



 **HexArmor**[®]
WITH **SuperFabric**[®]





PRODUCT CATALOG 2011

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PRESIDENT'S LETTER

Welcome to the HexArmor catalog, our first comprehensive safety solutions guide for advanced technology PPE. The web is great, but if you are like us, you still like a good book. So here it is: our first full-line catalog. We hope you like it and hope you like our story.

Our mission at HexArmor has always been the same: To be the trusted advisors for your safety program. There is a lot of confusion out there in the market: What standard do I use? What is the difference between EN388 Level 5 and an ASTM level 5? What do the puncture tests really indicate? What is it relevant for? What is the difference between this product and that product? So it all boils down to this: Who do I trust will give me straight answers? We want you to think of us when you ask these questions.

The products in the following pages were developed by our team in close conjunction with our top designers (you, our customers). Over the years, we have become pretty good at listening to our customers and helping them solve difficult problems. Give us a call and let our team come in and help you with your needs.

Thanks for choosing HexArmor.

A stylized, handwritten signature in blue ink, appearing to read "SV".

Steve VanErmen
President & CEO
steve@hexarmor.com

WE COULD HAVE SPENT MILLIONS ON A FANCY RACE CAR...



Chrome Series: 4026

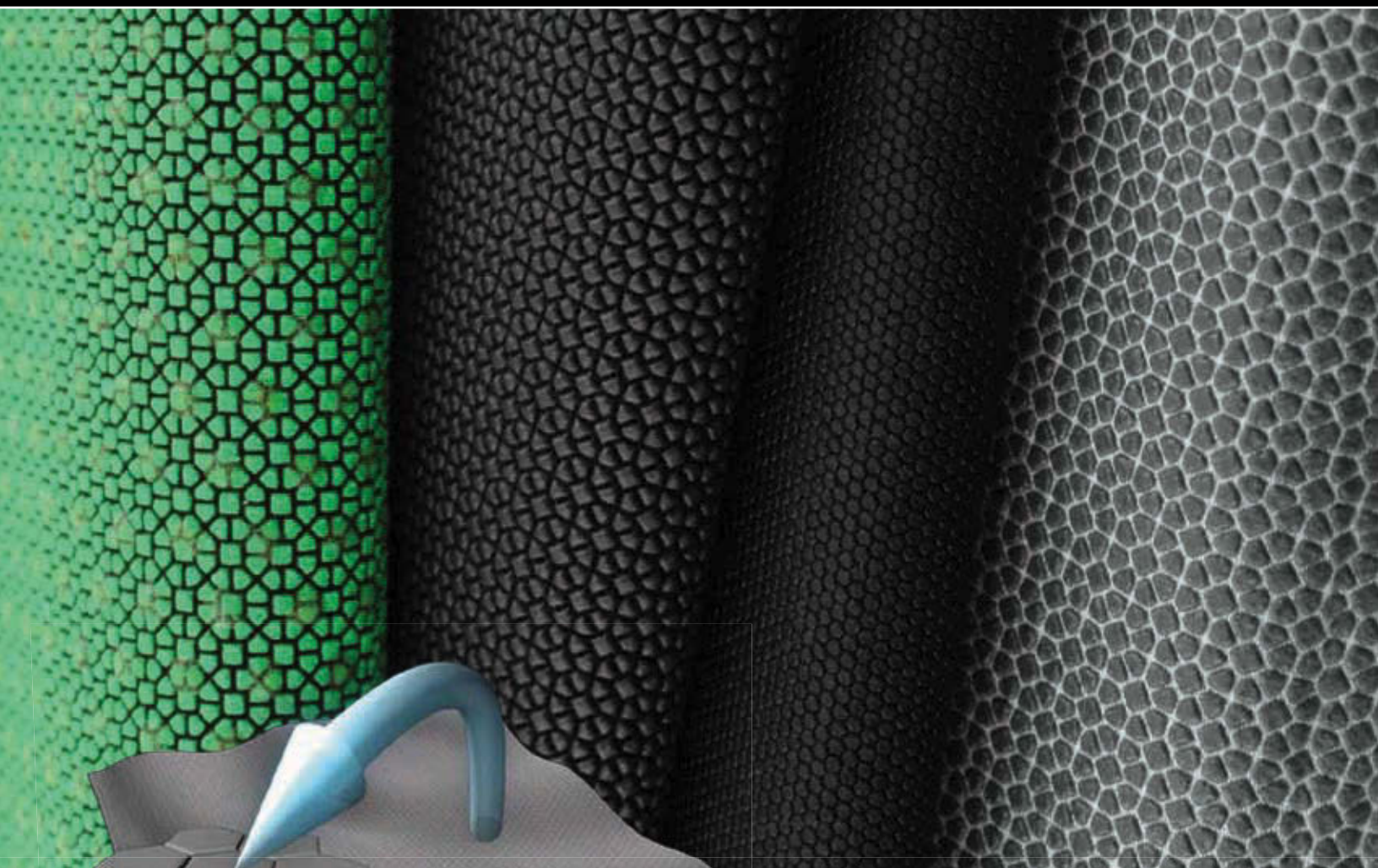
INSTEAD..

We invested over **\$20 MILLION** developing the cutting edge safety products that keep your employees safe and productive.



WHAT IS SUPERFABRIC®?

HexArmor® has partnered with HDM Inc. to design technologies with unique capabilities for the safety market. **SuperFabric®** technology, by HDM Inc., is a finishing process that takes ordinary fabrics and transforms them into high performance products collectively known as **SuperFabric®** brand materials. These new protective fabrics can be engineered for optimum resistance to abrasions, lacerations, punctures, stains, and more, while remaining highly flexible. **SuperFabric®** brand material simultaneously incorporates a variety of protective fabric functions that no other known fabric can simulate, including industry-leading cut-puncture-and needle-resistance.



HexArmor utilizes variations of **SuperFabric®** technologies that are directly integrated into high-performance products (gloves, arm, and body protection) through different patterns of cut/sewn and direct print technologies and processes.



Scan this code with your smart phone to get more information about **SuperFabric®** technology.

PERFORMANCE ADVANTAGE



UNBEATABLE CUT-RESISTANCE

- Exceeds ASTM/ISEA and CE Level 5
- Shielding effect keeps sharp hazards (metal, blades, glass) from slipping between fibers and causing injury
- Won't snag or abrade like typical fiber based cut-resistant products



INDUSTRIAL PUNCTURE-RESISTANCE

- Guardplates act as a shield from punctures, deflecting and blocking hazards
- Spacing between guardplates provides flexibility and breathability



INDUSTRY LEADING NEEDLE-RESISTANCE

- Layered guard plates arrest, trap, and block needles and other hazards



UNMATCHED ABRASION-RESISTANCE

- Incredibly high abrasion-resistance, outlasting competitors and providing protection longer into product life
- Longer durability means better ROI and higher performance later in product life



GATOR GRIP TECHNOLOGY®

4020 GGT5®



4021X GGT5® Mud



4031 GGT5® Chill



MECHANICS' STYLE

4018 Mechanics'+



Chrome Series: 4022 Cut 5



Chrome Series: 4023 Cut 5 360°



Chrome Series: 4024 Cut 5 Impact



Chrome Series: 4025 Cut 5 Impact 360°



Chrome Series: 4026 Cut 5 Impact Hi-Vis



Chrome Series: 4028 Cut 5 Impact SlipFit



NXT™

NXT 10-301



NXT 10-302



HOTMILL

Hotmill 8100/HWT8100



NEEDLESTICK RESISTANT

Sharpmaster II™: 9014



Sharpmaster HV™ 7082



PointGuard™ X 6044



Hercules™ NSR 3041



NSR 4041



General Search & Duty 4045



Leather Tactical 4046



8" Arm Guard AG8TW



**COATED
PERFORMANCE FIBER**

Level Six Series: 9003



Level Six Series: 9010



Level Six Series: 9011



Level Six Series: 9012



**LEATHER/COATED
SUPPORTED**

SteelLeather™ III 5033



BigJake® Premium 5040/5041



TenX Threesixty 7090



ARM GUARDS & APRONS

9" Arm Guard AG10009S



19" Arm Sleeve AS019S



20X22 Apron AP102222



20X29 Apron AP229-102229



36" Apron AP361



24X30 Apron AP321-322



24X38 Apron AP382



GGT5

**EXTREME
CUT, PUNCTURE,
CONTUSION PROTECTION**

THE GGT5® SERIES

Shouldn't Advanced Technology gloves actually have Advanced Technology in them? The oil-gas industry has heard the call for better hand protection and is changing requirements to include premium protection. The GGT5® Series is the most complete glove series for oil-gas, combining superior performance levels in cut and puncture-resistance, smash protection, and grip enhancements for the toughest applications.



PRODUCT FEATURES:

We designed the GGT5® series with input from some of the largest oil-gas companies and contractors in the industry to solve a large hand injury problem.

Advanced technology gloves made with SuperFabric® material provide:

- Highest cut-resistance, exceeds ISEA and CE level 5 in enhanced areas
- Puncture protection from wickers, burrs, and cable wire
- GripTek™ palm and thumb area for maximum grip
- Grip surfaces to match the needs of your application, from saturated fluids to dry
- High visibility coloring for easy signaling and compliance checks
- Enhanced impact protection on back of hand
- Launderable

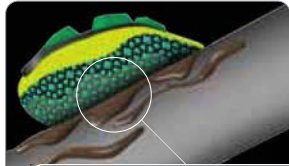


Scan this code with your smart phone to get more information about Gator Grip Technology.®

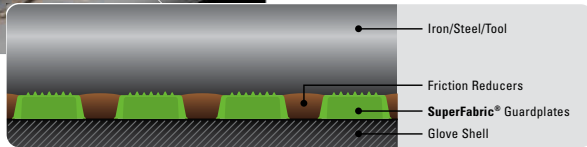
4020X GGT5®

RECOMMENDED USES:

Low viscosity solutions (LGC's, friction reducers), maintenance, rig and site operations
Available in sizes 7/S through 12/3XL



SuperFabric® guardplates bite through and channel away lubricant, creating a "snow tire" effect. This gives the user the ability to grip oily or lubricated parts and tools.



