IRONCLAD®
PERFORMANCE WEAR

Glovepedia™ Series:
CUT RESISTANCE

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Ironclad® PERFORMANCE WEAR

Key Takeaways:

- 70% of the U.S. workforce does not wear hand protection, despite the fact that cut hazards account for 41% of all hand injuries and cost an average of $41k per injury.
- The overall cut resistance of a glove is determined by each of the following: fiber choice, yarn configuration, knit construction, & coating properties.
- To choose the right glove for the job, you must evaluate many factors: cut hazards, impact and chemical hazards, grip requirements, environmental factors, etc.
- Ironclad engineers premium cut-resistant gloves that are comfortable, high dexterity, and designed for a wide variety of workplace hazards.

ALL ABOUT CUT RESISTANCE

Hands. Those incredibly useful tools attached to our wrists that we use every day to do practically everything. However, not enough thought is given to keeping them safe until it is too late - and after all, you only get one pair. There is good news though: wearing the right gloves for the job can dramatically reduce injuries in the workplace, as long as they are worn and used properly.

Hand safety technology is constantly evolving, and just keeping up can be difficult. There are multiple rating systems, dozens of fiber and yarn types, and many different glove designs to sort through and understand. But let's face it, choosing the correct glove for the task can be the difference between losing a glove and losing a finger.

This edition of Ironclad's Glovepedia™ Series will introduce you to the design of cut-resistant materials, explain how gloves are engineered from the ground up to prevent hand injuries, and assist you in choosing the right glove for the task at hand.

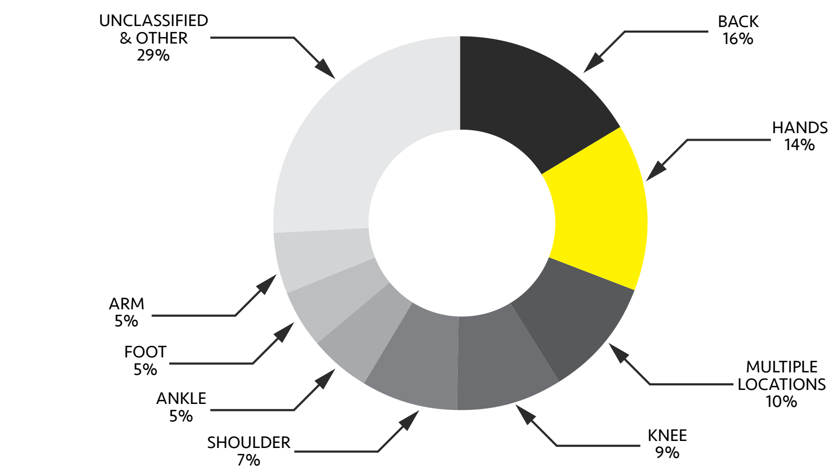
KEY STATISTICS:

Cut injuries, i.e. hand lacerations, are costly to the employer and potentially devastating to the employee. In 2018, there were 124,000 hand injuries in the United States and more than 40% of them were classified as cuts/lacerations. That's a whopping fifty-thousand cut injuries every single year, just in the U.S. alone. Unfortunately, 70% of all workers still don't wear hand protection, according to data from the Occupational Safety and Health Administration, which means that workplace compliance is the single largest obstacle to increasing hand safety and reducing cut injuries.

51,840

Number of hand lacerations in the United States in 2018 (BLS)

