



VERIFIED GRAPHENE[®]
— P R O D U C E R —
THE GRAPHENE COUNCIL



KYORENE[®]

— A N D —

KYORENE[®] PRO

PRODUCT CATALOGUE

TABLE OF CONTENTS

	Page
Who is QS Safety?	2
What is graphene/ Kyorene®?	4
Verified Graphene Producer Status	6
Kyorene®/ Kyorene® Pro Inherent Properties	8
Kyorene®/ Kyorene® Pro Product Index	10
Kyorene® Products	12
Kyorene® Pro Products	32
EN388 & ANSI Standards	51
Heat & Cold protection EN standards	53
Kyorene®/ Kyorene® Pro Unique Properties	54
Sizing Guide	55
Washing Instructions	56



Who is QS Safety?

- Founded in 1993
- Operating factories are ISO 9001:2000 certified for quality management & ISO 14001 certified for environmental management
- Vertically integrated manufacturer
- 85% of QS Safety's electricity is generated by solar energy
- 153,000+ square metre manufacturing campus
- 48,000 square metres of rooftop solar installations
- Over 2,500 employees
- Over 2,500 knitting machines & 18 dipping lines
- In-house cut-and-sew operation with its own tannery

Product Innovation:

- Proprietary & patented HCT[®] process for all foam coatings that produces a breathable and oil-resistant finish
- State-of-the-art **Kyorene[®] & Kyorene[®] Pro** graphene glove ranges after more than 15 years of research & development

An Environmentally Responsible Glove Producer for More Than 20 Years!


QS Safety has long been a pioneer in responsible and environmentally friendly manufacturing practices. Since its beginning in 1993, QS Safety has believed in doing its part to manufacture products in the most ethical and environmentally friendly way as possible.



Solar Energy

In 2007, QS Group established QS Solar as a new entity to further pursue doing its part for the environment. QS Solar has become one of the most well-known solar companies in the world. It produces state-of-the-art solar panels for domestic and international customers and has invested in its own operations to make them more energy efficient.

- \$ 80 Million capital investment for a 500MW production capacity facility
- QS Group & QS Solar are operating with more than 60MW of solar capacity

- QS Group is able to harness 85% of their electricity demand from solar energy 



Waste Gas Control Facility

Another key component of QS Safety's operations is the use of an on-site waste gas control facility. QS does its part in managing air pollution output by using a state-of-the-art waste gas facility that far exceeds the standards in China.



Wastewater Treatment Facility

As part of the overall manufacturing plan, a state-of-the-art wastewater treatment plan was designed and brought into QS Safety's operation as far back as 2006; a step unheard of at the time in China.

WHAT IS GRAPHENE?

What is graphene?

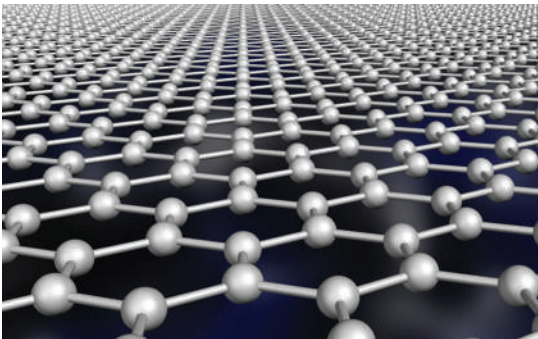
- Graphene is an allotrope of carbon which is a two-dimensional structure in a honeycomb lattice construction that is one-atom thick.
- When one million layers of graphene are stacked on top of each other they form graphite, a mineral consisting of carbon which is the most abundant material on earth.
- Graphene is a nano-scale material; 1 gram covers 100 square metres.

How was graphene discovered?

- Graphene was discovered in 2004 by two Russian scientists working at the University of Manchester in the UK: Professor Andre Geim and Professor Kostya Novoselov.
- In 2010, they jointly won the Nobel Prize in physics for their discovery.

What are the properties of graphene?

- 1 million times thinner than a piece of paper
- 200 times stronger than steel
- Harder than diamond
- Flexible, transparent & conductive
- Inherently bacteriostatic, thermal regulating, odor neutralizing and has mechanical strength, UV resistance and mite & mosquito repellency



FROM GRAPHENE TO KYORENE®

Since 2009, QS Safety has continuously invested in research and development to develop graphene's properties to be produced cost effectively. The investment has paid off and the result is called Kyorene®. Kyorene® is a multi-purpose brand name used to describe QS Safety's graphene-based technologies, the graphene-based textile fibre that QS Safety produces, as well as serving as the name for an entire product range of graphene-based protective gloves.

The amazing properties of Kyorene® come from the core of the graphene material electron concentration. The fibre & yarns are functionalised and the graphene oxide is covalently bonded.