HexArmor
Protection Zone

ISEA
CUT: 5

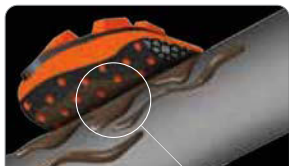
CE **PENDING**

Impact Protection

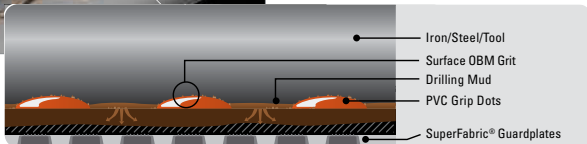
4021X GGT5® MUD

RECOMMENDED USES:

Medium/high viscosity solutions (oil based muds), maintenance, rig and site operations
Available in sizes 7/S through 12/3XL



Surface wicks away lubricant, leaving particles that create friction and improve grip on metal tools.



HexArmor
Protection Zone

ISEA
CUT: 5

CE **4533**

Impact Protection

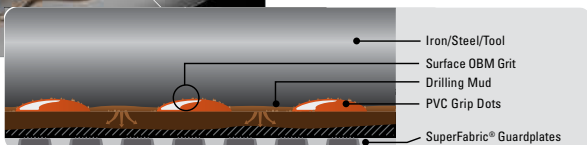
4031 GGT5® CHILL

RECOMMENDED USES:

Wet medium/high viscosity solutions (oil based muds), maintenance, rig and site operations
Available in sizes 7/S through 12/3XL



Surface wicks away lubricant, leaving particles that create friction and improve grip on metal tools.

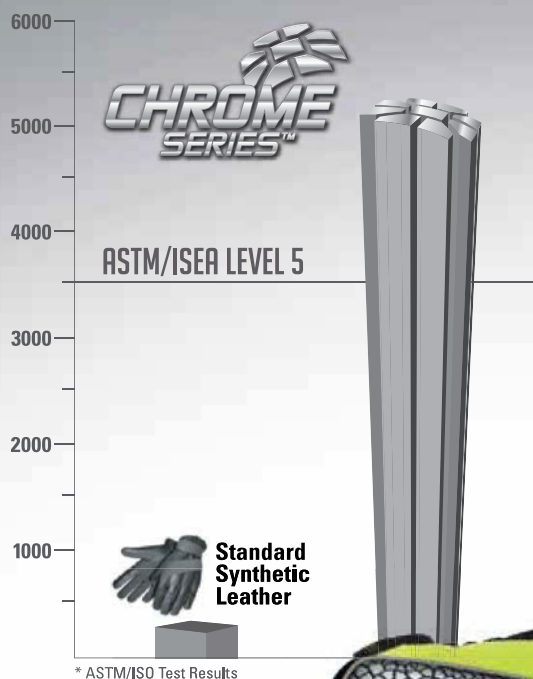


HexArmor
Protection Zone

ISEA
CUT: 5

CE **PENDING**

Impact Protection



CHROME SERIES™ 20X MORE CUT-RESISTANT THAN STANDARD SYNTHETIC LEATHER

When 250 grams is considered cut-resistant, you have problems. That's why we made the Chrome Series™ with safety in mind. Chrome Series™ gloves exceed ISEA Cut Level 5, that's over 5000 grams of cut-resistance! It would take twenty synthetic leather mechanics' gloves to stop the same hazards as one pair of Chrome Series™ gloves.

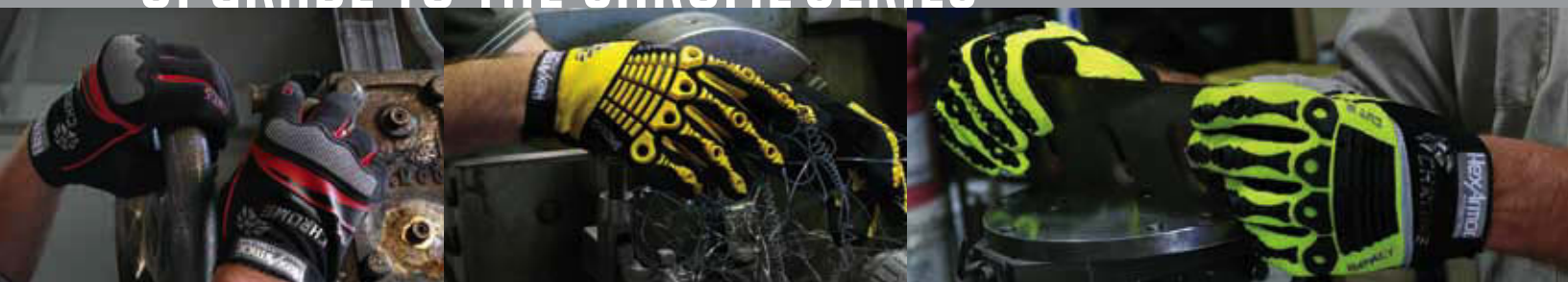
When you want True Cut Level 5, push your safety program to the redline with the Chrome Series™.



**PUSH
SAFETY
TO THE
REDLINE**

WITH THE ONLY TRUE CUT LEVEL 5 ON THE MARKET

UPGRADE TO THE CHROME SERIES™



CHROME SERIES™



CHROME SERIES:
4022 CUT 5



CHROME SERIES:
4024 CUT 5 IMPACT



CHROME SERIES:
4026 CUT 5 IMPACT HI-VIS



CHROME SERIES:
4025 CUT 5 IMPACT 360°



CHROME SERIES:
4023 CUT 5 360°

CHROME SERIES:
4028 CUT 5 IMPACT SLIPFIT™

Turn to pages 24–25 for features and protection.

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Scan this code with your smart phone to get more information about the Chrome Series.™



HexArmor[®] NXT[™]

WITH SuperFabric[®]



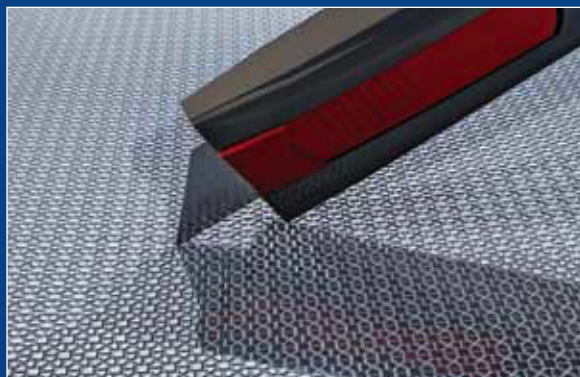
NXT[™] SERIES

Take a look at the pictures here. You get it right? We basically take a knit glove structure and make it **A TON** stronger by adding our **SuperFabric[®]** armor plating on top of a performance shell. TruShield[®] performance means we give your employees the best tools in safety: high cut-resistance, shielding from puncture hazards, and durability which keeps them safer, longer. In other words, NXT is the ultimate in mechanical protection—a true revolution in hand protection technology.



TRU-CUT-RESISTANCE™

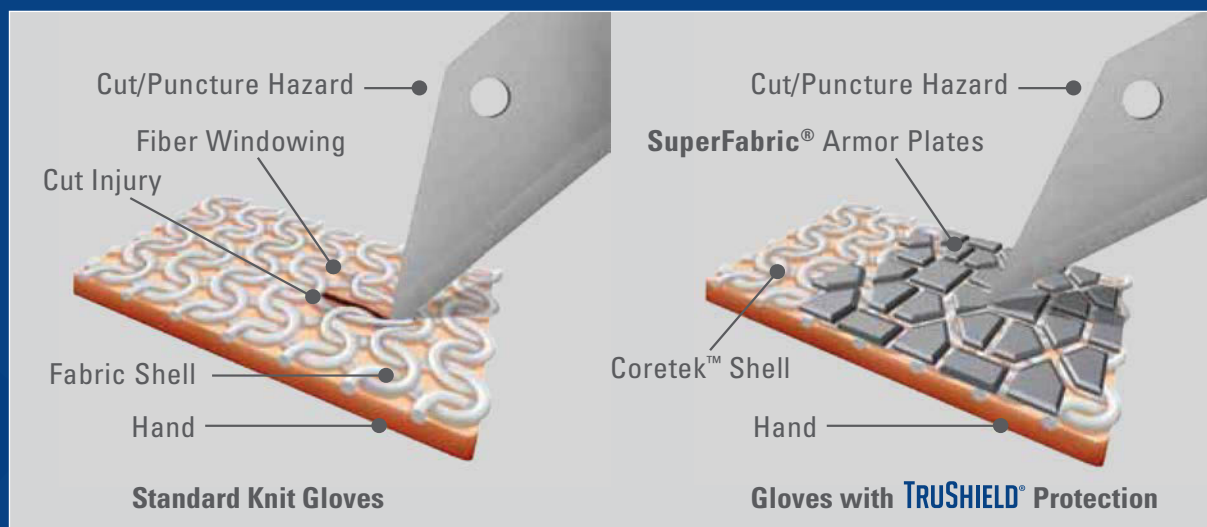
NXT™ products are made with **SuperFabric®** armor plating combined with our own proprietary blend of Coretek™ performance fibers. The plating is bonded to the fibers reducing the ability for the fibers to ‘window’ or separate, preventing cut and jagged puncture hazards from reaching the user’s hand.



- High performance on standard industry tests (exceeds Level 5 on ASTM F1790 and EN388)
- Exceptional performance in real-world application testing— NXT doesn’t have the weaknesses of standard fiber knit products which provide less protection from cuts and punctures when immobilized, when under tension or load, or coated
- Provides 12–14x more abrasion-resistance than fiber knit products, which means higher performance longer into the product’s life
- UV stable, washable

SHIELDING

A picture is worth a thousand words, right? One look at the graphics below and it’s easy to see why NXT products keep you safer than standard knit gloves. TruShield® performance means you’re getting the highest rated hand shield on the market— armor for your hands.



