applies only to the faceshield system as tested and does not imply full head coverage. Careful consideration should be made to address exposed skin and back of the head at energy values above 12 cal/cm².

No variations to standard method noted. Samples tested as received, samples not laundered.

Test Summary

The Arc Rating of this material is intended for use as part of a flame resistant garment or system for workers exposed to electric arcs. The test result is applicable only to the test item as described; other fiber blends, weaves, finishing or dye may have different protection level. The test articles are tested as received; no test is done to validate the fiber content or composition. The Arc Rating was calculated based on the data obtained and analysed in accordance with the latest version of the applicable standards. The individual test sheets, graphs, photographs of the samples and video of every test are provided in digital format to the Client for review.

The arc testing performed to the above mentioned Standard is accredited by the Standards Council of Canada (SCC) to conform to the requirements of CAN-P-4E (ISO/IEC 17025:2005). Accreditation by the Standards Council of Canada (SCC) is a mark of competence and reliability recognized throughout the world.

Kinectrics Inc takes reasonable steps to ensure that all work performed shall meet the industry standards as set out in Kinectrics Inc.'s Quality Manual, and that all reports shall be reasonably free of errors, inaccuracies or omissions. KINECTRICS INC. DOES NOT MAKE ANY WARRANTY OR REPRESENTATION WHATSOEVER, EXPRESS OR IMPLIED, WITH RESPECT TO THE MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY INFORMATION CONTAINED IN THIS REPORT OR THE RESPECTIVE WORKS OR SERVICES SUPPLIED OR PERFORMED BY KINECTRICS INC. Kinectrics Inc. does not accept any liability for any damages, either directly, consequentially or otherwise resulting from the use of this report.

Note: The test performed does not apply to electrical contact or electrical shock hazard.

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Prepared by:	Approved by:
Yosbani Guerra HCL Technologist Kinectrics Inc.	Andrew Haines HCL Supervising Technologist Kinectrics Inc.

Note: For verification about results in this report, please forward copy of the report or inquiry to hcl@kinectrics.com

Date:
Nov-21-19

Report #
K-352232-1911F01-R00

Determination of Ebt by performing logistic regression on the panel
break-open response as indicated in Summary Table

Test Performed in accordance with: ASTM F2178-17b



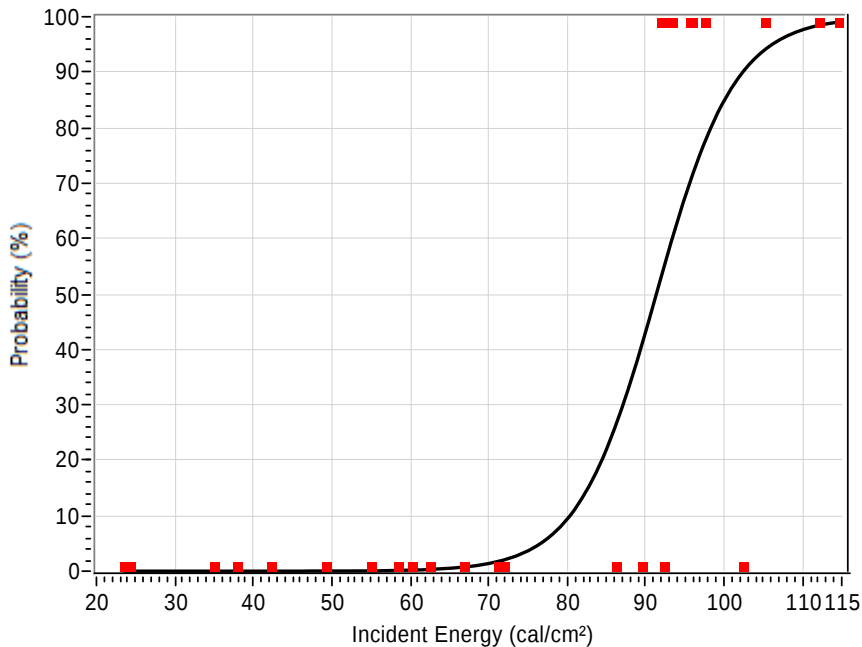
Item Description:

Rudolf Uhlen GmbH, Faceshield, Model GFKES004-3,
Lens: Mfg. Rudolf Uhlen, Polycarbonate, Green, Thickness 2 mm ,
Hard Hat: MSA V-Gard,
Fabric Interface: 2 Layers of Ikena Style 8075 7.1 oz/yd² 240 g/m²,
75% Nomex 13% Modacrylic 10.5% Cotton, 1.5% Carbon Fiber, Royal Blue,
ArcWear# 1911F01
FABRIC ARC RATING ATPV = 46 cal/cm² Aitex Report No. 2015EP1469, 2015