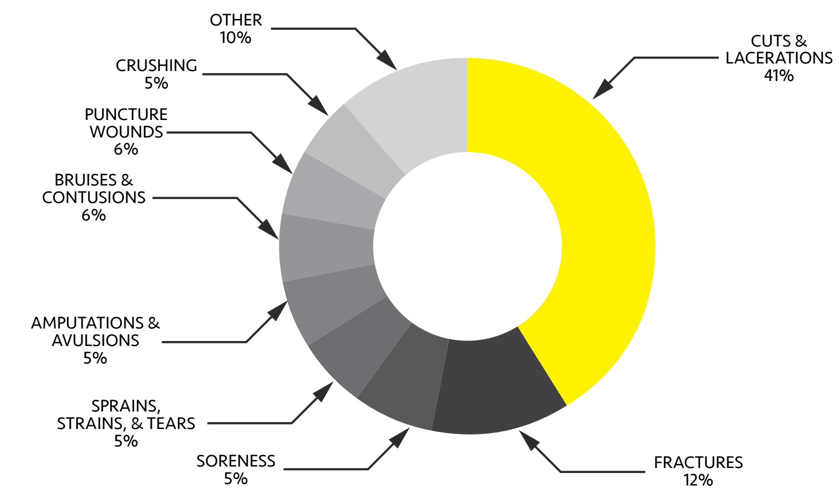
Injuries by Location, 2018



70%

Percentage of U.S. workforce that does not wear gloves. (OSHA)

Hand Injuries by Type, 2018



$41k

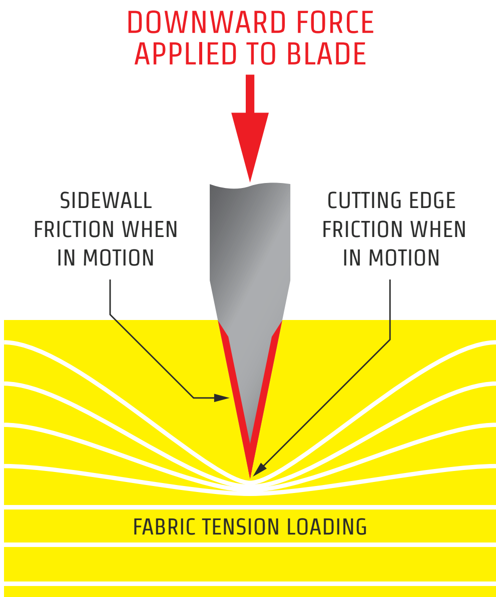
Average cost of a workplace injury in the United States in 2018. (NSC)

SCIENCE OF CUTS & CUT-RESISTANT MATERIALS

Engineers create cut-resistant gloves by first understanding exactly how cuts occur, and then creating fiber and yarn technologies designed to defend against them. As shown in Figure 1, a slicing cut is the result of a downward force from a blade or sharp edge, combined with friction caused by the slicing motion between the edge and the material being cut.

Downward Force: The downward force creates high tension in the fabric. This is counteracted by the tensile strength of the material being cut. High strength materials typically have high density, and are more likely to bend than break under this downward force. A very sharp edge, though, will focus the force on a small area, increasing the likelihood of failure. Some materials counter this by dulling the blade or edge, which can greatly increase cut resistance.

FIG. 1: Cut Forces



Friction Force: As the blade moves across the surface, friction along the cutting edge removes material from the fabric. This results in thinner fibers, which weakens the fabric, and can result in a cut occurring.

Properly engineered cut-resistant fabrics are designed to counteract downward and friction forces by maximizing the following properties:

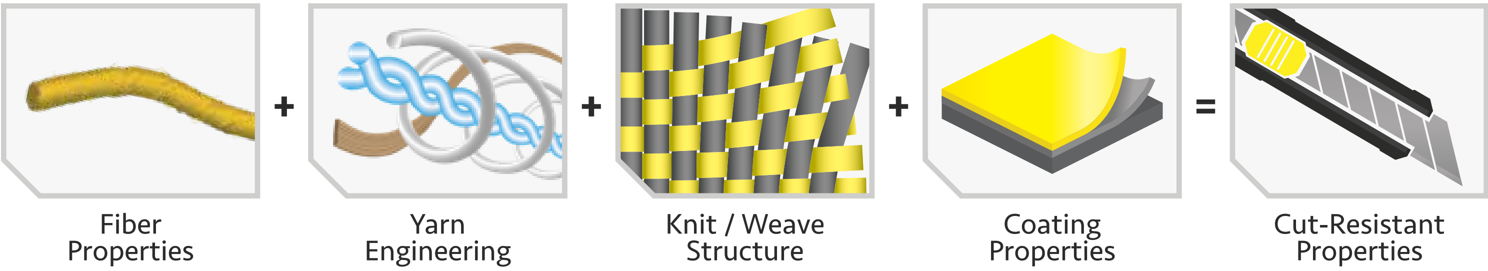
- **Tensile Strength** - high strength materials are designed to resist breaking due to large downward forces.
- **Hardness** - hardened fibers, such as stainless steel, can dull very sharp edges.
- **Lubricity** - low friction fibers reduce cutting edge friction, causing the blade to slide rather than slice.
- **Rolling Action** - yarns can be engineered to roll when contacted by a sharp edge - this will spread the contact among many fibers instead of concentrating it in one place.