INVENTION AND PATENTS

QS Safety has invented and patented a proprietary technology which economically transforms graphene into fibre and from there, into all kinds of textiles. It has more than 70 patents with some of them having global reach.

KYORENE® GRAPHENE FIBRE & YARN DIVISION

QS Safety is the largest producer of graphene-based textile yarn in the world. Its 300+ employees include scientists who are scattered across the globe. They helped make today's Kyorene® possible while also working to develop the Kyorene® of the future.

The Kyorene® fibre is not only present in our protective gloves, it is also being used in diverse products such as sportswear, denim, jackets, work wear, socks and underwear. Kyorene® can even be found in diverse applications such as water filtration, mattress ticking, towels, bedding and even toothbrush bristles!



VERIFIED GRAPHENE
PRODUCER
THE GRAPHENE COUNCIL

VERIFIED GRAPHENE PRODUCER

Who is The Graphene Council?

- The Graphene Council is the largest community and association in the world for graphene researchers, academics, producers, developers, investors, nanotechnologists, regulatory agencies, research institutes, material science specialists and even the public.

How does The Graphene Council validate graphene?

- The Graphene Council has created the Verified Graphene Producer™ program and Verified Graphene Product™ designation to help reputable graphene companies to differentiate themselves from the competition and to provide industrial buyers with supply chain transparency.
- The Verified Graphene Producer® program is the only credential that includes independent 3rd party inspections of graphene production facilities, verification of production methods, volumes, and quality control processes.
- The Verified Graphene Producer program also includes independent expert testing of graphene materials according to the Graphene Classification Framework (currently being adapted as an official ISO Standard).

Who else produces graphene?

- QS Safety, and its subsidiarties (Graphene One, Armor Guys and Kyorene® Italia & Kyorene® France), are 1 of 6 verified graphene manufacturers in the world.
- Of the other 5 verified producers, QS Safety (and its subsidiaries) is the only graphene manufacturer in the textile and PPE industry recognized by The Graphene Council under its Verified Graphene Producer® program.

KYORENE® GRAPHENE GLOVES: A CASE STUDY

The Graphene Council conducted a study on work gloves as “markets that gain association with popular additives (such as graphene) are susceptible to false claims....In some cases, these alterations are intentional while others are innocent; product manufacturers may use feedstocks purchased in good faith that do not in fact contain the claimed ingredient[...]”.

As a case study, The Graphene Council investigated five commercially sourced cut-resistant glove products from four distinct brands that advertised inclusion of graphene. Only one product was determined to contain conclusive evidence of content from the graphene family. This product is referred to as Glove E in the study and is manufactured by QS Safety under the Kyorene® work glove brand.

These results were expected. QS Safety is one of 6 manufacturers and the one PPE manufacturer in the world recognised by The Graphene Council under its Verified Graphene Producer® program. Since 2009, QS Group began researching graphene for use in their hand protection and solar panel businesses. It has amassed a robust amount of technological know-how and related patents. It has double down with its most recent Kyorene® Pro addition; the 00-810.

Kyorene® and Kyorene® Pro gloves have incredibly high tensile strength, superior cut, abrasion and heat resistance. They possess anti-bacterial, odor neutralizing and thermal regulating properties.

To read the full case study visit www.kyorene.com

KYORENE®

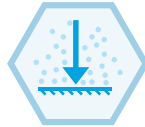
THE GRAPHENE FIBER

INHERENT PROPERTIES



BACTERIOSTATIC

Kyorene® Graphene gloves are bacteriostatic and anti-bacterial. They regulate bacteria and inhibit the reproduction and growth of new bacteria



ODOR NEUTRALIZING

Kyorene® Graphene gloves balance the acidity of body sweat, thus neutralizing odor associated with it.



THERMAL REGULATION

Kyorene® Graphene gloves absorb radiation, allowing heat to dissipate from the hands.



UV PROTECTION

Kyorene® Graphene gloves effectively protect hands and arms against UV-A and UV-B rays.



CUT RESISTANCE

Kyorene® Pro graphene gloves offer cut resistance from level A up to level F according to EN 388 and from A1 up to A6 according to ANSI.



ABRASION RESISTANCE

Kyorene® Pro graphene gloves offer abrasion resistance from level 1 to 4 according to EN 388 and from Level 1 up to Level 6 according to ANSI.









