ICAS®
英格尔集团

TEST REPORT

Report No.: SHX23071245-01E **Date:** 2023-09-01

Applicant :
Address :

The content of this section is manufacturer's information

Sample Information

Sample Name	:	13 Gauge Anti-Static Carbon PU Palm Coated Glove
Sample Type/Specification	:	/
Sample Qty.	:	1
Sample acquisition method	:	Sent by client

Above information and sample(s) was/were submitted and certified by/on behalf of the applicant. ICAS was not responsible for the authenticity of the sample, and quoted the information with no responsibility as to the accuracy, adequacy and/or completeness.

Sample No.	:	X23071245-01
Date of Sample Received	:	2023-08-02&2023-08-25
Sample Test Period	:	2023-08-02~2023-08-31

Test content:

Test item(s)	:	Please refer to next page(s).
Test Method(s)	:	Please refer to next page(s).

ICAS TESTING TECHNOLOGY SERVICE（SHANGHAI）Co.,LTD

Prepared by: 史秋秋 (Zhuqiu Shi) Reviewed by: 赵浩彦 (Haoyan Zhao) Approved by: (Authorized signatory: Yang Zhang)

TEST REPORT

Test Item1: System Re sistance (Finger Sleeve)

1.Test Equipment

Equipment Name	Model
Impedance Tester	TREK 152-1
Electronic Drying Cabinets	FHA328D

2.Environmental Conditions

Temperature: 23±3 ℃; Humidity: 12±3%RH

3.Test Standard: ANSI ESD STM15.1-2019

4.Test Condition

Preprocessing: Temperature: 23±3℃; Humidity: 12±3% RH adjust 72h

Test voltage: 10VDC; Test time: 15s.

5.Test Result(s):

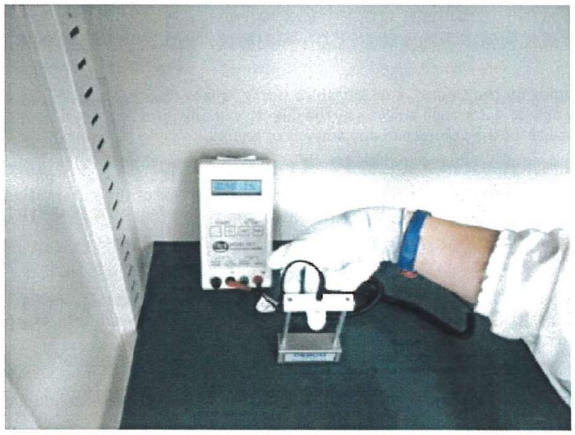
Test Sample	Test Result（Ω）
1	8.87×10^5
2	9.35×10^5
3	8.41×10^5
4	7.92×10^5
5	9.83×10^5
6	8.97×10^5
Ave.	8.89×10^5

TEST REPORT

Report No.: SHX23071245-01E **Date:** 2023-09-01

Test Photo(s)

Low humidity dry ing Cabinets(Humidity:12.0%RH)



System Resistance Test (F inger Sleeve)

TEST REPORT

Test Item1: Surface resistance

1.Test Equipment:

Equipment Name	Model
Impedance Tester	TREK 152-1
Electronic Drying Cabinets	FHA328D

2.Environmental Conditions

Temperature: 23±3 ℃; Humidity: 12±3%RH

3.Test Standard: ANSI ESD STM15.1-2019

4.Test Condition

Preprocessing: Temperature: 23±3℃; HIumidity: 12±3% RH adjust 72h

Test voltage: 10VDC; Test time: 15s.