Hood System Limited by Fabric Arc Rating, ATPV = 46 cal/cm²

Ebt = 91 cal/cm²

Determination of Ebt, 50% of Probability of Breakopen

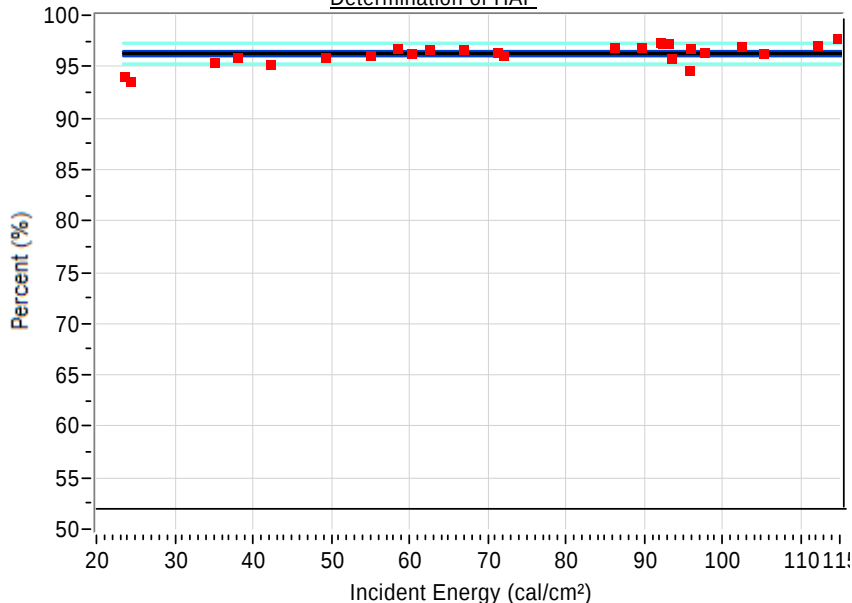


Probability	Ei
5%	76.6
10%	80.3
20%	84.4
30%	87.1
40%	89.3
50%	91.4
60%	93.4
70%	95.6
80%	98.3
90%	102.4

(Note: Ebt is reported to nearest integer
for ratings above 10 cal/cm²)

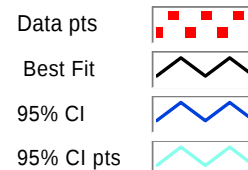
Total points analyzed = 26
Points Break-Open = 9
Points above mix zone = 3
Points below mix zone = 15
Pts within 20% = 11
Pts in mix zone = 8