Oeko-Tex Certified, Reach Compliant and FDA 21 CFR Compliant

TESTING PARTNERS:



KYORENE[®] PRO GRAPHENE

INHERENT PROPERTIES

 <p><u>NO STAINLESS STEEL</u> Kyorene[®] Pro Graphene gloves are highly cut resistant without the use of stainless steel.</p>	 <p><u>NO FIBERGLASS</u> Kyorene[®] Pro Graphene gloves are highly cut resistant without the use of fiberglass.</p>
 <p><u>BACTERIOSTATIC</u> Kyorene[®] Graphene gloves are bacteriostatic and anti-bacterial. They regulate bacteria and inhibit the reproduction and growth of new bacteria.</p>	 <p><u>ODOR NEUTRALIZING</u> Kyorene[®] Graphene gloves balance the acidity of body sweat, thus neutralizing odor associated with it.</p>
 <p><u>THERMAL REGULATION</u> Kyorene[®] Graphene gloves absorb radiation, allowing heat to dissipate from the hands.</p>	 <p><u>UV PROTECTION</u> Kyorene[®] Graphene gloves effectively protect hands and arms against UV-A and UV-B rays.</p>
 <p><u>CUT RESISTANCE</u> Kyorene[®] Pro graphene gloves offer cut resistance from level A up to level F according to EN 388 and from A1 up to A9 according to ANSI.</p>	 <p><u>ABRASION RESISTANCE</u> Kyorene[®] Pro graphene gloves offer abrasion resistance from level 1 to 4 according to EN 388 and from Level 1 up to Level 6 according to ANSI.</p>

Oeko-Tex Certified, Reach Compliant and FDA 21 CFR Compliant

TESTING PARTNERS:



PRODUCT INDEX

Part #	EN388:2016 Cut Level	Coating Material	Coating Coverage	Gauge	Touch Screen	Thumb Crotch	EN388:2016	Page
00-101	A	N/A	N/A	18	Y	N	1X4XA	12
00-102		HCT® nano-foam nitrile	Palm dipped	18	Y	N	4X31A	13
00-110		HCT® micro-foam nitrile	Palm dipped	18	Y	N	4X21A	14
00-111		HCT® nano-foam nitrile	Palm dipped	18	Y	N	4X21A	15
01-101		HCT® micro-foam nitrile	Palm dipped	15	Y	N	4121A	16
01-107		HCT® microfoam nitrile with dots	Palm dipped	15	Y	N	4121A	17
01-108		HCT® microfoam nitrile with dots	3/4 dipped	15	Y	N	4121A	18
01-109		Nitrile	3/4 dipped	15	Y	N	4121A	19
		HCT® microfoam nitrile	Palm dipped					
01-110		Nitrile	Fully dipped	15	Y	N	4142A	20
		HCT® microfoam nitrile						
02-101		HCT® nano-foam nitrile	Palm dipped	15	Y	N	4131A	21
03-101RHV		HCT® Lite nitrile	Palm dipped	15	Y	Y	4121A	22
01-301		B	HCT® micro-foam nitrile	Palm dipped	13	Y	Y	4X42B
02-205R	HCT® nano-foam nitrile		Palm dipped	13	Y	Y	4X42B	24
04-205R	Polyurethane		Palm dipped	13	Y	Y	4X42B	25
01-501	C	HCT® micro-foam nitrile	Palm dipped	13	Y	Y	4X42C	26
02-405R	D	HCT® nano-foam nitrile	Palm dipped	13	Y	Y	4X42D	27
04-405		Polyurethane	Palm dipped	13	Y	Y	4X42D	28
00-408	E	HCT® micro-foam nitrile	3/4 dipped	13	Y	Y	4X42EP	29
	TPV protection		7g poly-acrylic					
01-701	F	HCT® micro-foam nitrile	Palm dipped	13	Y	Y	4X42F	30
09-605R1		Crinkle Latex	Palm dipped	13	N	Y	4X42F	31



* All gloves without polyurethane coating are DMF free.

* All our gloves are silicone free.

KYORENE® PRO

PRODUCT INDEX

Part #	EN388:2016 Cut Level	Coating Material	Coating Coverage	Gauge	Touch Screen	Thumb Crotch	EN388:2016	Page
00-810	A	HCT® micro-foam nitrile	Palm dipped	18	Y	Y	4121A	32
00-832	C	HCT® nano-foam nitrile	3/4 dipped	18	Y	Y	4X42C	33
K01-303		HCT® micro-foam nitrile	Palm dipped	18	Y	Y	4X42C	34
K02-303L		HCT® nano-foam nitrile	Palm dipped	18	Y	Y	4X31C	35
K03-303RHV		HCT® Lite nitrile	Palm dipped	18	Y	Y	4X42C	36
K01-403		HCT® micro-foam nitrile	Palm dipped	18	Y	Y	4X42D	37
K01-403RT	D	HCT® micro-foam nitrile	Palm dipped TPV protection	18	Y	Y	4X42DP	38
K01-424		Nitrile HCT® microfoam nitrile	Fully dipped	18	Y	Y	4X43D	39
K02-403R		HCT® nano-foam nitrile	Palm dipped	18	Y	Y	4X42D	40
K03-403RHV		HCT® Lite nitrile	Palm dipped	18	Y	Y	4X43D	41
K04-403		Polyurethane	Palm dipped	18	Y	Y	4X42D	42
K01-501		E	HCT® micro-foam nitrile	Palm dipped	15	Y	Y	4X43E
00-898	F	HCT® micro-foam nitrile	Palm dipped TPV protection	18 7g poly-acrylic	Y	Y	4X43FP	44
K00-600		Sleeve		13	N/A	N/A	2X4XF	45
K00-600T		Sleeve		13	N/A	N/A	2X4XF	46
K00-800		Sleeve		7	N/A	N/A	3X4XF	47
K01-605		HCT® micro-foam nitrile	Palm dipped	13	Y	Y	4X43F	48
K01-903R		HCT® micro-foam nitrile	Palm dipped	18	Y	Y	4X43F	49
K01-903RT		HCT® micro-foam nitrile	Palm dipped TPV protection	18	Y	Y	4X43FP	50