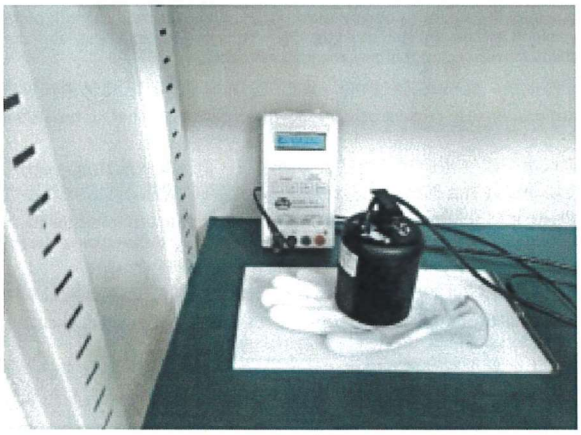
5.Test Result(s):

Test Sample	Test Result（Ω）
1	7.73×10^5
2	5.96×10^5
3	8.42×10^5
4	7.31×10^5
5	6.94×10^5
6	8.06×10^5
Ave.	7.27×10^5

TEST REPORT

Test Photo(s)

Low humidity drying Cabinets(Humidity:12.0%RH）



Surface resistance test

Test Item2: Volume resistance

1.Test Equipment

Equipment Name	Model
Impedance Tester	TREK 152-1
Electronic Drying Cabinets	FHA328D

2.Environmental Conditions

Temperature: 23±3 ℃; Humidity: 12±3%RH

3.Test Standard: ANSI ESD STM15.1-2019

4.Test Condition

Preprocessing: Temperature: 23±3 ℃; Humidity: 12±3% RH adjust 72h

Test voltage: 10VDC; Test time: 15s.

5.Test Result(s)

Test Sample	Test Result（Ω）
1	2.03×10^5
2	3.49×10^5
3	2.71×10^5
4	2.52×10^5
5	3.18×10^5
6	2.97×10^5
Ave.	2.79×10^5

TEST REPORT

Test Photo(s)

Low humidity drying Cabinets(Humidity:12.0%RH）

Volume resistance test

TEST REPORT

Report No.: SHX23071245-01E Date: 2023-09-01

Sample Photo

This photo is limited to ICAS used this report

End of the report

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“#” indicated that data comes from designated contracted lab:

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TESTING
CNAS L4577

TEST REPORT

Report No.: S230605141_1

26 June 2023

APPLICANT:

The content of this section is manufacturer's information.

Date of receipt :08 June 2023
Testing period :09 June 2023
:26 June 2023

Buyer: --

Sample description: 13 Carbon Fiber/Polyester Anti-Static PU Coated Glove

Style / Article no. :PU301
Test(s) requested :--
Service :REGULAR
Brand / Section :--
Season :--
End use :--
Factory name :--
Factory code :--

Previous report :--
Product category :--
Product type :--
Test stage :FIRST TEST
Supplier name :--
Exported to :--

1. Conclusion:

	Tests description	Conformity
	EN 388:2016+A1:2018	
1	Abrasion resistance: 2016	**Level 4**
2	Cut resistance: 2016	**Level 1**
3	Tear strength resistance: 2016	**Level 4**
4	Puncture resistance: 2016	**Level 1**

	Tests description	Conformity
	EN ISO 21420:2020	
5	pH - Textile (KCl solution)	**Pass**
6	Aromatic amines derived from azo colorants	**Pass**
7	Dimethylformamide (DMF/DMFo/DMFa)	**Pass**
8	Polycyclic Aromatic Hydrocarbons (8)	**Pass**
9	Vertical resistance of material	**Pass**
10	Dexterity	**Level 5**
11	XRF screening	**Pass**
12	XRF screening (Tin)	**Pass**
13	Phthalates	**Pass**

Pass: requirements met Fail: requirements not met None: no requirement for this test N/A: not applicable

TEST REPORT

Report No.: S230605141_1

26 June 2023

APPLICANT:

The content of this section is manufacturer's information.

Approved by

Henry YAN 严滨
Laboratory Manager

Yvonne MAO 茅璇怡
Senior Analytical Chemical Engineer

TEST REPORT

Report No.: S230605141_1 26 June 2023

APPLICANT: The content of this section is manufacturer's information.