CUT-RESISTANT GLOVE COMPONENTS

Engineering a cut-resistant glove begins at the fiber level, choosing from a multitude of fiber types and attributes. These fibers are combined, or spun, into different yarn constructions, which are then knit into a glove shell or fabric liner. Knit gloves typically receive a palm coating, while glove liners are integrated into a glove that is sewn together from multiple fabric components.

Each of these building blocks are specifically designed to create a glove that is not only cut resistant, but suited to the wide variety of tasks and trades performed in environments with high-cut hazards.

FIG. 2: Components of Cut Resistance

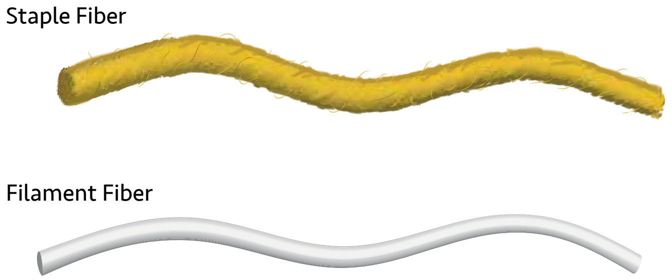


CUT-RESISTANT FIBERS

The basic building block of a cut-resistant glove or glove liner is the fiber. Fibers can be man-made, such as nylon or polyester - or they can be natural, such as cotton or wool. They also vary in weight and thickness, and can be thinner than a human hair. For cut-resistant gloves, there are two main types of fibers – staple fibers and filament fibers.

- **Staple Fibers -** these are typically composed of shorter strands that are wound together to create a continuous fiber. Staple fibers have a ‘fuzzy’ finish, which gives a sensation of warmth to the touch. They usually absorb fluids and perform well in high-heat environments. DuPont™ Kevlar® is a man-made staple fiber; cotton and wool are natural staple fibers.
- **Filament Fibers** - these fibers actually start out as a high viscosity liquid, typically melted down from pellets. The liquid is then extruded, or drawn, to create a long smooth fiber. Filament fibers have a smooth finish and are cool to the touch. They tend to wick fluids on their surface and typically have higher lubricity than staple fibers. Nylon and stainless steel are filament fibers.

FIG. 3: Fiber Structures



Many synthetic fibers have been created with the intention of increasing cut resistance. One example is Ultra High Molecular Weight Polyethylene, UHMWPE, which is often shortened to High Performance Polyethylene, or HPPE. Another example is DuPont™ Kevlar®, which has high cut and high heat resistance, providing an additional benefit to the user. Table 1 below compares several different fibers found in cut-resistant gloves and liners.

TABLE 1:
CUT-RESISTANT FIBER COMPARISON

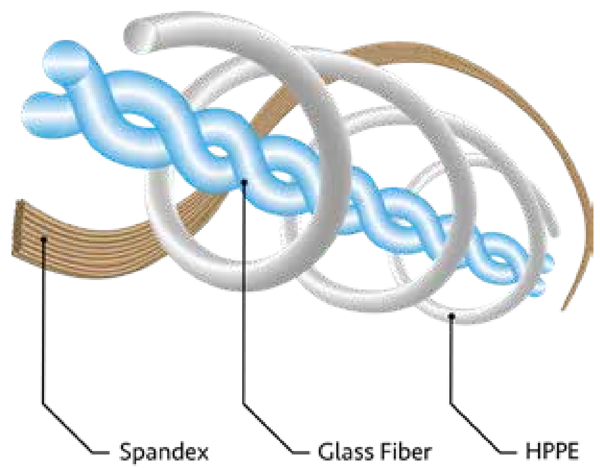
FIBER	STRUCTURE	COMFORT	STRENGTH	HARDNESS	HEAT DEGRADATION RESISTANCE	COST
NYLON	Filament	High	Low	Low	Low	$
POLYESTER	Filament	High	Low	Low	Low	$
ARAMID	Staple	Medium	High	Medium	High	$$
HPPE	Filament	Medium	High	Medium	Low	$$
GLASS	Filament	Low	Low	High	High	$$
STEEL	Filament	Low	Medium	Very High	Very High	$$$
EXOTICS	Varies	Varies	Varies	Medium - High	Varies	$$$$