* All gloves without polyurethane coating are DMF free.

* All our gloves are silicone free.

00-101

EN388 LEVEL A

KYORENE®
THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



11X4XA

EN16350



ATTRIBUTES:

- 18 gauge grey Kyorene® graphene ESD liner

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Aerospace
- Electronics



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00-102

EN388 LEVEL A

KYORENE®

THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



4X31A

EN407



X1XXXX

EN16350



ATTRIBUTES:

- 18 gauge grey Kyorene® graphene ESD liner
- Black HCT® nano-foam nitrile palm coating

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Aerospace
- Electronics



00-110

EN388 LEVEL A

KYORENE®

THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



4X21A

EN407



X1XXXX



ATTRIBUTES:

- 18 gauge grey Kyorene® graphene recycled polyester liner
- Black HCT® microfoam nitrile palm coating

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping
- Aerospace



00-111

EN388 LEVEL A

KYORENE®

THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



4X21A

EN407



X1XXXX



ATTRIBUTES:

- 18 gauge grey Kyorene® graphene recycled polyester liner
- Black HCT® nano-foam nitrile palm coating

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping
- Aerospace



01-101

EN388 LEVEL A

KYORENE®

THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



4121A

EN407



X1XXXX



ATTRIBUTES:

- 15 gauge grey Kyorene® graphene liner
- Black HCT® microfoam nitrile palm coating

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping



OekoTex®
Standard 100



01-107

EN388 LEVEL A

KYORENE®

THE GRAPHENE FIBER

GENERAL
PURPOSE



Dotted palm
for added grip



EN388



4121A

EN407



X1XXXX



ATTRIBUTES:

- 15 gauge grey Kyorene® graphene liner
- Black HCT® microfoam nitrile palm coating with dotted palm

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping



Oeko-Tex®
Standard 100

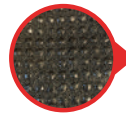


01-108

EN388 LEVEL A

KYORENE®
THE GRAPHENE FIBER

GENERAL
PURPOSE



Dotted palm
for added grip



EN388



4121A

EN407



X1XXXX



ATTRIBUTES:

- 15 gauge grey Kyorene® graphene liner
- Black HCT® microfoam nitrile knuckle coating with dotted palm

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping



Oeko-Tex®
Standard 100



01-109

EN388 LEVEL A

KYORENE®

THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



4121A

EN407



X1XXXX



ATTRIBUTES:

- 15 gauge grey Kyorene® graphene liner
- Blue nitrile knuckle coating with black HCT® microfoam nitrile palm coating

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping



Oeko-Tex®
Standard 100



01-110

EN388 LEVEL A

KYORENE®

THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



4142A

EN407



X1XXXX



ATTRIBUTES:

- 15 gauge grey Kyorene® graphene liner
- Full Blue nitrile coating with black HCT® microfoam nitrile palm coating

FEATURES:

- Full nitrile coating for superior oil & water resistance
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Aerospace
- Automotive manufacturing
- Maintenance



Oeko-Tex®
Standard 100



02-101

EN388 LEVEL A

KYORENE®

THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



4131A

EN407



X1XXXX



ATTRIBUTES:

- 15 gauge grey Kyorene® graphene liner
- Black HCT® nano-foam nitrile palm coating

FEATURES:

- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping
- Aerospace



Oeko-Tex®
Standard 100



03-101RHV

EN388 LEVEL A

KYORENE®
THE GRAPHENE FIBER

GENERAL
PURPOSE



EN388



4121A

EN407



X1XXXX



Thumb Crotch
Reinforcement



TOUCH
SCREEN

ATTRIBUTES:

- 15 gauge grey/hi-vis Kyorene® graphene liner
- Hi-vis HCT® Lite nitrile palm coating

FEATURES:

- Hi-vis reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping



Oeko-Tex®
Standard 100



KYORENE®
THE GRAPHENE FIBER



VERIFIED GRAPHENE®
PRODUCER
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01-301