2. Sample(s) description assigned by laboratory:

Size	Analyzed product	Description	Sample information
	GLOVE		
		Whole glove	
		white(grey/white) PU(carbon fiber/polyester) palm	
		white(grey/white) PU(carbon fiber/polyester) palm	
		grey/white carbon fiber/polyester back	
		grey/white carbon fiber/polyester/elastic cuff	

230605141

TEST REPORT

Report No.: S230605141_1 26 June 2023

APPLICANT: The content of this section is manufacturer's information.

3. GLOVE/

Whole glove

	Method	Client Requirement	Unit	Result	Conformity
▲ **4.2. Dimethylformamide (DMF/DMFo/DMFa)**	EN 16778: 2016				Pass
Dimethylformamide			mg/kg	887.3	
Dimethylformamide (2)			mg/kg	906.0	
Dimethylformamide - average		<1000	mg/kg	896.7	
(+) **5.2. Dexterity**	EN ISO 21420: 2020				
Smallest diameter of pin fulfilling test condition			mm	5.0	
Smallest diameter of pin fulfilling test condition (2)			mm	5.0	
Smallest diameter of pin fulfilling test condition (3)			mm	5.0	
Smallest diameter of pin fulfilling test condition (4)			mm	5.0	
Performance level				5	

white(grey/white) PU(carbon fiber/polyester) palm

	Method	Client Requirement	Unit	Result	Conformity
(+) **4.1. Abrasion resistance: 2016**	EN 388:2016 + A1:2018				
used consumables - abrasive				Klingspor PL31B Grit 180	
used consumables - adhesive				3M Scotch	
Number of cycles at the hole detection				>8000	
Number of cycles at the hole detection (2)				>8000	
Number of cycles at the hole detection (3)				>8000	
Number of cycles at the hole detection (4)				>8000	
Performance level				4	
(+) **4.1. Cut resistance: 2016**	EN 388:2016 + A1:2018				
Deviation from the test method				No	
used consumables - canvas				LEM 6	
used consumables - blade				OLFA RB45	
C1				1.2	

TEST REPORT

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APPLICANT: The content of this section is manufacturer's information.

	Method	Client Requirement	Unit	Result	Conformity
T1				0.8	
1C1				1.3	
I1				1.6	
C2				1.3	
T2				0.8	
1C2				1.3	
I2				1.6	
C3				1.3	
T3				0.9	
1C3				1.3	
I3				1.7	
C4				1.3	
T4				0.8	
1C4				1.4	
I4				1.6	
C5				1.4	
T5				0.9	
1C5				1.4	
I5				1.6	
Mean value of test piece 1				1.6	
C1 bis				1.3	
T1 bis				0.8	
2C1bis				1.4	
I1 bis				1.6	
C2 bis				1.4	
T2 bis				0.8	
2C2bis				1.4	
I2 bis				1.6	
C3 bis				1.4	
T3 bis				0.8	
2C3bis				1.4	
I3 bis				1.6	
C4 bis				1.4	
T4 bis				0.9	

TEST REPORT

Report No.: S230605141_1 26 June 2023

APPLICANT: The content of this section is manufacturer's information.

	Method	Client Requirement	Unit	Result	Conformity
2C4bis				1.4	
I4 bis				1.6	
C5 bis				1.4	
T5 bis				0.9	
2C5bis				1.4	
I5 bis				1.6	
Mean value of test piece 2				1.6	
Considered value				1.6	
Performance level				1	
Observation				No comment	
(+) **4.1. Tear strength resistance: 2016**	EN 388:2016 + A1:2018				
Tear strength			N	>75	
Tear strength (2)			N	>75	
Tear strength (3)			N	>75	
Tear strength (4)			N	>75	
Performance level				4	
(+) **4.1. Puncture resistance: 2016**	EN 388:2016 + A1:2018				
Puncture resistance			N	51	
Puncture resistance (2)			N	58	
Puncture resistance (3)			N	55	
Puncture resistance (4)			N	53	
Performance level				1	