- Reduces ability of sharp hazards to skip between fibers and cut/puncture the hand
- Keeps burrs and other sharp edges above the surface of plates, reducing the likelihood of a puncture or tear
- Dulling: hard plates dull even the sharpest hazards as they move across surface, reducing ability to injure



NXT™ SERIES



NXT 10-301



FEATURES:

- Back of hand protection
- Designed to reduce potential razor knife slips, grinding wheel abrasions to back of hand
- Nitrile palm coating is strong in dry and oil grip situations
- Coretek™ fiber keeps hands cool & comfortable while providing best-in-class dexterity and all around cut protection
- Launderable

RECOMMENDED USES:

Warehousing, flexible packaging, grinding, box cutting
Available in sizes 7/S through 11/XXL



Coretek™
Performance Fiber

ISEA
CUT: 1

CE 4143

TruShield™
Performance Area

ISEA
CUT: 5

Plated Area
Unplated Area



Scan this code with your smart phone to get more information about the NXT Series.™



NXT 10-302



FEATURES:

- 3-finger coverage
- Targets primary area for knife strikes in food service, processing, and even general manufacturing applications
- Coretek™ fiber keeps hands cool & comfortable while providing best-in-class dexterity and all around cut protection
- Launderable and sanitizeable
- Ambidextrous, sold in eaches
- Meets European food migration testing (EN 1186:2002 SI 1998 No 1376)

*Note enhanced area is rated ISEA and CE level 5 for cut-resistance

RECOMMENDED USES:

Food service, cutting and processing, de-boning applications, plastics trimming

Available in sizes 6/XS through 11/XXL



Coretek™
Performance Fiber

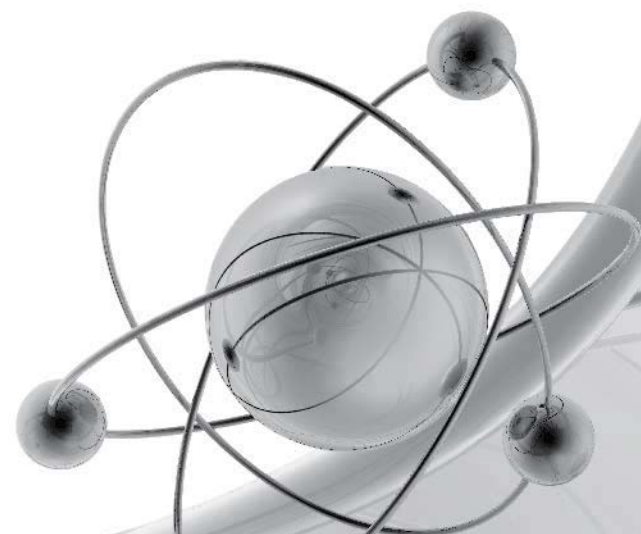
ISEA
CUT: 1

CE
414X

TruShield™
Performance Area

ISEA
CUT: 5

Plated Area
Unplated Area



HEAT ARMOR

All jokes aside, this really is one of our hottest products. We're talking Level 5 (CE and ISEA) cut-resistance in a heat-resistant shell, that's over 4x more cut-resistance than a standard hotmill glove. When your job calls for work on the hot side, make sure you have cut protection that can take the heat. Get HeatArmor™ Hotmill and battle tough hazards head-on.



Scan this code with your smart phone to get more information about the Hotmill 8100/HWT8100.

BRING ON THE HEAT

LEVEL 5 CUT-RESISTANCE (CE AND ISEA)

HOTMILL 8100/HWT8100



FEATURES:

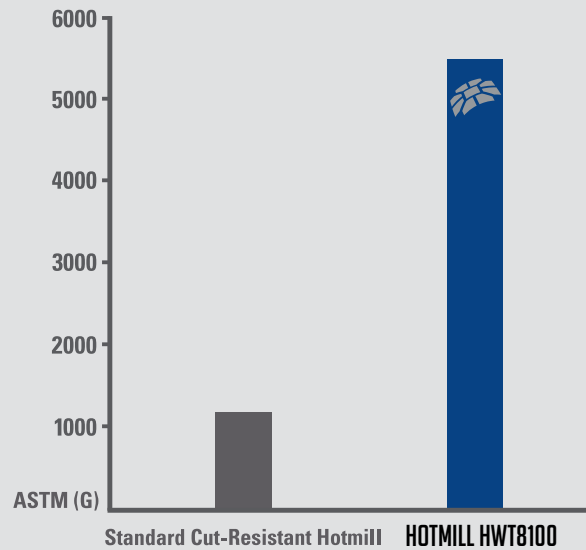
- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market— Exceeds ISEA and CE Level 5 (over entire hand)
- 360° Level 5 cut-resistance
- Rates CE Level 2 for contact heat, up to 250°C
- Level 5 ISEA 105 in accordance with ASTM 1776, 320°C (HWT8100)
- 13oz cotton shell, burlap lining (HWT8100)
- Extended canvas cuff, allows for easy removal

RECOMMENDED USES:

General steel mill, pipes, cables, metal scrap, glass, paper, petrochemicals
Available in sizes 8/M through 10/XL

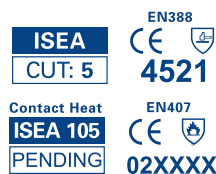


HEAT/CUT COMPARISON



HexArmor
Protection Zone

8100



HWT8100



DON'T GET STUCK

Our needle-resistant gloves and arm guards aren't just lab tested, we test them with actual .25 gauge needles to give you maximum protection and peace of mind.

"The best hand protection on the market."

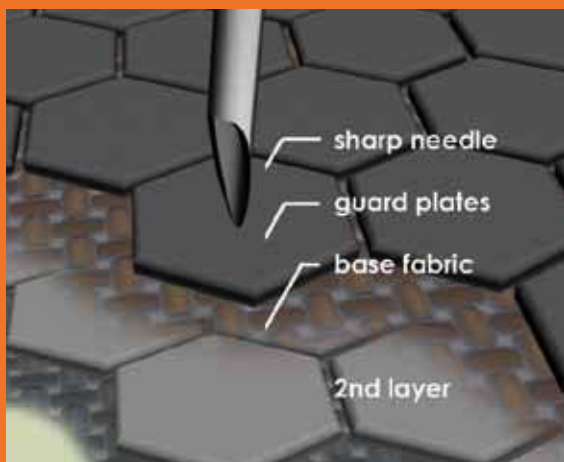
—Regional Safety Manager, large US Waste Handler/Recycler



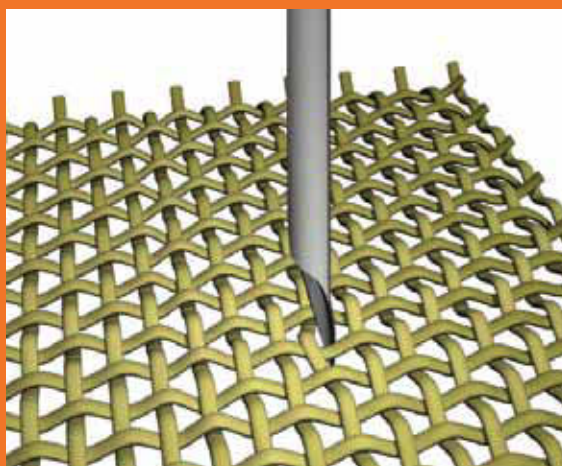
Scan this code with your smart phone to get more information about needlestick-resistance.

HOW IT WORKS

Needle injuries can be extremely dangerous and costly, so why risk a potential disaster by using gloves that don't stop needles? HexArmor realizes that one needlestick can have devastating effects on employees and businesses alike, so we go the extra mile to test our products beyond industry standards. Our demonstration tells the whole story: don't stick your employees with faulty protection, upgrade to HexArmor.



HexArmor with **SuperFabric®** materials



Standard open-weave fiber

THE HEXARMOR DIFFERENCE

HexArmor® products are tested against competitors using a modified EN388/ASTM F1342-05 with a medical needle substituted for the standard probe. This simulates real world situations with needle risks.

- Layering of **SuperFabric®** guardplates provide highest needlestick-resistance on the market
- Tested using actual .25 gauge needles on modified ASTM1342-05 test



HexArmor
Protection Zone
ISEA
CUT: 5

CE 
4544

SHARPSMASTER II™: 9014

FEATURES:

- Highest needlestick-resistance available provided by the layering of **SuperFabric®** brand material
- Highest level of cut-resistance on noted enhanced areas— Exceeds ISEA/CE Level 5
- Single-glove needle solution with incredible dexterity and comfort
- Wrinkle rubber palm coating with Actifresh™ anti-microbial treatment
- Launderable

RECOMMENDED USES:

Waste/recycle sorting, laundry & linen, wastewater/sewage treatment
Available in sizes 7/S through 10/XL



INDUSTRY-LEADING NEEDLESTICK PROTECTION

POINTGUARD™ X 6044



FEATURES:

- Highest needlestick-resistance available provided by the layering of **SuperFabric®** brand material
- Highest level of cut-resistance on noted enhanced areas—Exceeds ISEA/CE Level 5
- Recommended use as under-glove solution with appropriate top-glove combination
- Lightweight cotton shell with elastic wrist support
- Launderable

RECOMMENDED USES:

Glove liner, waste/recycle sorting, laundry & linen, wastewater/sewage treatment
Available in sizes 5/XXS through 11/XXL



3 Layers

HexArmor
Protection Zone

ISEA

CUT: 5

CE 
4512



SHARPMASER™ HV 7082

FEATURES:

- Highest needlestick-resistance available provided by the layering of **SuperFabric®** brand material
- Highest level of cut-resistance on noted enhanced areas—Exceeds ISEA/CE Level 5
- Single-glove needle solution with incredible dexterity and comfort
- Flat nitrile dip
- Launderable

RECOMMENDED USES:

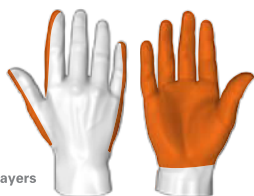
Waste/recycle sorting, laundry & linen, wastewater/sewage treatment
Available in sizes 7/S through 10/XL

HexArmor
Protection Zone

ISEA

CUT: 5

CE 
4533



3 Layers



8" NEEDLE RESISTANT ARM GUARD AG8TW

FEATURES:

- Highest needlestick-resistance available provided by the layering of **SuperFabric®** brand material
- Highest level of cut-resistance on noted enhanced areas—Exceeds ISEA/CE Level 5
- Won't fall down like knit sleeves, lightweight and cooler than knit or leather alternatives
- Spandex wrist insert with thumb hole, snap fasteners
- Launderable

RECOMMENDED USES:

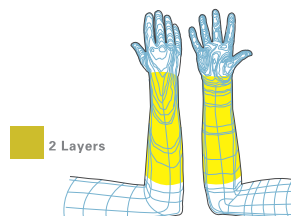
Recycle sorting, hospital waste, laundry & linen, wastewater
Available in sizes 7/S through 12/3XL

HexArmor
Protection Zone

ISEA

CUT: 5

CE 
4501



2 Layers



HERCULEX™ NSR 3041

FEATURES:

- Highest needlestick-resistance available provided by the layering of **SuperFabric®** brand material
- Highest level of cut-resistance over entire hand— Exceeds ISEA/CE Level 5
- Full coverage design, pre-curved shape for maximum comfort and ultimate protection
- Specialized silicon gripping surface on palm
- Launderable

RECOMMENDED USES:

Waste/recycle sorting, laundry & linen, wastewater/sewage treatment

Available in sizes 7/S through 10/XL

HexArmor
Protection Zone

ISEA
CUT: 5

CE
PENDING



NSR 4041

FEATURES:

- Highest needlestick-resistance available provided by the layering of **SuperFabric®** brand material
- Highest level of cut-resistance in enhanced areas— Exceeds ISEA/ CE Level 5
- Specialized silicon gripping surface on palm
- Launderable

RECOMMENDED USES:

Law enforcement, waste/recycle sorting, laundry & linen handling

Available in sizes 7/S through 11/XXL

HexArmor
Protection Zone

ISEA
CUT: 5

CE
PENDING



GENERAL SEARCH & DUTY 4045

FEATURES:

- Highest needlestick-resistance available layering of 2 layers of **SuperFabric®** brand material (in fingertips)
- Highest level of cut-resistance in enhanced areas— Exceeds ISEA/ CE Level 5
- AirMesh™ breathable back of hand with Airprene wrist band, velcro closure
- Launderable

RECOMMENDED USES:

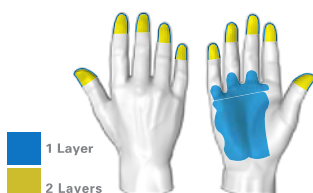
General search & duty, seizure/pat downs, correctional operations, apprehension/control

Available in sizes 7/S through 11/XXL

HexArmor
Protection Zone

ISEA
CUT: 5

CE
4532



LEATHER TACTICAL ENFORCEMENT 4046

FEATURES:

- Highest needlestick-resistance available layering of 2 layers of **SuperFabric®** brand material (in fingertips)
- Highest level of cut-resistance in enhanced areas— Exceeds ISEA/CE Level 5
- Soft grain leather for tactile comfort
- Cut-resistant liner for back of hand protection

RECOMMENDED USES:

General search & duty, seizure/pat downs, correctional operations, apprehension/control

Available in sizes 7/S through 11/XXL

HexArmor
Protection Zone

ISEA
CUT: 5

DuPont™
Kevlar® Shell
ISEA
CUT: 3

CE
4512



HIGH PERFORMANCE MECHANICS' GLOVES

"In looking at the years leading up to the implementation of HexArmor®, we had 65 laceration hand injuries. In the two years since we implemented two HexArmor® solutions, we have not had a single laceration or puncture from wire pokes, sheathing, and wire stripping knife injuries."

- Safety Manager, Major Utility Distribution Group



Scan this code with your smart phone to get more information about mechanics' style gloves.

THE ONLY MECHANICS' STYLE GLOVE WITH CUT AND PUNCTURE-RESISTANCE!

Here's the bottom line: our mechanics' products offer the most cut and puncture protection on the market. It's not a marketing campaign, it's what our customers tell us on a daily basis. HexArmor mechanics' products don't pretend to be safety gloves, they are a mechanic's most important set of tools. Everyone is making flashy racing gloves, but HexArmor makes the only mechanics' glove with extreme cut and puncture protection.

If you're looking for a glove that will stop a wire poke or metal burr puncture, get your hands on the Mechanics'+ 4018. For a glove that feels like your current mechanics' glove, but with a whole new level of cut protection, reach for the Chrome Series.™

4018 MECHANICS'+



FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market— Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Synthetic leather palm enhances grip in dry and light oil applications, while providing dexterity to utilize tools and equipment
- Launderable

RECOMMENDED USES:

General work, Maintenance & mechanics', wires, metal, wood, glass

Available in sizes 6/XS through 12/3XL



HexArmor
Protection Zone

ISEA
CUT: 5

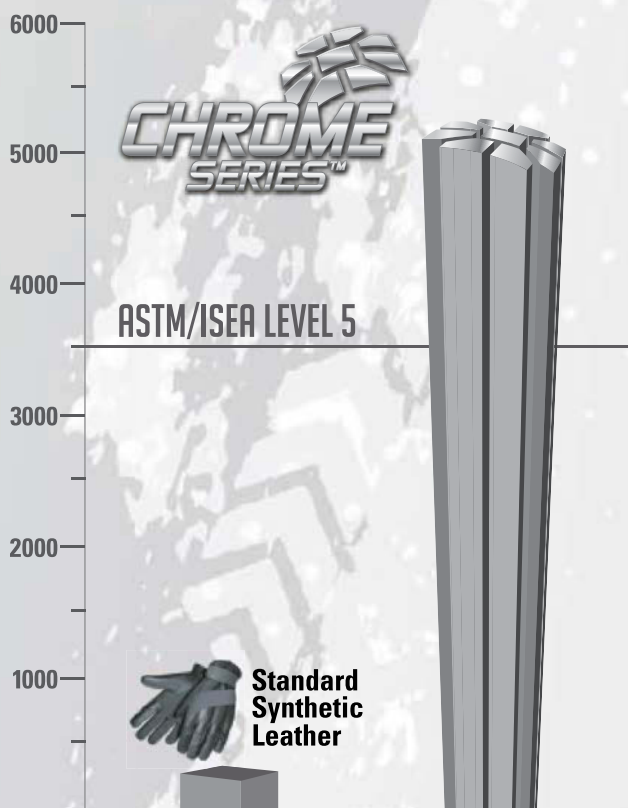
CE 4522





Employees like mechanics' gloves: form-fitting, cool-looking, comfortable. Safety managers don't like them because the thin synthetic leather and nylon aren't strong enough to stop injuries. This got us thinking— could we use our advanced technology to make super SAFE mechanics' gloves?

We went to the lab and started working on a new version of **SuperFabric®** that would feel softer and more flexible on the hand, but still deliver high performance. When we reformulated the technology, we came up with something that was on a whole new level of performance and comfort. The new guardplates turned out extremely strong and silver in appearance— which reminded us of steel, or more specifically, chrome. The rest is history— history about making **the world's highest performance mechanics' gloves.**



* ASTM/ISO Test Results

CHROME SERIES™ ADVANTAGE:

- Over 25x more cut-resistance than standard mechanics' gloves
- Only mechanics' style glove to exceed ASTM and CE Level 5 cut-resistance
- Aggressive designs for a wide variety of applications and cut, impact/contusion hazards
- Launderable— increases product life and ROI

MARKETS:

- Oil-Gas operations
- Metal fabrication
- Steel manufacturing
- Extrication
- General work
- Lumber/paper
- Facility operations
- Energy/utilities

APPLICATIONS:

- Oil-Gas operations
- Maintenance, mechanics
- Machine repair
- Extrication
- General work
- Glass, metal, wood handling

PRODUCT	FEATURES							PROTECTION
	PALM CUT-RESISTANCE	360° CUT-RESISTANCE	BACK OF HAND IMPACT PROTECTION	KNUCKLE PATCH	SLIP FIT CUFF	PVC-PAINTED PALM GRIP	PVC DOT'S GRIP	
4022 CUT 5 CHROME SERIES Available in sizes 7/S-11/XXL  								 HexArmor Protection Zone  HexArmor Protection Zone ISEA CUT: 5 4521
4023 CUT 5 360° CHROME SERIES Available in sizes 7/S-11/XXL  								 HexArmor Protection Zone  HexArmor Protection Zone ISEA CUT: 5 4522
4024 CUT 5 IMPACT CHROME SERIES Available in sizes 7/S-11/XXL  								 HexArmor Protection Zone HexArmor Impact Protection  HexArmor Impact Protection ISEA CUT: 5 4532
4025 CUT 5 IMPACT 360° CHROME SERIES Available in sizes 7/S-11/XXL  								 HexArmor Protection Zone HexArmor Impact Protection  HexArmor Impact Protection ISEA CUT: 5 4522
4026 CUT 5 IMPACT HI-VIS CHROME SERIES Available in sizes 7/S-12/3XL  								 HexArmor Protection Zone HexArmor Impact Protection  HexArmor Impact Protection ISEA CUT: 5 4521
4028 CUT 5 IMPACT SLIPFIT™ CHROME SERIES Available in sizes 7/S-11/XXL  								 HexArmor Protection Zone HexArmor Impact Protection  HexArmor Impact Protection ISEA CUT: 5 4521



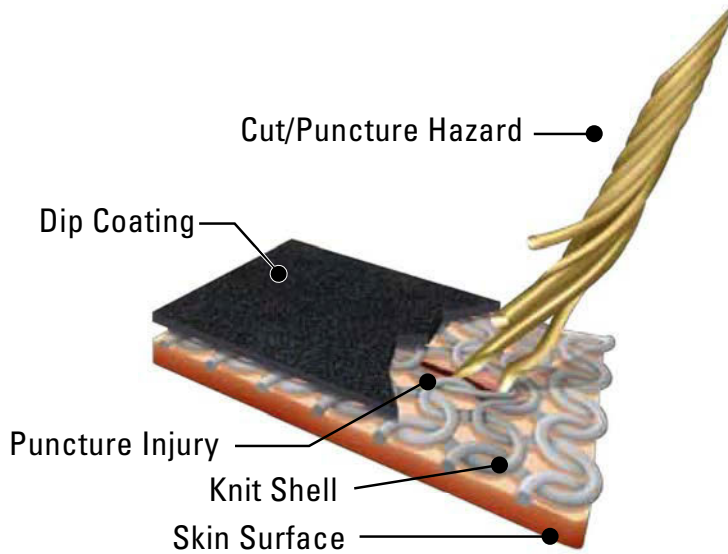
A NEW LEVEL OF PROTECTION: LEVEL SIX SERIES

Why Level Six Series? Because these products are so cut-and-puncture-resistant that the industry doesn't have a standard to rate them. We take the same knit gloves you wear now and insert technology that will act as a shield against the toughest hazards your job site can throw at you. Are you ready to take your hand protection to the next level?