Determination of HAF



HAF = 96 %

Confidence Intervals
95% CI = 95.8 , 96.2



Date: Nov-21-19		Summary of Measured Energy and Observations													
Report # K-352232-1911F01-R00		Test Performed in accordance with : ASTM F2178-17b													
Item Description: Rudolf Uhlen GmbH, Faceshield, Model GFKES004-3, Lens: Mfg.Rudolf Uhlen, Polycarbonate, Green, Thickness 2 mm , Hard Hat: MSA V-Gard, Fabric Interface: 2 Layers of Ibena Style 8075 7.1 oz/lyd² 240 g/m², 75% Nomex 13% Modacrylic 10.5% Cotton, 1.5% Carbon Fiber, Royal Blue, ArcWear# 1911F01 FABRIC ARC RATING ATPV = 46 cal/cm² Aitex Report No. 2015EP1469, 2015															
	Test #	Panel	Test Current A	Cycles of 60Hz	Ei Cal/cm²	SCD Cal/cm²	HAF %	>Stoll Y/N	Break Open Y/N	Ablation Y/N	After Flame sec.	Omit Y/N	Comment		
1	K-352151-7462	A	8132	30.2	23.5	-0.6	94.1	No	N	N	0	No			
2	K-352151-7462	B	8132	30.2	24.3	-0.4	93.6	No	N	N	0	No			
3	K-352151-7463	A	8100	50.2	35.0	-0.6	95.4	No	N	N	2	No			
4	K-352151-7463	B	8100	50.2	37.9	-0.6	95.9	No	N	N	6	No			
5	K-352151-7464	A	8082	80.2	60.2	-0.6	96.3	No	N	N	12.5	No			
6	K-352151-7464	B	8082	80.2	62.5	-0.6	96.7	No	N	N	5	No			
7	K-352151-7466	A	8064	92.2	66.8	-0.5	96.7	No	N	Y	9.5	No			
8	K-352151-7466	B	8064	92.2	71.2	-0.5	96.4	No	N	N	10	No			
9	K-352151-7467	A	8057	110.2	86.2	-0.5	96.9	No	N	Y	12	No			
10	K-352151-7467	B	8057	110.2	93.1	-0.4	97.3	No	Y	Y	12.5	No			
11	K-352151-7468	A	8039	130.2	97.6	0.8	96.4	Yes	Y	Y	17.5	No	Exceeded stoll curve on LE, Mouth and Chin sensors.		
12	K-352151-7468	B	8039	130.2	102.4	-0.1	97.0	No	N	Y	12	No			
13	K-352151-7471	A	8082	135.2	95.9	-0.1	96.8	No	Y	Y	9	No			
14	K-352151-7471	B	8082	135.2	105.2	1.4	96.3	Yes	Y	Y	14	No	Exceeded stoll curve on Chin sensor.		
15	K-352151-7472	A	8030	135.3	93.4	0.7	95.8	Yes	Y	Y	12	No	Exceeded stoll curve on LE, Mouth and Chin sensors.		
16	K-352151-7472	B	8030	135.3	112.1	0.0	97.1	Yes	Y	Y	14	No	Exceeded stoll curve on LE, Mouth and Chin sensors.		
17	K-352151-7473	A	8003	133.2	95.7	2.0	94.7	Yes	Y	Y	9.5	No	Exceeded stoll curve on LE, Mouth and Chin sensors.		
18	K-352151-7473	B	8003	133.2	114.7	-0.3	97.8	No	Y	Y	14.5	No			
19	K-352151-7474	A	8055	105.2	72.0	-0.1	96.1	No	N	N	7	No			
20	K-352151-7474	B	8055	105.2	89.6	-0.5	96.9	No	N	Y	10	No			
21	K-352151-7475	A	8064	120.2	92.3	-0.6	97.3	No	N	Y	8	No			
22	K-352151-7475	B	8064	120.2	92.0	-0.7	97.4	No	Y	Y	11	No			
23	K-352232-1084	A	8122	62.2	42.2	-0.5	95.2	No	N	N	0	No	Scouting test to verify performance. AW#1911Fs01.		
24	K-352232-1084	B	8122	62.2	55.0	-0.6	96.1	No	N	Y	1.5	No	Scouting test to verify performance. AW#1911Fs01.		
25	K-352232-1085	A	8120	72.2	49.2	-0.5	95.9	No	N	Y	1.5	No	Scouting test to verify performance. AW#1911Fs01.		
26	K-352232-1085	B	8120	72.2	58.4	-0.7	96.8	No	N	Y	1.5	No	Scouting test to verify performance. AW#1911Fs01.		
27															
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36															
37															
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20 samples exhibited afterflame during testing for an average duration of 10.4 seconds. All afterflame was only present on the hood fabric.															

Photographs

The following photographs are representative of test results observed.



Figure 1. Hood system before arc exposure.



Figure 2. Hood system after arc exposure at 92 cal/cm²

EU DECLARATION OF CONFORMITY (2023.R1)

1. PPE: **GFKES004**
 2. Manufacturer: **Rudolf Uhlen GmbH
Am Höfgen 13
42781 Haan**
- 
3. This declaration of conformity is issued under the sole responsibility of the manufacturer:
Rudolf Uhlen GmbH.
 4. Object of the declaration:
Electricians Face Shield, made of PC, green, 550x200x2,0mm, with chin guard, DIN EN 166 and GS-ET-29 (7kA)
 5. The object of the declaration described in point 4 is in conformity with the relevant Union harmonisation legislation: guideline 2001/95/EG and regulation (EU) 2016/425
 6. References to the relevant harmonised standards used, including the date of the standard, or references to the other technical specifications, including the date of the specification, in relation to which conformity is declared: EN 166:2001, EN 170:2002 and GS-ET 29:2011-05
 7. The notified body DIN CERTCO Gesellschaft für Konformitätsbewertung mbH, Alboinstr. 56, 12103 Berlin (0196) performed the EU type-examination (Module B) and issued the EU type-examination certificate **C2667.1UHL** ausgestellt.
 8. The PPE is subject to the conformity assessment procedure based on internal production control plus supervised product checks at random intervals (Module C2) under surveillance of the notified body DIN CERTCO Gesellschaft für Konformitätsbewertung mbH, Alboinstr. 56, 12103 Berlin (0196).
 9. Additional Information:
Signed for and on behalf of:
Rudolf Uhlen GmbH

Haan, 20. April 2023:



Steffen Fiedler
-General Manager-