white(grey/white) PU(carbon fiber/polyester) palm

	Method	Client Requirement	Unit	Result	Conformity
(+) **4.2. pH - Textile (KCl solution)**	ISO 3071:2020				Pass
pH value		3.5< - <9.5		7.3	
▲ **4.2. Polycyclic Aromatic Hydrocarbons (8)**	ISO 16190:2021				Pass
Benzo(a)anthracene		<1	mg/kg	<0.2	
Chrysene		<1	mg/kg	<0.2	

TEST REPORT

Report No.: S230605141_1 26 June 2023

APPLICANT: The content of this section is manufacturer's information.

	Method	Client Requirement	Unit	Result	Conformity
Benzo(b)fluoranthene/ Benz[e]acephenanthrylene		<1	mg/kg	<0.2	
Benzo(k)fluoranthene		<1	mg/kg	<0.2	
Benzo(a)pyrene/ Benzo[def]chrysene		<1	mg/kg	<0.2	
Dibenzo(a.h)anthracene		<1	mg/kg	<0.2	
Benzo(e)pyrene		<1	mg/kg	<0.2	
Benzo(j)fluoranthene		<1	mg/kg	<0.2	
▲ **4.4.1. Vertical resistance of material**	EN 16350: 2014				Pass
Pre-conditioning				(23±1)°C,(25±5)%RH for 48H	
Test apparatus				Normal.specimen(EN.1149-2)	
Number of test piece(s)				5	
Applied voltage			V	100	
Vertical resistance (1)		<100	Mohms	2.65	
Vertical resistance (2)		<100	Mohms	1.61	
Vertical resistance (3)		<100	Mohms	2.27	
Vertical resistance (4)		<100	Mohms	3.58	
Vertical resistance (5)		<100	Mohms	9.49	
(+) **XRF screening**	ASTM F2617 – 15				Pass
Cd (Cadmium)		<100	ppm	<100	
XRF screening (Tin)	ASTM F2617 – 15				Pass
Sn (Tin)		<150	ppm	<150	
(+) **Phthalates**	ISO 16181-1:2021				Pass
BBP . Butyl benzyl phthalate		<0.1	%	<0.0020	
DBP . Di-butyl phthalate		<0.1	%	<0.0020	
DEHP . Di-(2-ethylhexyl) phthalate		<0.1	%	<0.0020	
DIBP . Di-iso-butyl phthalate		<0.1	%	<0.0020	

Client requirement < 100 Mohms
100 Mohms = $1x10^8$

Result Test = 4 Mohms (average)
4 Mohms = $4x10^6$

grey/white carbon fiber/polyester back

	Method	Client Requirement	Unit	Result	Conformity
(+) **4.2. pH - Textile (KCl solution)**	ISO 3071:2020				Pass
pH value		3.5< - <9.5		7.4	

TEST REPORT

Report No.: S230605141_1 26 June 2023

APPLICANT: The content of this section is manufacturer's information.

	Method	Client Requirement	Unit	Result	Conformity
(+) **4.2. Aromatic amines derived from azo colorants**	ISO 14362-1:2017 (combined extraction)				Pass
Accessible with fibre extraction		<30	mg/kg	<5	
Accessible without fibre extraction		<30	mg/kg	<5	

grey/white carbon fiber/polyester/elastic cuff

	Method	Client Requirement	Unit	Result	Conformity
(+) **4.2. pH - Textile (KCl solution)**	ISO 3071:2020				Pass
pH value		3.5< - <9.5		7.4	
(+) **4.2. Aromatic amines derived from azo colorants**	ISO 14362-1:2017 (combined extraction)				Pass
Accessible with fibre extraction		<30	mg/kg	<5	
Accessible without fibre extraction		<30	mg/kg	<5	

TEST REPORT

END OF TEST REPORT

(+)CNAS accreditation

▲: The test was carried out by external accredited laboratory under their accreditation scope.