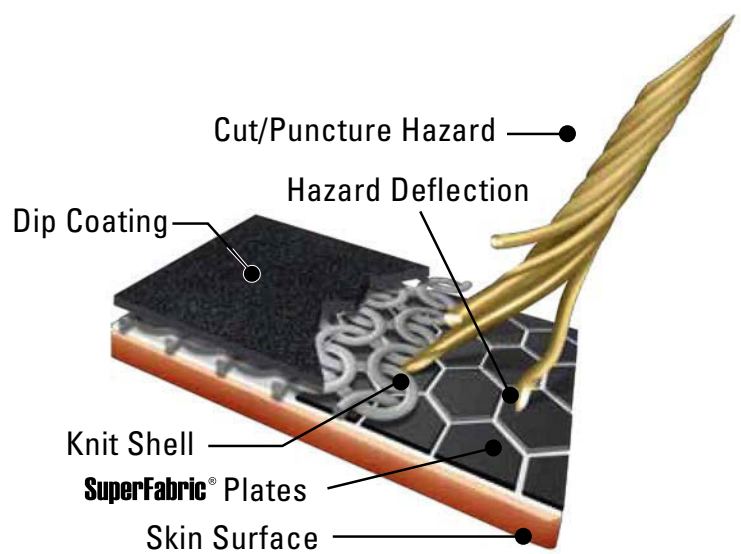


Scan this code with your smart phone to get more information about the Level Six Series.

THE PERFECT UNION OF PERFORMANCE AND COMFORT- 4544



Standard Dipped Knit Gloves



HexArmor LEVEL 6 SERIES

LEVEL SIX SERIES: 9010



FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market- Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Cut-resistant HPPE shell with flat nitrile palm coating for great oily or dry grip- ISEA Level 4
- Launderable

RECOMMENDED USES:

General work, small parts, wires, metal, wood, glass
Available in sizes 6/XS through 11/XXL



HPPE Shell

ISEA

CUT: 4

HexArmor
Protection Zone

ISEA

CUT: 5

CE 
4544



UNMATCHED SAFETY PERFORMANCE



LEVEL SIX SERIES ADVANTAGE:

- Innovative industrial puncture protection on enhanced areas
- Exceeds ASTM and CE Level 5 cut-resistance on palm
- Launderable— increases product life and ROI



MARKETS:

- Steel manufacturing
- Paper
- Glass
- Utilities
- Automotive

APPLICATIONS:

- General work
- Small parts handling
- Glass/metal/wood handling
- Wire/cable work

PRODUCT	FEATURES						PROTECTION
	PALM CUT-RESISTANCE	INDUSTRIAL PUNCTURE PROTECTION	FINE PUNCTURE (WIRE POKES)	NITRILE PALM COATING	WRINKLE RUBBER PALM COATING	POLYURETHANE PALM COATING	
9003 LEVEL SIX SERIES Available in sizes 6/XS– 11/XXL 							 HPPE Shell ISEA CUT: 4 HexArmor Protection Zone ISEA CUT: 5 CE  4543
9010 LEVEL SIX SERIES Available in sizes 6/XS– 11/XXL 							 HPPE Shell ISEA CUT: 4 HexArmor Protection Zone ISEA CUT: 5 CE  4544
9011 LEVEL SIX SERIES Available in sizes 7/S– 11/XXL 							 HexArmor Protection Zone ISEA CUT: 5 CE  4544
9012 LEVEL SIX SERIES Available in sizes 7/S– 11/XXL 							 DuPont™ Kevlar® Shell ISEA CUT: 3 HexArmor Protection Zone ISEA CUT: 5 CE  4544

HEXARMOR SAVES A WORKER'S FINGER



STELLEATHER™ 5033 IN ACTION!

While replacing a steam valve in a manufacturing site, a maintenance worker was exposed to a nail on a wooden crate. The worker accidentally grabbed the crate where the nail was protruding. The nail punctured through the leather on the middle finger, but was stopped by the protective liner in the HexArmor SteelLeather 5033 glove. The nail ripped the leather shell, but *did not puncture* the protective layer of HexArmor material. HexArmor saved the worker from serious injury, and allowed the employee to continue their workday.



Scan this code with your smart phone to get more information about leather work gloves.



HexArmor
Protection Zone

ISEA
CUT: 5

CE 
4533

STELLEATHER™ III 5033



FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market— Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, and glass
- Comfortable grain leather that will outlast your typical leather driver's gloves
- May be dry-cleaned for repeated use

RECOMMENDED USES:

General work, Maintenance & mechanics, wires, metal, wood, glass

Available in sizes 7/S through 12/3XL



HexArmor
Protection Zone

ISEA
CUT: 5

CE 
4544

BIGJAKE® PREMIUM 5040/5041



FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market— Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas— 4x the puncture protection of standard double-palmed leather (modified ASTM F1342-05 with 18 gauge needle)
- Classic BigJake® cowhide leather feel with critical seams reinforced along thumb and bottom edge for extra protection
- Canvas safety cuff: 5040 (2 ¾"), 5041 (4 ½")
- May be dry-cleaned for repeated use

RECOMMENDED USES:

Veneer & plywood manufacturing, razorwire/barbed wire, metal, wood, glass

Available in sizes (5040) 7/S through 11/XXL, (5041) 8/M through 11/XXL



HexArmor
Protection Zone

ISEA
CUT: 5

CE 
4532

TENX THREESIXTY 7090



FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market— Exceeds ISEA/CE Level 5 (over entire hand)
- Innovative industrial puncture protection over entire hand from wires, metal, wood, glass
- Canvas safety cuff and particle nitrile coating for liquid & chemical resistance

RECOMMENDED USES:

General work, metal treatment, casting manufacturing, chemically immersed product

Available in sizes 7/S through 11/XXL



60% COST SAVINGS- NO INJURIES



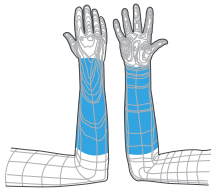
	 HEXARMOR® ARM GUARD	 KEVLAR® ARM SLEEVE
Cut-Resistance	Exceeds ASTM Level 5	ASTM Level 2-3
Puncture-Resistance	80x More than Kevlar®	None
Usage per Employee	1 pair per 8-14 months	1 pair per week
Total Monthly Cost	\$818.00	\$1,969.00*

* Study based on metal fabrication plant with 200 employees. Switching from Kevlar® arm sleeves to HexArmor arm protection saved them 60% on product cost due to longevity of the HexArmor arm protection.



Scan this code with your smart phone to get more information about arm guards.

ARM GUARDS THAT WILL NEVER SLIP ON THE JOB



HexArmor
Protection Zone

ISEA
CUT: 5

CE 4532

9" ARM GUARD AG10009S



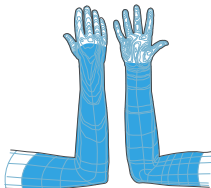
FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market— Exceeds ISEA/CE Level 5
- Innovative industrial puncture protection from wires, metal, wood, glass over entire forearm
- Won't fall down like knit sleeves, lightweight and cooler than knit or leather alternatives
- Spandex wrist insert with thumb hole
- Launderable

RECOMMENDED USES:

General work, wires, metal, wood, glass, assembly, food packing/processing

Available in sizes 6/XS through 11/XXL



HexArmor
Protection Zone

ISEA
CUT: 5

CE 4532

19" ARM SLEEVE AS019S



FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market— Exceeds ISEA/CE Level 5
- Innovative industrial puncture protection from wires, metal, wood, glass from wrist to bicep
- Won't fall down like knit sleeves, lightweight and cooler than knit or leather alternatives
- Neoprene thumb loop and alligator sleeve clip keeps sleeve from falling down
- Launderable

RECOMMENDED USES:

General work, wires, metal, wood, glass, assembly, food packing/processing

Available in sizes 7/S through 12/3XL



ARMOR UP!

No more snags, punctures, abrasions, or cuts to your torso. HexArmor® industrial aprons and body protection outperform, outlast, and fit better than the competition. Most customers experience a 20% reduction in safety costs by switching to our industrial aprons from leather, Kevlar®, Dyneema, or other fiber-based apron protection.



PROTECTIVE APRON 24" X 38" AP382



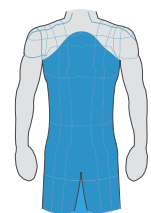
FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market- Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Heavy Duty (double layer)
- Lightweight compared to alternatives
- Launderable

RECOMMENDED USES:

Veneer, food processing, filing/grinding, wires, metal, wood, glass

SIZES: One size fits most



HexArmor
Protection Zone

ISEA
CUT: 5

CE 
4534



PROTECTIVE APRON 20" X 22" AP102222

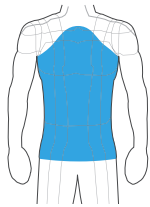
FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market- Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Heavy Duty (double layer)
- Lightweight compared to alternatives
- Launderable

RECOMMENDED USES:

Veneer, food processing, filing/grinding, wires, metal, wood, glass

SIZES: One size fits most



HexArmor
Protection Zone
ISEA
CUT: 5



PROTECTIVE APRON 20" X 30" AP229

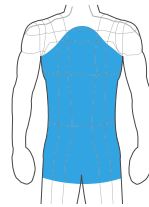
FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market- Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Medium weight (single layer)
- Lightweight compared to alternatives
- Launderable

RECOMMENDED USES:

Veneer, food processing, filing/grinding, wires, metal, wood, glass

SIZES: One size fits most



HexArmor
Protection Zone
ISEA
CUT: 5

CE
4532



PROTECTIVE APRON 20" X 30" AP102229

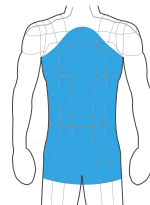
FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market- Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Heavy Duty (double layer)
- Lightweight compared to alternatives
- Launderable

RECOMMENDED USES:

Veneer, food processing, filing/grinding, wires, metal, wood, glass

SIZES: One size fits most



HexArmor
Protection Zone
ISEA
CUT: 5

CE
4534



PROTECTIVE APRON 24" X 30" AP321

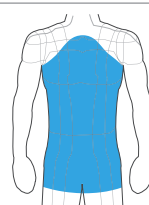
FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market- Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Medium weight (single layer)
- Lightweight compared to alternatives
- Launderable

RECOMMENDED USES:

Veneer, food processing, filing/grinding, wires, metal, wood, glass

SIZES: One size fits most



HexArmor
Protection Zone
ISEA
CUT: 5

CE
4532



PROTECTIVE APRON 24" X 30" AP322

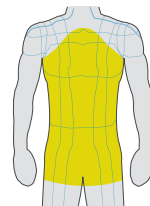
FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market- Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Heavy Duty (double layer)
- Lightweight compared to alternatives
- Launderable

RECOMMENDED USES:

Veneer, food processing, filing/grinding, wires, metal, wood, glass

SIZES: One size fits most



HexArmor
Protection Zone
ISEA
CUT: 5

CE
4534



PROTECTIVE APRON 36" AP361

FEATURES:

- Made with **SuperFabric®** brand material for the highest cut-resistance available on the market- Exceeds ISEA/CE Level 5 (in noted enhanced areas)
- Innovative industrial puncture protection on enhanced areas from wires, metal, wood, glass
- Heavy Duty (double layer belly patch)
- Lightweight compared to alternatives
- Launderable

RECOMMENDED USES:

Veneer, food processing, filing/grinding, wires, metal, wood, glass

SIZES: One size fits most



HexArmor
Protection Zone
ISEA
CUT: 5

CE
4532

1 Layer
2 Layers

RESOURCES SECTION

39-41 **Sizing, Washing Instructions**
Our sizing charts take the guessing game out of ordering.