YARN ENGINEERING

Yarns are created by winding multiple fibers together on winding machines. The yarn fibers can all be similiar, or they can be a blend of fibers each with different properties. Cut-resistant yarns are engineered by blending several different fibers, utilizing different winding arrangements (twist, wrap, helix, etc.), to create a yarn with specific properties – cut level, stretch, comfort, thickness, etc.

Figure 4 is an example of an engineered yarn with multiple fibers. In this example the glass fiber core provides high strength, wound in a helix shape to improve flexibility. It is wrapped with HPPE fiber, which adds comfort and improves cut resistance, and spandex is wound along the length of the yarn to provide stretch and enhance fit of the glove.

FIG. 4: Engineered Yarn



During the winding process, engineers can precisely set the winding tension on the fibers, which can give the overall yarn structure the ability to 'roll' with a sharp edge or blade, increasing cut resistance even further.

Engineered yarns have revolutionized the field of cut-resistant gloves, and opened the door to a world of possibilities. Historically cut-resistant gloves were bulky, with poor dexterity, and often had low cut resistance. With today's engineered yarns, gloves with high cut resistance can be thin, comfortable, and have high dexterity as well.

KNIT SHELL / FABRIC CONSTRUCTION

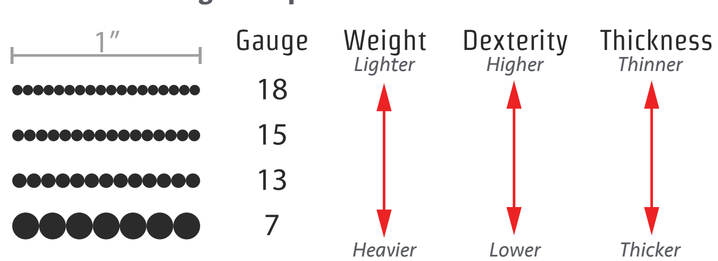
Engineered yarns are knit into a glove shell, or woven into a fabric liner. At this stage, engineers utilize different knitting and weaving techniques to enhance cut glove characteristics such as comfort, flexibility, and tactility. Specific techniques can also enhance cut, puncture, and abrasion resistance.

GLOVE GAUGES

Cut-resistant gloves are often categorized according to their 'gauge', which is a measurement borrowed from the fabric world. For fabrics, gauge is defined by the number of needles per inch on a stitching machine. This correlates directly to the number of stitches per inch on the fabric being made. On a knit glove, the gauge refers to the number of stitches (i.e. strands of yarn going up and down), per inch of the glove. In Figure 5, you can see that gloves with thick yarns have a lower gauge, such as 7 or 10, and gloves with finer yarns have a higher gauge, such as 15 or 18. In general, lower gauge gloves with thicker yarns will be heavier and bulkier than higher gauge gloves with thinner yarns. Gloves with thinner yarns offer higher dexterity and tactility, and are preferred for tasks that require precision and an increased sense of motor feedback. Gloves with heavier yarns are preferred for cold weather work and tasks that don't require a high level of dexterity.

Another look at Figure 5 reveals an important fact: on high-gauge gloves with thin yarns, there isn't much fabric protecting your hand from a blade or sharp edge. In order to effectively prevent cuts at these higher gauges, gloves must be made with state of the art engineered yarns, using a blend of different fibers to maximize strength, hardness, comfort, and stretch.

FIG. 5: Yarn Gauge Comparison



COATING PROPERTIES

Most knit gloves receive a coating as the final assembly step. This involves a dipping process, in which the palm is drawn through a long trough filled with a heated liquid chemical compound, such as nitrile or latex. The glove is also exposed to cleaning agents, surface treatments, and then finished with a drying stage. The result is a flexible coating that provides enhanced grip for a variety of applications.