Unless otherwise specified, the physical test items in this report performed in CTC Shanghai lab were conditioned and tested in the environment of T 23±2°C / RH 50±4%.

Table of Performance Level for Glove

Test Item	Performance Level					
	0##	1	2	3	4	5
Abrasion Resistance (EN 388) Number of cycles (minimum)	<100	100	500	2000	8000	---
Blade Cut Resistance (EN 388) Index (I) (minimum)	<1.2	1.2	2.5	5.0	10.0	20.0
Tear Resistance (EN 388) Force (N) (minimum)	<10	10	25	50	75	---
Puncture Resistance (EN 388) Force (N) (minimum)	<20	20	60	100	150	---
Finger dexterity (EN ISO 21420) Smallest diameter of pin fulfilling test conditions (mm)	---	11.0	9.5	8.0	6.5	5.0

Performance level 0 means the glove falls below the minimum performance level for the given individual hazard

SAFETY DATA SHEET(MSDS)
ESD GLOVE
(THICK TYPE)

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Misumi ESD Gloves.

Company Name: MISUMI(THAILAND) CO., LTD.

Address: 300/24 MOO 1, EASTERN SEABOARD INDUSTRIAL ESTATE SOI 5
T.TASITH, A.PLUAKDAENG, RAYONG 21140 THAILAND

Tel: 1382 Fax: 038-959202

Section 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Product Name: Misumi ESD Glove. MESD-TF/PF-(S/M/L)

MateriaI Composition	Percent(%)	CAS No.
Polyurethane	50% - 60%	9009-54-5
Polyester Fiber	20% - 30%	/
Carbon Fiber	10% - 15%	7440-44-0
Spandex	2%	/

Section 3 - HAZARDS IDENTIFICATION

Potential Health Effects

Hazard Effects	Health Hazard Effects : None
	Environmental impact : None
	Physical and chemical hazard : None
	Special damages : None
Main Symptoms : No data	
Hazard Class : None	

Section 4 - FIRST AID MEASURES

Skin contact: Wash hands with mild soap after handling.

Eye contact: If the eyes are irritated flush with water for ten minutes. Obtain medical attention.

Avoid ingestion. If ingested seek medical attention.

Section 5 - FIRE FIGHTING MEASURES

Flash Point: > 100 °C

Lower Explosion Limit: N/A

Upper Explosion Limit: N/A

Fire Hazard: Stable under normal situation. Flammable / Combustible under extreme high heat and flame. Can generate toxic and combustible fumes, - carbon monoxide, nitrogen and hydrocarbon compounds, and soot.

Fire Fighting Procedures: Use full protective equipment and SCBA, filter masks, etc.

Extinguishing Media: High expansion foam, water fog and spray.

Section 6 - ACCIDENTAL RELEASE MEASURES

Release Response: Retain for recycle or disposal.

Section 7 - HANDLING AND STORAGE

Gloves shall maintain their properties when stored in dry condition at temperature between 10°C to 30°C. Protect gloves against ultraviolet light sources such as sunlight and oxidizing agents.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Control

Use local exhaust in confined spaces where gloves are heated.

Personal Protective Equipment

Eyes : Not required. or just use goggles if gloves are heated.

Inhalation : Not required. or use face mask 3 ply

Skin : Not required. or use heat resistance gloves if heated to melting state.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Textured, White color

Physical State : Rubber / Odor / pH : 7 (Reference average)

Section 10: CHEMICAL STABILITY AND REACTIVITY INFORMATION

Chemical Stability : Stable at normal temperature and storage condition.

Conditions to Avoid : Avoid contact with excessive heat, sparks or open flame. Avoid dust accumulation.

Incompatibility with other materials

No specific information is available, however strong oxidizers or reducing agents which generally not compatible with compounds.