42-43 **Needlestick-Resistance**
HexArmor sets the new standard for needlestick resistance.

44-47 **Cut-Resistance**
Information and illustrations to make sense of cut levels and standards.

48 **Contact Information**

LAUNDERING INSTRUCTIONS

NXT™ Series

Machine wash warm water. Can be bleached in a bleach solution. Tumble dry low. For oily, greasy or carbon-based grime, OXY-CLEAN has proven to work very well. Gloves can be commercially cleaned as well.

Mechanics' Style

Machine wash cold or warm, do not bleach. Tumble dry low. Secure all Velcro closures to prevent snagging. For oily, greasy, or carbon-based grime, OXY-CLEAN has proven to work very well. Gloves can be commercially cleaned as well.

Arm and Body Protection

Machine wash cold or warm, do not bleach. Tumble dry low. Secure all Velcro closures to prevent snagging. For oily, greasy, or carbon-based grime, OXY-CLEAN has proven to work very well. Can be commercially cleaned as well.

Sewn Knits

Hand or machine wash on gentle, warm water only. Use soap or detergent. Do not bleach. Air dry at temperatures less than 120 degrees. Can be commercially cleaned.

Kevlar/Aramid

Machine wash at 60°C in wash cycle that does not exceed 1 hour and adequately remove residual soap and detergents. Tumble dry at a temperature no higher than 90°C. Do not OVER dry, remove slightly damp and let air dry. Can be commercially cleaned.

HDPE/Nylon/Dyneema

Machine wash at temperature no higher than 40°C, with non-biological detergent or bleach. Gloves can be dry cleaned. Gloves should be dried at room temperature. Can be commercially cleaned.

Glued Styles (knit and woven)

Hand wash using warm water and mild soap or detergent. Do NOT bleach. Lay flat to air dry.

Leather Styles

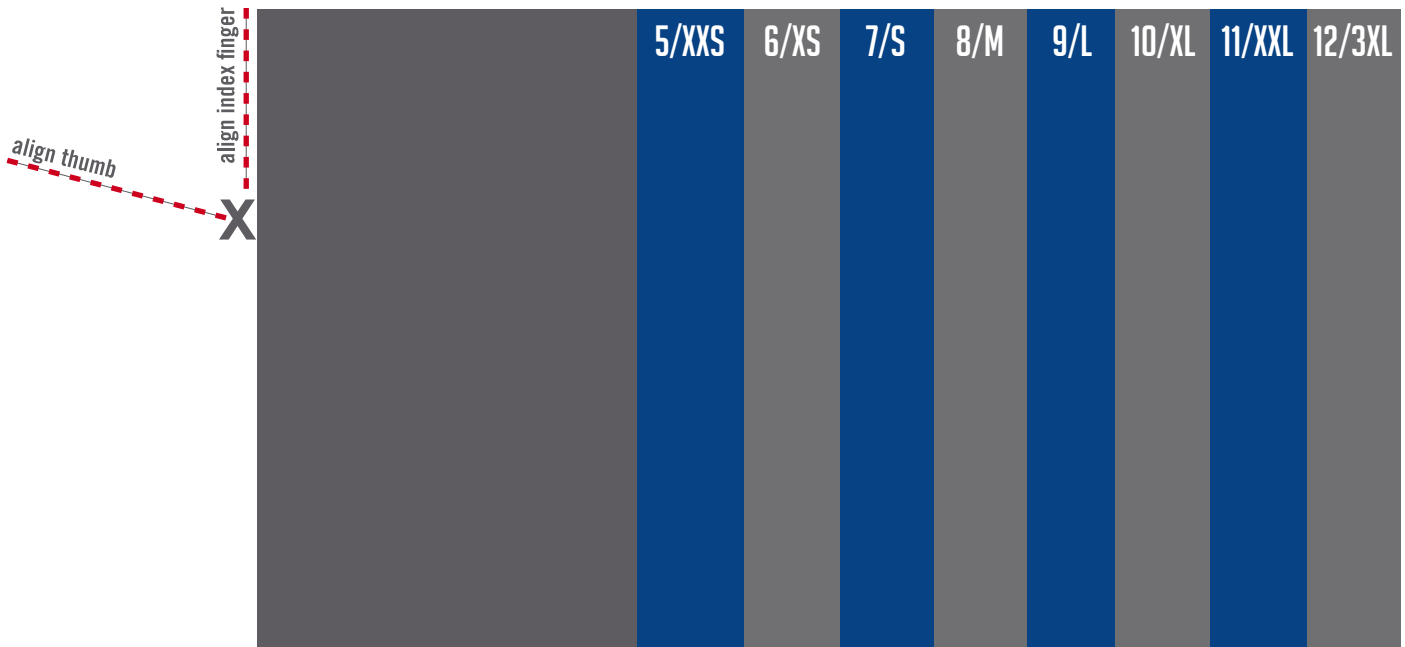
Hand wash in cool water using PH-balanced detergent or gentle shampoo. DO NOT wash any other articles with the gloves, as some of the dye will run (this is normal). Rinse thoroughly in cool water. Repeat if necessary. Gently squeeze out excess water. DO NOT USE BLEACH.

Recommendation:

Coat gloves inside and out with quality PH-balanced hair conditioner and let stand 1 minute (this helps replace any leather topping oils which may have been removed). Rinse thoroughly with cool water. Pat dry with towel, flatten out and lay flat to air dry. DO NOT MACHINE DRY OR USE DIRECT HEAT OF ANY KIND ON LEATHER GLOVES. DO NOT DRY IN DIRECT SUN.

GLOVE SIZE CHART

1. Place right hand flat on chart below, aligning saddle of index finger and thumb on the **X**
2. With your hand on the chart, choose the sizing bar closest to the edge of your right hand



ARM GUARD SIZE CHART

Most arm guards are comparable to glove sizes. If you wear a large size glove, you will typically wear a large size arm guard. If you plan on wearing the arm guard over shirt sleeves, you may need to order one size larger. Measure around the widest part of your forearm, below the elbow. Make sure to measure over your clothes if the arm guard will be worn over clothing.

CIRCUMFERENCE	S	M	L	XL	XXL
AG8TW	LESS THAN 26cm LESS THAN 10.5in	26 – 28cm 10.5 – 11.25in	28 – 32cm 11.25 – 12.75in	32 – 36cm 12.75 – 14.25in	N/A
AG10009S	LESS THAN 26cm LESS THAN 10.5in	26 – 31cm 10.5 – 12.25in	31 – 34cm 12.25 – 13.75in	34 – 40cm 13.75 – 15.75in	40 – 41cm 15 – 16in

LENGTH	S	M	L	XL	XXL
AG8TW	20cm 8in	21cm 8.25in	22cm 8.75in	23cm 9in	N/A
AG10009S	23cm 9in	23.5cm 9.25in	24cm 9.75in	25cm 10in	31cm 12.25in

AS019S

1. For bicep circumference measurement, measure around the widest part of your bicep, a few inches below the shoulder.
2. For wrist measurement, measure wrist circumference.

CIRCUMFERENCE	S	M	L	XL
WRIST	LESS THAN 19cm LESS THAN 7.5in	19 – 22cm 7.5 – 8.5in	22 – 24cm 8.5 – 9.5in	GREATER THAN 24cm GREATER THAN 9.5in
BICEP	LESS THAN 42cm LESS THAN 16.5in	42 – 44cm 16.5 – 17.25in	44 – 46cm 17.25 – 18in	GREATER THAN 46cm GREATER THAN 18in

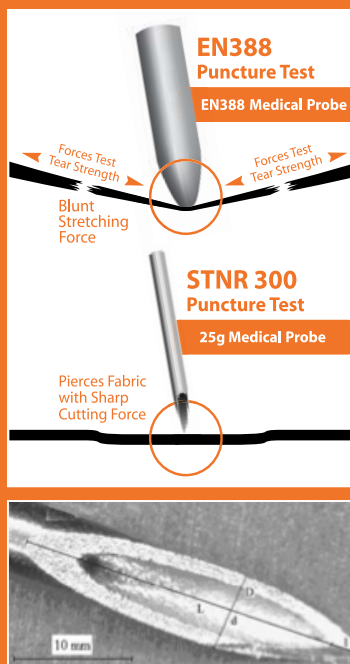
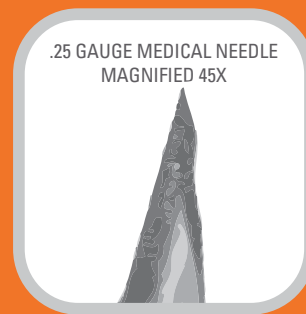
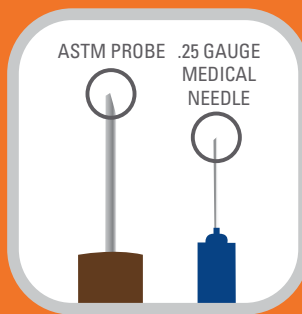
PROBLEM WITH INDUSTRY NEEDLE TESTS

HexArmor® products are tested against competitors using a modified EN388/ASTM F1342-05 with a medical needle substituted for the standard probe. This simulates real world situations with needle risks.

An article published in the Journal of ASTM international (Journal of ASTM International, Vol. 5, No. 1, Paper ID JAI101364) stated:

"It has been shown that the protection level of protective gloves measured using the current puncture-resistance standards is not relevant when dealing with medical needles."