EN388 LEVEL B

KYORENE®

THE GRAPHENE FIBER



EN388

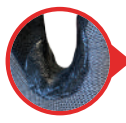


4X42B

EN407



X1XXXX



Thumb Crotch Reinforcement

ATTRIBUTES:

- 13 gauge grey Kyorene® graphene liner
- Black HCT® microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Appliance manufacturing
- Sheet metal handling
- Construction



Oeko-Tex® Standard 100



02-205R

EN388 LEVEL B

KYORENE®

THE GRAPHENE FIBER



Thumb Crotch Reinforcement



EN388



4X42B



ATTRIBUTES:

- 13 gauge grey Kyorene® graphene liner
- Black HCT® nano-foam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Appliance manufacturing
- Sheet metal handling
- Construction



OekoTex®
Standard 100



04-205R

EN388 LEVEL B

KYORENE®

THE GRAPHENE FIBER



EN388



4X42B



**Thumb Crotch
Reinforcement**



**TOUCH
SCREEN**

ATTRIBUTES:

- 13 gauge grey Kyorene® graphene liner
- Polyurethane palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Appliance manufacturing
- Sheet metal handling
- Construction



Oeko-Tex®
Standard 100



01-501

EN388 LEVEL C

KYORENE®

THE GRAPHENE FIBER



EN388



4X42C

EN407



X1XXXX



Thumb Crotch Reinforcement



TOUCH SCREEN

ATTRIBUTES:

- 13 gauge grey Kyorene® graphene liner
- Black HCT® microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Appliance manufacturing
- Metal stamping
- Sheet metal handling
- Construction



Oeko-Tex®
Standard 100



02-405R

EN388 LEVEL D

KYORENE®

THE GRAPHENE FIBER



EN388



4X42D



Thumb Crotch
Reinforcement



TOUCH
SCREEN

ATTRIBUTES:

- 13 gauge grey Kyorene® graphene liner
- Black HCT® nano-foam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Appliance manufacturing
- Metal stamping
- Sheet metal handling
- Handling extruded plastics
- Construction



Oeko-Tex®
Standard 100



04-405

EN388 LEVEL D

KYORENE®

THE GRAPHENE FIBER



EN388



4X42D



**Thumb Crotch
Reinforcement**



**TOUCH
SCREEN**

ATTRIBUTES:

- 13 gauge grey Kyorene® graphene liner
- Black polyurethane palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Appliance manufacturing
- Metal stamping
- Sheet metal handling
- Construction
- Plastics
- Steel handling



Oeko-Tex®
Standard 100



KYORENE®
THE GRAPHENE FIBER



VERIFIED GRAPHENE®
PRODUCER
THE GRAPHENE COUNCIL

00-408

EN388 LEVEL E

KYORENE®

THE GRAPHENE FIBER



EN388



4X42EP

EN511



X2X

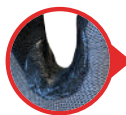
EN407



X2XXXX



CUT



Thumb Crotch Reinforcement



TOUCH SCREEN

ATTRIBUTES:

- 13 gauge grey Kyorene® graphene liner with 7g poly-acrylic lining
- Black HCT® microfoam nitrile knuckle coating

FEATURES:

- Back of hand TPV protection
- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 24PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Construction
- Off-shore drilling
- Maintenance
- Refineries



Oeko-Tex® Standard 100



01-701

EN388 LEVEL F

KYORENE[®]

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Thumb Crotch Reinforcement



TOUCH SCREEN

EN388



4X42F

EN407



X1XXXX



ATTRIBUTES:

- 13 gauge grey Kyorene[®] graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Metal fabrication
- Metal stamping
- Steel processing
- Steel handling
- Recycling



Oeko-Tex[®]
Standard 100



09-605R1

EN388 LEVEL F

KYORENE®

THE GRAPHENE FIBER



Thumb Crotch Reinforcement

EN388



4X42F

EN407



X1XXXX



ATTRIBUTES:

- 13 gauge grey Kyorene® graphene liner
- Black crinkle latex palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Bottling
- Glass handling
- Heavy material handling



Oeko-Tex®
Standard 100



00-810

EN388 LEVEL A

KYORENE[®]

PRO GRAPHENE

GENERAL
PURPOSE



**Enhanced ergonomics*

EN388



4121A

EN407



X1XXXX



Thumb Crotch
Reinforcement



TOUCH
SCREEN

ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Hi vis reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Maintenance
- Warehousing
- Landscaping
- Aerospace
- All general purpose work



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00-832

EN388 LEVEL C

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Thumb Crotch Reinforcement



EN388



4X42C



ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene ESD liner
- Black HCT[®] nano-foam nitrile knuckle coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Light manufacturing
- Aerospace
- Electronics



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K01-303

EN388 LEVEL C

KYORENE[®]

PRO GRAPHENE



Thumb Crotch Reinforcement



ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fiberglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Appliance manufacturing
- Metal stamping
- Sheet metal handling
- Handling extruded plastics
- Construction