Hazardous Decomposition Products

Fumes produced when heated to decomposition temperatures may contain carbon monoxide, carbon dioxide, hydrogen cyanide, oxides of nitrogen, and small amounts of aromatic and aliphatic hydrocarbons. Combustion products from natural leather, like those of other natural and synthetic materials, must be considered toxic.

Section 11: TOXICOLOGICAL INFORMATION

No information is available.

Section 12: ECOLOGICAL INFORMATION

Product of Biodegradation: Biodegradable.

Ecotoxicity: Considered as inert.

Section 13: WASTE TREATMENT

Waste disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

Incineration: Put appropriate amount of the gloves into the incinerator or furnace to destroy them following the requirements shown below.

Requirements:

1) Burning temperature exceeds 850oC

2) Combustion retention time is not less than 2 seconds

Note: Gloves should not be destroyed by open burning at low temperature or dispose at normal disposal area

Section14: TRANSPORTATION INFORMATION

Non-dangerous goods.

Section 15: LAW INFOMATION

No information is available.

Section 16: OTHER INFORMATION

This Product Safety Data Sheet is offered solely for your information. Misumi(Thailand) Co.,Ltd provides no warranties, either express or implied, concerning the sage use of this product in your process or in combination with other substances and assumes no responsibility for the accuracy or completeness of the data contained herein. User has the sole responsibility to determine the suitability of they use and the manner of use contemplated.

Test Report

Report No.: THSD23062648081-2EN **Job No.:**48081 **Date:** June 29, 2023

Applicant	:	Manufacturer information
Address	:	
Sample Name	:	ESD Carbon Fiber PU gloves
Sample Model	:	PU301
Sample Receive Date	:	June 26, 2023
Sample Testing Period	:	June 26, 2023---June 28, 2023
Test Result Summary	:	

As requested by the applicant, for details refer to attached page(s).

TEST ITEM(S)	TEST REQUESTED	CONCLUSION(S)
Pb, Cd, Hg, CrVI, PBBs, PBDEs and Phthalates(DBP, BBP, DEHP, DIBP) content	RoHS Directive 2011/65/EU and its amendment (EU) 2015/863	PASS

* Applicant,address,sample name and model information have been provided by the customer.GTS is not responsible for its authenticity.

For and on behalf of

Shanghai Global Testing Services Co., Ltd.

Authorized Signature

Shi Lei/Kevin

General Manager -GTS/SHO

Shanghai Global Testing Services Co., Ltd.
Floor 2nd, Building D-1, No. 128, Shenfu Road, Minhang District, Shanghai, China.
Tel: (86-21) 3363 7866 Fax: (86-21) 3363 7858 E-mail: info@gts-lab.com Web Site: http://www.gts-lab.com

Test Report

Report No.: THSD23062648081-2EN **Job No.:**48081 **Date:** June 29, 2023

Test Result(s):

Test Sample Description:

Material No.	Material Description
01	Light gray cloth

RoHS(Pb, Cd, Hg, CrVI, PBBs, PBDEs and Phthalates(DBP, BBP, DEHP, DIBP))

Test Method: Lead(Pb), Cadmium(Cd) –IEC 62321-5: 2013
Mercury(Hg) –IEC 62321-4: 2013+AMD1:2017
Chromium VI(CrVI) –IEC 62321-7-2: 2017
PBBs, PBDEs –IEC 62321-6: 2015
DBP, BBP, DEHP, DIBP –IEC 62321-8: 2017