This finding highlights the difference in measuring needle-resistance with a probe that has very different design. The picture below shows the different probe design for the ASTM/EN388 and a standard .25 gauge needle.

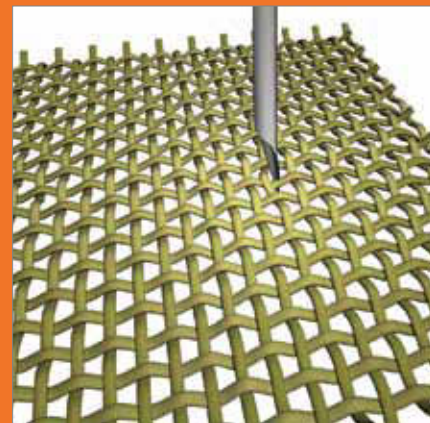
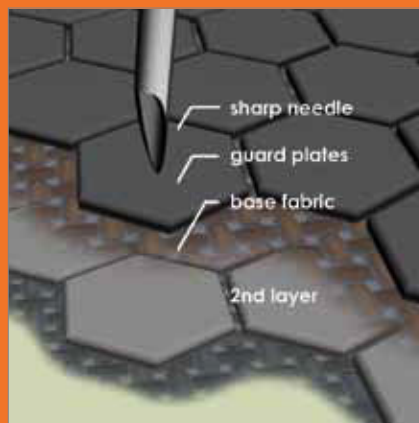


THE REAL STORY

- Needles are sharp, beveled cutting instruments designed to pierce the skin. To stop them, you need to stop the cutting action by putting something hard in front of them, such as the protective guard plates found in SuperFabric® brand materials.
- ASTM/EN388 test probes are rounded and tear fabric instead of cutting as it penetrates. This rounded ASTM/EN388 tip functions more to test burst strength whereas the .25G medical needle tests true needle resistance.
- One well known notified body, SATRA, has realized the deficiency and designed a new test M18 which is similar to the testing procedure used at HexArmor.
- Various testing bodies throughout the world have acknowledged this deficiency and are adapting standards to meet this. Two examples are the Canadian research organization IRRST and the ASTM F23 Standards committee, who are working together to design a standard that uses the same test procedures as tested herein.

THE HEXARMOR DIFFERENCE

HexArmor needle-resistant products work by layering **SuperFabric®** materials over each other. **SuperFabric®** guardplates block and deflect needle hazards, or trap and arrest them in the small gaps between guard plates. Multiple aligned layers of fabric provide extra resistance against needle hazards.



HEXARMOR NEEDLE PROTECTION ADVANTAGE

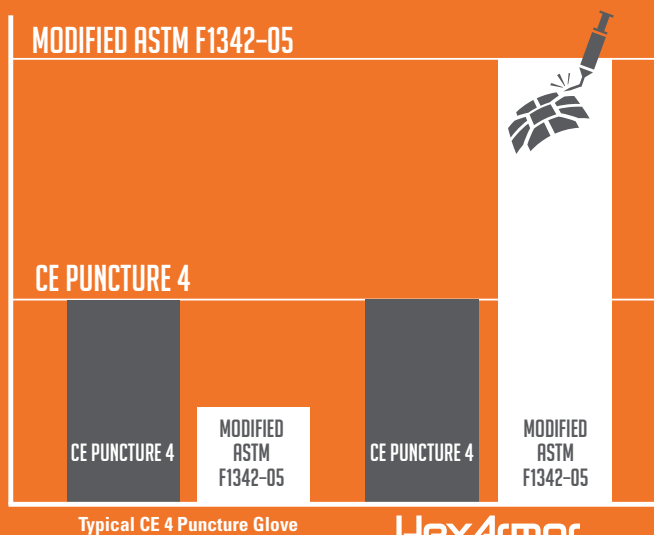
- Layered guardplates maximize resistance to all gauges of needles, providing highest needlestick-resistance available by the layering of **SuperFabric®** brand material.
- Tested using actual 25 gauge needles (modified ASTM 1342-05 test)

WHAT THIS MEANS

HexArmor products are tested in real world applications and are proven to reduce needlestick injuries. Using the correct test will ensure you have the right glove to protect your employees. In the example on the right, both gloves have a CE puncture rating of 4 (maximum), but resistance to .25 gauge medical needles is very different between the two.

BE CAUTIOUS OF GLOVES THAT RATE CE 4 FOR PUNCTURE, THEY MAY NOT PROVIDE SUITABLE NEEDLE PROTECTION.

NEEDLESTICK PROTECTION ADVANTAGE



HexArmor
WITH SuperFabric®
SHARPSMASTER™ II 9014

*ASTM Paper Titled "Influence of Medical Needle Characteristics on the Resistance to Puncture of Protective Glove Materials," Journal of ASTM International, Vol. 5, No. 1, Paper ID JA101364, Available online at astm.org

MAKING SENSE OF CUT LEVELS

Laceration injuries can be costly. Not only is time lost, but also the actual cost of a laceration can be anywhere from \$3,000–\$16,000 per incident. This makes the selection of PPE a critical decision, one that can have great impact on a company and its employees. The chart on the right illustrates the performance characteristics of common ‘cut-resistant’ technologies taken from the ASTM F1790 method for testing cut-resistance. As you can see, HexArmor® products perform above the industry standard, and blow away the competition.

HOW CAN WE PROTECT EMPLOYEES WITH THE BEST PPE?

In our field studies of injuries and the corresponding hand protection worn, we see that many injuries can happen with PPE rated in the range below ASTM/ISEA level 5 of 3569 grams (35 Newtons). This can be demonstrated easily with a razor blade (simulating sharp metal or glass) and how easily typical CE 5 gloves, for example, will cut. As a result, many of our customers have adopted standards in their own organization, specifying a minimum cut at a certain number such as 3000 or 3500 grams- level 4 or 5 ASTM. Keep in mind the standard is just a guide, the profile of the hazard and actual use conditions are paramount. We always encourage conducting a safe test in actual situations; new gloves, used gloves, saturation with oils and fluids, etc.

CPPT-ASTM-F1790 TEST

- Various weights are applied to a standardized razor blade
- Blade travels at constant speed until material is cut through and a conductive strip is contacted
- Blade travel distance is recorded and index is used to calculate grams of cut-resistance

100% VARIABILITY IN CE 5 SCORES?

When normalized, we see that the scores of gloves claiming to be CE Level 5 gloves vary quite a bit. Why is this? There are several reasons for the variability; testing consistency, operator variability, material variability, etc. However, the single largest factor is this: While the EN388 standard suggests that the Coup test is not appropriate for materials that abrade the cutting wheel, the standard doesn’t require the alternative ISO be used. Section 6.2 of the standard merely states that the test is not appropriate for hard materials like chain mail, but doesn’t contemplate other hard materials like fiberglass, SuperFabric®, etc. So, some manufacturers, while knowing the test is not appropriate, use it anyway to get the higher score (and sell more gloves). This is very common in gloves that are blended with fiberglass, as the fiberglass “fools” the Coup test by dulling the blade. The range of performance that gloves can score and still qualify for a level 5 is so varied, that the CEN body is going to require gloves to not only list their Cut Level, but to note their average Newton force. Why would they do this? Because they recognize that worker safety requires a better understanding of the real cut protection a glove is providing. We can now conclude that all Level Five’s are not created equal. There is significant confusion in global markets because many glove manufacturers misrepresent how they test their gloves, and the standard doesn’t provide clear direction.

EN388-COUP TEST

- Constant weight applied to a counter-rotating circular blade
- Blade travels at constant speed until material is cut through and a conductive strip is contacted
- Number of rotations is recorded and indexed



Scan this code with your smart phone to get more information about cut testing.

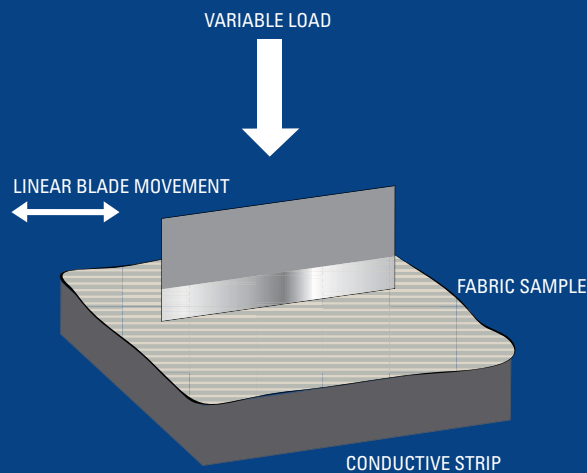
ANSI/ISEA LEVELS

CUT LEVEL	WEIGHT (G) NEEDED TO CUT WITH 1" (25MM) BLADE TRAVEL
0	< 199
1	200 – 499
2	500 – 999
3	1000 – 1499
4	1500 – 3499
5	> 3500

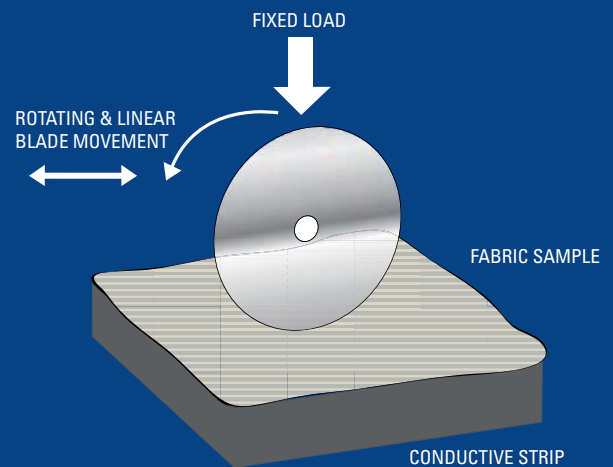
EN388 LEVELS*

CUT LEVEL	WEIGHT (G) NEEDED TO CUT WITH 1" (25MM) BLADE TRAVEL	AVERAGE CUT INDEX (10 MEASUREMENTS)
0	< 119	< 1.2
1	120 – 249	1.2 – 2.4
2	250 – 499	2.5 – 4.9
3	500 – 999	5.0 – 9.9
4	1000 – 1999	10.0 – 19.9
5	> 2000	> 20

*N/F required and converted to Grams to determine approximate correlation. 101.97gF. Based on calculation $G/F = .00980665N$



CPPT-ASTM-F1790 TEST
U.S. STANDARD



EN388-COUP TEST
EUROPEAN STANDARD

ISEA: Industrial Safety Equipment Association
ASTM: Internationally developed & approved test method to measure cut-resistance in standard format
EN 388: Test method used for CE Scores, generally required outside the USA.
Scores listed in the following order: Abrasion-Cut-Tear-Puncture (example CE 4521)

WHAT'S IN A CE LEVEL 5 GLOVE?