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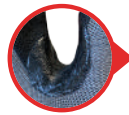
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K02-303L

EN388 LEVEL C

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PRO GRAPHENE



Thumb Crotch Reinforcement



ATTRIBUTES:

- 18 gauge 100D grey Kyorene[®] Pro graphene liner
- Black HCT[®] nano-foam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Metal stamping
- Sheet metal handling
- Steel processing
- Construction



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K03-303RHV

EN388 LEVEL C

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Thumb Crotch Reinforcement



ATTRIBUTES:

- 18 gauge grey/hi-vis Kyorene[®] Pro graphene liner
- Hi-vis HCT[®] Lite nitrile palm coating

FEATURES:

- Hi-vis reinforced thumb crotch for extended wear
- No stainless steel or fiberglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Metal stamping
- Sheet metal handling
- Steel processing
- Construction



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Standard 100



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K01-403

EN388 LEVEL D

KYORENE[®]

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EN388

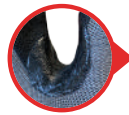


4X42D

EN407



X1XXXX



**Thumb Crotch
Reinforcement**



ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Metal stamping
- Sheet metal handling
- Steel processing
- Construction



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K01-403RT

EN388 LEVEL D

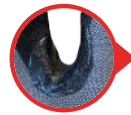
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EN388



4X42DP



**Thumb Crotch
Reinforcement**



**TOUCH
SCREEN**

ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Back of hand TPV protection
- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Oil & gas
- Mining
- Construction



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EN388 LEVEL D

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Thumb Crotch Reinforcement



EN388



4X43D

EN407



X1XXXX



ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner
- Full blue nitrile coating with black HCT[®] microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

APPLICATIONS:

- Aircraft maintenance
- Fluid handling
- Engine assembly
- General handling & maintenance

Packaging: 72PR per carton (All sizes: 6 – 11)



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EN388 LEVEL D

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EN388



4X42D



CUT



**Thumb Crotch
Reinforcement**



**TOUCH
SCREEN**

ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] nano-foam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fiberglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Metal stamping
- Sheet metal handling
- Steel processing
- Construction



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EN388 LEVEL D

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EN388



4X43D



Thumb Crotch
Reinforcement



TOUCH
SCREEN

ATTRIBUTES:

- 18 gauge grey/hi-vis Kyorene[®] Pro graphene liner
- Hi-vis HCT[®] Lite nitrile palm coating

FEATURES:

- Hi-vis reinforced thumb crotch for extended wear
- No stainless steel or fiberglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Metal stamping
- Sheet metal handling
- Steel processing
- Construction



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K04-403

EN388 LEVEL D

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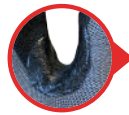
EN388



4X42D



CUT



Thumb Crotch
Reinforcement



TOUCH
SCREEN

ATTRIBUTES:

- 18 gauge grey Kyorene® Pro graphene liner
- Black polyurethane palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Oil & gas
- Mining
- Construction



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K01-501

EN388 LEVEL E

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EN388



4X43E

EN407



X1XXXX



CUT



Thumb Crotch Reinforcement



TOUCH SCREEN

ATTRIBUTES:

- 15 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fiberglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Automotive manufacturing
- Metal stamping
- Sheet metal handling
- Plastics



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EN388 LEVEL F

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EN388



4X43FP

EN511



X2X

EN407



X2XXXX



Thumb Crotch
Reinforcement



ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner with 7g poly-acrylic lining
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Back of hand TPV protection
- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

APPLICATIONS:

- Construction
- Off-shore drilling
- Maintenance
- Refineries

Packaging: 24PR per carton (All sizes: 6 – 11)

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K00-600

EN388 LEVEL F

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EN388



2X4XF



ATTRIBUTES:

- 45cm, 13 gauge grey Kyorene[®] Pro graphene sleeve

FEATURES:

- No stainless steel or fibreglass
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands/arms comfortable
- Odor neutralizing to keep the sleeves smelling fresh

Packaging: 72EA per carton (One Size)

APPLICATIONS:

- Metal fabrication
- Metal stamping
- Steel processing
- Glass handling



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K00-600T

EN388 LEVEL F

KYORENE®
PRO GRAPHENE



EN388



2X4XF



ATTRIBUTES:

- 45cm, 13 gauge grey Kyorene® Pro graphene sleeve with thumb hole

FEATURES:

- No stainless steel or fibreglass
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands/arms comfortable
- Odor neutralizing to keep the sleeves smelling fresh

Packaging: 72EA per carton (One Size)

APPLICATIONS:

- Metal fabrication
- Metal stamping
- Steel processing
- Glass handling



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Standard 100



K00-800

EN388 LEVEL F

KYORENE®
PRO GRAPHENE



EN388



3X4XF



ATTRIBUTES:

- 45cm, 7 gauge grey Kyorene® Pro graphene sleeve

FEATURES:

- No stainless steel or fibreglass
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands/arms comfortable
- Odor neutralizing to keep the sleeves smelling fresh

Packaging: 72EA per carton (One Size)

APPLICATIONS:

- Metal fabrication
- Metal stamping
- Steel processing
- Glass handling



Oeko-Tex®
Standard 100



K01-605

EN388 LEVEL F

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PRO GRAPHENE



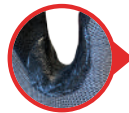
EN388



4X43F



CUT



**Thumb Crotch
Reinforcement**



**TOUCH
SCREEN**

ATTRIBUTES:

- 13 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Oil & gas
- Mining
- Construction



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EN388 LEVEL F

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EN388



4X43F

EN407



X1XXXX



CUT



Thumb Crotch Reinforcement



TOUCH SCREEN

ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Reinforced thumb crotch for extended wear
- No stainless steel or fiberglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Metal fabrication
- Steel processing
- Recycling
- Glass manufacturing



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EN388



4X43FP

EN407



X1XXXX



Thumb Crotch
Reinforcement

ATTRIBUTES:

- 18 gauge grey Kyorene[®] Pro graphene liner
- Black HCT[®] microfoam nitrile palm coating

FEATURES:

- Back of hand TPV protection
- Reinforced thumb crotch for extended wear
- No stainless steel or fibreglass
- Ergonomically shaped for superior fit
- Bacteriostatic kills harmful bacteria
- Thermal regulating to keep the hands comfortable
- Odor neutralizing to keep the gloves smelling fresh

Packaging: 72PR per carton (All sizes: 6 – 11)

APPLICATIONS:

- Oil & gas
- Mining
- Construction



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GUIDE TO EN388 CUT LEVELS

EN388



4 1 2 1 A X

ABRASION (1-4)

BLADE CUT (1-5)

TEAR (1-4)

PUNCTURE (1-4)

CUT TDM TEST (A-F)

IMPACT PROTECTION (X, F, P)

A

EN388



2 Newtons = 203 Grams to Cut

Light Cut Hazards

APPLICATIONS:

Automotive Manufacturing, Light Manufacturing, Maintenance, Warehousing, Landscaping

B

EN388



5 Newtons = 509 Grams to Cut

Light/Medium Cut Hazards

APPLICATIONS:

Automotive Manufacturing, Appliance Manufacturing, Sheet Metal Handling, Construction

C

EN388



10 Newtons = 1019 Grams to Cut

Medium Cut Hazards

APPLICATIONS:

Automotive Manufacturing, Appliance Manufacturing, Metal Stamping, Sheet Metal Handling, Construction

E

EN388



22 Newtons = 2243 Grams to Cut

Medium/High Cut Hazards

APPLICATIONS:

Automotive Manufacturing, Appliance Manufacturing, Metal Fabrication, Metal Stamping, Sheet Metal Handling, Steel Handling, Steel Processing, Construction, Extruded plastics, Recycling

D

EN388



15 Newtons = 1529 Grams to Cut

Medium Cut Hazards

APPLICATIONS:

Automotive Manufacturing, Appliance Manufacturing, Metal Stamping, Sheet Metal Handling, Construction, Extruded Plastics

F

EN388



30 Newtons = 3059 Grams to Cut

High Cut Hazards

APPLICATIONS:

Metal Fabrication, Metal Stamping, Steel Processing, Steel Handling, Recycling

EN388



Test Method:	ABRASION	CUT (Coup Test)	TEAR	PUNCTURE	CUT (TDM-100)	IMPACT PROTECTION
Example 1:	Level 2	Level 4	Level 3	Level 2	Level D	Passed
Example 2:	Level 2	Level 2	Test not performed	Level 1 not achieved	Level E	Test not performed or not applicable
Example 3:	Level 2	Level 2	Level 1 not achieved	Level 2	Test not performed	Passed

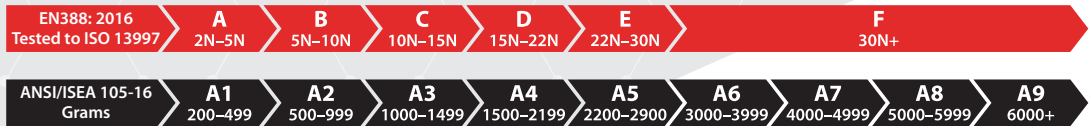
2 4 3 2 D P

2 2 X X E

2 2 X 2 X P

EN388 VS ANSI CUT LEVELS

EN388 measures **force** using **Newton** VS ANSI/ISEA 105 measures **mass** using **grams**



$N = g \times 0.00981$
force = mass \times 0.00981

THE NEW GLOBAL CUT STANDARDS

EN388: 2016 (ISO 13997)

EN388:2016 uses both the Coup Test and the TDM-100 test machine to determine cut levels. The TDM-100 test is used in addition to the Coup Test in order to accommodate the limitations of the Coup Test (dulling of the blade) when testing strong cut-resistant fabrics.