Test item(s)	Limit	Unit	MDL	Result(s)
				01
Lead(Pb)	1000	mg/kg	2	N.D.
Cadmium(Cd)	100	mg/kg	2	N.D.
Mercury(Hg)	1000	mg/kg	2	N.D.
Chromium VI(CrVI)	1000	mg/kg	2	N.D.
Dibutyl phthalate(DBP)	1000	mg/kg	50	N.D.
Butyl benzyl phthalate(BBP)	1000	mg/kg	50	N.D.
Di-2-ethylhexyl phthalate(DEHP)	1000	mg/kg	50	N.D.
Di-iso-butyl phthalate(DIBP)	1000	mg/kg	50	N.D.
Monobromobiphenyls	--	mg/kg	5	N.D.
Dibromobiphenyls	--	mg/kg	5	N.D.
Tribromobiphenyls	--	mg/kg	5	N.D.
Tetrabromobiphenyls	--	mg/kg	5	N.D.
Pentabromobiphenyls	--	mg/kg	5	N.D.
Hexabromobiphenyls	--	mg/kg	5	N.D.
Heptabromobiphenyls	--	mg/kg	5	N.D.
Octabromobiphenyls	--	mg/kg	5	N.D.
Nonabromobiphenyls	--	mg/kg	5	N.D.
Decabromobiphenyl	--	mg/kg	5	N.D.
Group PBBs	1000	mg/kg	--	N.D.
Monobromodiphenyl ethers	--	mg/kg	5	N.D.
Dibromodiphenyl ethers	--	mg/kg	5	N.D.

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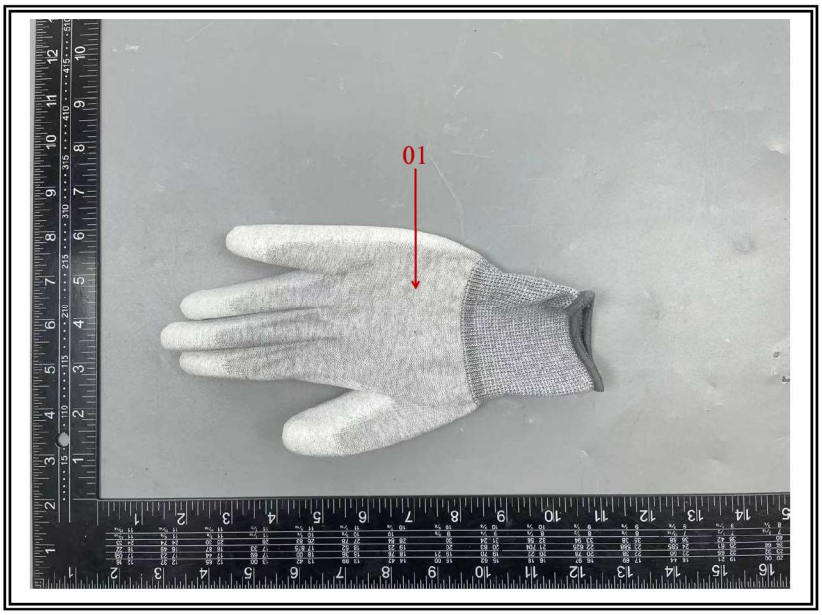
Test Report

Report No.: THSD23062648081-2EN **Job No.:**48081 **Date:** June 29, 2023

Test item(s)	Limit	Unit	MDL	Result(s) 01
Tribromodiphenyl ethers	--	mg/kg	5	N.D.
Tetrabromodiphenyl ethers	--	mg/kg	5	N.D.
Pentabromodiphenyl ethers	--	mg/kg	5	N.D.
Hexabromodiphenyl ethers	--	mg/kg	5	N.D.
Heptabromodiphenyl ethers	--	mg/kg	5	N.D.
Octabromodiphenyl ethers	--	mg/kg	5	N.D.
Nonabromodiphenyl ethers	--	mg/kg	5	N.D.
Decabromodiphenyl ether	--	mg/kg	5	N.D.
Group PBDEs	1000	mg/kg	--	N.D.
Conclusion(s)				PASS

Note: 1. MDL = Method Detection Limit.
2. N.D. = Not detected, less than MDL.

Sample Photo(s):



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Test Report

Report No.: THSD23062648081-2EN **Job No.:**48081 **Date:** June 29, 2023

Sample photo(s) for reference:

End of Report

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