All CE Level 5 gloves are not created equal. Many offer a minimal level of protection for industrial applications.

When it comes to cut-resistance ratings on PPE, all Level Five's are not created equal. There is significant confusion in global markets because many glove manufacturers misrepresent how they test their gloves, and the standard doesn't provide clear direction.

In the European market, gloves are evaluated according to EN388, the mandatory performance standard for all gloves as standardized and regulated by the CEN. The cut test method, called the Coup test, uses a constant weight on a counter-rotating circular blade that is moved back and forth across a sample by the test machine. Ironically, this test, designed to measure cut-resistance, is not suitable for materials that have a high degree of cut-resistance as the materials that contribute to cut-resistance (glass fibers, steel or hard guard plates) tend to dull the blade and overestimate the real world protection provided by such gloves.

The U.S. uses a different standard developed by ASTM, method F1790-04. This standard is similar to the ISO (13997) test. This test involves the interpretation of data obtained from putting varying pressure (weights) on a standardized razor-type blade and recording the distance the blade travels (at a constant speed) before cutting through. The ISO 13997 or the ASTM F1790-04 test are the recommended method by the EN388 standard to calibrate the cut-resistance of high cut-resistant materials. In fact, it is noted in the EN388 documentation that the standard EN388 test is not applicable to gloves made from very hard materials. (i.e. glass fibers, fibers mixed with steel, **SuperFabric®** plates). It is further noted that the alternative test method for high cut-resistant materials is described in ISO 13997.

If test results of various products identified as CE Level 5 products are taken and normalized on the ISO or ASTM test, you can see the relative test results of various types of products (see graph). You will note that there are two bars on the graph for the CE 5 rating. This is because in our own tests (and in those of other respected manufacturers) we find that CE Level 5 gloves offer a wide array of performance ranges. Some of these gloves score as low as 1000 grams (10 Newtons), qualifying them barely for a level 3 on the ASTM/ISEA scale. Note that the force required to cut through is expressed as grams in the ASTM test and in Newtons in the ISO test. These numbers can be converted for comparing the results on these tests. (100 grams = .98 Newtons).

100% VARIABILITY IN CE 5 SCORES?

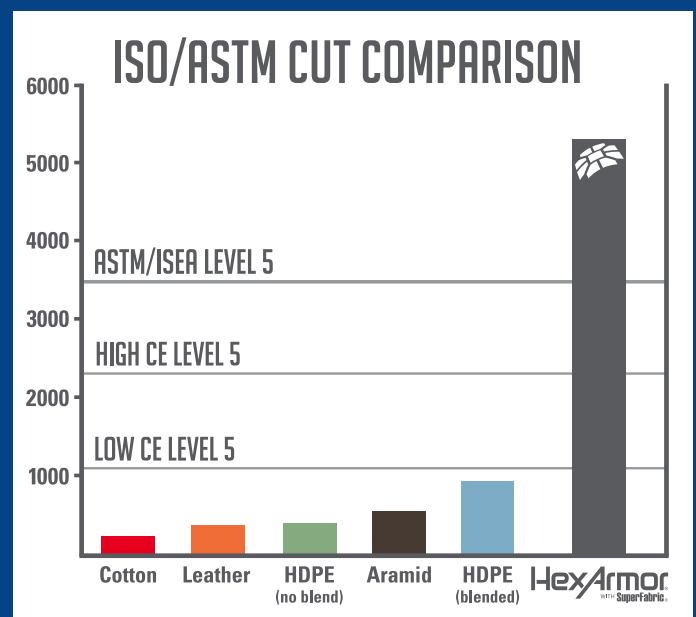
When normalized, we see that the scores of gloves claiming to be CE Level 5 gloves vary quite a bit. Why is this? There are several reasons for the variability; testing consistency, operator variability, material variability, etc. However, the single largest factor is this: While the EN388 standard suggests that the Coup test is not appropriate for materials that abrade the cutting wheel, the standard doesn't require the alternative ISO be used. Section 6.2 of the standard merely states that the test is not appropriate for hard materials like chain mail, but

doesn't contemplate other hard materials like fiberglass, **SuperFabric®**, etc. So, some manufacturers, while knowing the test is not appropriate, use it anyway to get the higher score (and sell more gloves). This is very common in gloves that are blended with fiberglass, as the fiberglass "fools" the Coup test by dulling the blade. The range of performance that gloves can score and still qualify for a level 5 is so varied, that the CEN body is going to require gloves to not only list their Cut Level, but to note their average Newton force. Why would they do this? Because they recognize that worker safety requires a better understanding of the real cut protection a glove is providing.

We can now conclude that all Level Five's are not created equal. There is significant confusion in global markets because many glove manufacturers misrepresent how they test their gloves, and the standard doesn't provide clear direction.

HOW CAN WE PROTECT EMPLOYEES WITH THE BEST PPE?

In our field studies of injuries and the corresponding hand protection worn, we see that many injuries can happen with PPE rated in the range below ASTM/ISEA level 5 of 3569 grams (35 Newtons). This can be demonstrated easily with a razor blade (simulating sharp metal or glass) and how easily typical CE 5 gloves, for example, will cut. As a result, many of our customers have adopted standards in their own organization, specifying a minimum cut at a certain number such as 3000 or 3500 grams- level 4 or 5 ASTM. Keep in mind the standard is just a guide, the profile of the hazard and actual use conditions are paramount. We always encourage conducting a safe test in actual situations; new gloves, used gloves, saturation with oils and fluids, etc.



Scan this code with your smart phone to get more information about CE scores.

MANY CUTS BEGIN WITH A PUNCTURE

Cut-resistance tests are just one element of what needs to be considered. Often punctures are mis-reported as cuts. A sharp edge, corner, burr, or other protruding hazards can penetrate the glove and scrape or cut skin. With knit gloves the hazard can actually poke through the open knit and cut the skin without cutting the glove. How does this happen? Depending on the density of the knit and gauge of the glove (the measure of the number of knitting needles per inch), and the thickness of the fibers a glove may “window” and allow the knit to spread apart, thus allowing a sharp point or blade to cut the hand. Plating with small guard plates, such as in HexArmor® products, reduces this effect as the plates shield the knit structure from the hazards. The plates also lock in the knit and don’t allow the knit to window as in traditional gloves.

OTHER FACTORS

Abrasion-Resistance is also a critical factor in preventing hand injuries. In fact if a glove fails too early due to wearing through from an abrasive hazard, the skin is quickly exposed to cut hazards. So the higher the abrasion level the higher the level of protection from not just abrasion, but from cut and punctures.

Stability. Evaluate Performance of a new glove versus a glove that has been worn for a day. Look for products that don’t degrade when exposed or used. Some products are affected when subject to abrasion, washed or exposed to UV light. Many products on the market lack the ability to provide consistent performance.

Wind-Up, All Occurrences. Some materials can be caught in machine parts such as rotating grinding wheels or drills and sanding materials. This can pull the hand or finger into the equipment and cause severe injury to tendons, muscles, and ligaments. Protective gloves that prevent or reduce windup risks are available and can be used where risks are present.

Fit plays a part in the level of protection. Gloves that are too tight may cut easier as many of the fibers used for cut-resistance use a rolling action to increase cut-resistance. When these fibers cannot roll, such as when they are stretched from an ill-fitting or wrong sized glove, they can “lose” some of their cut-resistance. Take an example from the kitchen and do this simple experiment: Put a cucumber on a cutting board and take a very sharp knife. Try to cut the cucumber with a sawing motion without holding the cucumber. It just rolls and doesn’t cut. Now hold that cucumber and do the same thing. It cuts very easily. So, tight fitting gloves can perform like the immobilized cucumber. Loose fitting gloves can also be a hazard for catching or snagging on tools and equipment. Make sure your glove program accounts for proper sizing and employees know what to look for when picking gloves.

Coating impacts cut-resistant gloves that use cut-resistant fibers. Once the coating is applied, the rolling and twisting that helps the fiber achieve its cut-resistance can be reduced. Most coated gloves have a higher cut-resistance on the back of the hand than on the palm because the fibers are not coated. Keep this in mind as you select your hand protection.

Grip is also important. Using grip that isn’t appropriate for the job can lead to higher injury rates as objects with sharp edges slip, causing slicing motion on the gloves.

WHAT TO DO WHEN EVALUATING GLOVES

With all of this confusion (what tests are relevant today, what performance factors to consider) in the PPE market, what can be done to make sure that as safety professionals, we pick the best gloves for the job? In our opinion based on real world tests, the Coup test is not a relevant test for today’s materials. An oscillating blade with a mere 500 Grams of force (1.1lbs) is not relevant to, for example, an automotive worker moving sheet metal fenders and body panels. Look around your office. That steel stapler on your test is probably about 2lbs. The ISO and ASTM tests offer a better approximation of what you are going to find in a real-world work situation. That combined with an assessment of “other factors” mentioned above is what you need for picking the correct PPE. To summarize, we have the following recommendations:

- 1. Partner** with respectable distributors and glove manufactures to analyze your operations, specific hazards, injury rates, and cost of current products used.
- 2. Get the Data.** Ask for the outside lab results and focus on the Newton/Gram Results, not just cut levels. If you are not getting the Newton number, then the glove was tested with the Coup test, and something must be wrong.
- 3. Assess the Risk.** Is it purely cut? Or is there a puncture risk too? If so, how can it best be protected?
- 4. Test, Test, Test.** Conducting safe and scientific tests with typical hazards is something your glove manufacturers should be able to help with. A hunting knife in the conference room does not qualify! Get out in the plant and setup a safe test for a true work hazard in the real world.
- 5. Keep Good Records.** If you don’t already, begin collecting injury data with pictures and an assessment of what happened so you can track successes over time and evaluate new products as they become available. Classify cuts, punctures, and abrasions separately so you know what you are dealing with.



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Additional patents are pending.

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