Coup Test: based on the ratio of rotations required to cut through the fabric

- Measured from level 1-5

TDM-100: measures how much force, in Newton, can be applied before achieving cut-through

- Measured from level A-F

ANSI/ISEA 105-2016 (ASTM F2992-15)

ANSI/ISEA 105-2016 uses the TDM-100 cut machine to test the cut level. The test measures how much force, in grams, can be applied before achieving cut-through.

To accommodate stronger cut-resistant fibers, the new standard measures in levels 1 through 9, as opposed to the previous levels which only went up to level 5.

- Measured from level A1-A9

HEAT PROTECTION

EN407



ABCDEF

PERFORMANCE LEVELS	1	2	3	4
A. Burning Behavior (after flame & after glow time)	< 20s no requir.	< 10s < 120s	< 3s < 25s	< 2s < 5s
B. Contact Heat (cont. temp. & threshold time)	100° > 15s	250° > 15s	350° > 15s	500° > 15s
C. Convective Heat (heat transfer delay)	> 4s	> 7s	> 10s	> 18s
D. Radiant Heat (heat transfer delay)	> 7s	> 20s	> 50s	> 95s
E. Small Drops Molten Metal (number of drops)	> 10	> 15	> 25	> 35
F. Large Quantity Molten Metal (mass)	> 30g	> 60g	> 120g	> 200g

s = seconds, g=gram

COLD PROTECTION

EN511



ABC

Protection against cold is expressed by a series of three performance levels. All gloves must achieve at least performance level 1 for abrasion and tear.

CONVECTIVE COLD (X - 4)

CONTACT COLD (X - 4)

WATER PERMEABILITY (0 or 1)

EN511



ABC

Resistance to **convective cold**
(performance level 0 to 4)
based on the thermal insulation
properties of the glove which
are obtained by measuring
the transfer of cold
via convection

A

Resistance to **contact cold**
(performance level 0 to 4)
based on the thermal resistance
of the glove material when
exposed to contact with
a cold object

B

Penetration by water (0 or 1)
0 = water penetration
1 = no water penetration

KYORENE® & KYORENE® PRO

UNIQUE PROPERTIES

BACTERIOSTATIC

- Our Kyorene® & Kyorene® Pro fibres have inherent bacteriostatic properties: they regulate bacteria and inhibit the reproduction and growth of new bacteria.
- Other products on the market use a chemical treatment, such as silver, to obtain bacteriostatic properties. However, these treatments can be washed out after time and become ineffective.
- Kyorene® & Kyorene® Pro fibres keep their bacteriostatic properties intact after 50 wash cycles

KYORENE® BACTERIOSTATIC TEST RESULTS:

Test Method: ASTM E2149-13A

Test Item	Reduction Rate	Evaluation
Staphylococcus Aureus	97.5%	Has Bacteriostatic Effect
Escherichia Coli (E-Coli)	98.8%	
Candida Albicans	98.1%	

Test Method: ASTM E2149-13A – After 50 Washes

Test Item	Reduction Rate	Evaluation
Staphylococcus Aureus	84.7%	Has Bacteriostatic Effect After 50 Washes
Escherichia Coli (E-Coli)	98.0%	
Candida Albicans	73.9%	

HEAT DISSIPATION

Thermal transmittance is measured using test method GB/T 11048-2008 Method B. Thermal transmittance (Watts per square meter Kelvin) is defined as the rate of transfer of heat through one square meter of a structure divided by the temperature across the structure. The higher the value, the more transmittance or heat dissipation is occurring. Testing according to this well-established method for textiles has shown that the addition of Kyorene® to the fabric has 1.5 times more thermal transmittance than the fabric without. In plain English, the data shows Kyorene® and Kyorene® Pro provide for a cooler and less sweaty hand inside a glove.

SIZING GUIDE

Measure the circumference of your dominant hand just below your knuckles. The measurement, in centimeters, determines what glove size you wear. See sizing chart below.



GLOVE SIZE	6	7	8	9	10	11
HAND MEASUREMENT	22cm	23cm	24cm	25cm	26cm	27cm

CUFF COLOR CORRESPONDS TO GLOVE SIZE

WASHING INSTRUCTIONS





- Experience and laboratory trials with 100% Kyorene® & Kyorene Pro® gloves and fabrics have proven that dry cleaning as well as laundering are suitable cleaning methods.
- We recommend not to use any bleaching or oxidising ingredients or any fabric softeners.
- Recommended washing temperature is between 40°C and 60°C (104–140°F) with mild detergents.
- The drying process may cause felting on the fabric surface. Drying temperature should not exceed 70°C (158°F).



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