There are many different coating compounds, and each one has benefits for particular applications and environments. Table 2 compares four common coating compounds and highlights their different characteristics. In addition to different compounds, each coating will have a different surface finish. These surface finishes will enhance grip properties in the presence of different liquids and surfaces that the gloves come in contact with. Table 3 highlights different coating finishes and the particular benefits of each one.

Understanding the benefits of coatings and surface finishes will help you choose the right glove for the application. For example, a foamed nitrile coating will provide excellent grip in wet and oily environments and is particularly well-suited to jobsites where gloves are exposed to oils and hydrocarbons. And keep in mind that maintaining a good grip is critical to preventing workplace accidents.

TABLE 2:
COATING COMPOUND COMPARISON

COMPOUND	DRY GRIP	WET GRIP	GREASE GRIP	DURABILITY	OTHER
LATEX	High	Low	Low	High	Degrades In Oil Based Products; Can Cause Allergic Reactions
NITRILE (FLAT)	Medium	Low	Low	High	Protects Against Oil Based Products
POLYURETHANE	Medium	High	High	Medium	Low-Shedding; Not Good for Hot Environments
NEOPRENE	High	High	High	High	Heat & Flame Resistant
NITRILE FOAM	Medium	High	High	Medium	Highly Breathable

TABLE 3:
COATING FINISH COMPARISON

FINISH	PROCESS DESCRIPTION	PROS	CONS
FLAT	Standard / Non-Textured Finish	Higher Abrasion Resistance	Less Versatile Grip
FOAMED	Air Is Incorporated to Create a Thick, Sponge-Like Finish	Breathable & Increased Grip in Wet Conditions	Decreased Durability
SANDY	Grainy Finish	Overall Increased Grip Performance	Decreased Durability; Shedding
WAVY / CRINKLED	Rippled Finish	Increased Grip Performance	Low Durability

ANSI/ISEA 105 CUT RATING

Companies in North America follow guidelines set by the American National Standards Institute, or ANSI, and approved by the International Safety Equipment Organization, or ISEA. Ratings are specified in the document titled ANSI/ISEA 105. When testing for glove cut resistance, the following test method is used: ASTM F2992-15. This test is sometimes referred to as the TDM test, after the TDM-100 testing machine used in the test.

As shown in Figure 6, the test is performed by placing a fabric sample, taken from the palm of the glove, onto a curved mandrill. A specified vertical force is applied to a razor blade bringing it into contact with the fabric. The blade is then moved across the fabric until cut through is achieved, and the distance traveled is recorded. This process is repeated five times at three different vertical forces, each with a fresh razor blade. The results are charted and a 'trend line' is formed. This trend line is used to calculate the amount of force, in grams, required to cause a cut through at 20mm of blade travel. This result, in grams of force, is used to determine the ANSI/ISEA 105 cut rating for the glove, as shown in Table 4.

FIG. 6: TDM Testing

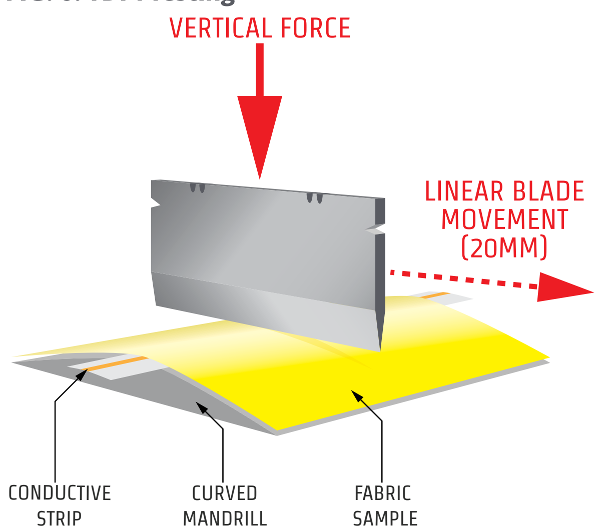


TABLE 4: ANSI CUT RATINGS

CUT RESISTANCE (g)	CUT RATING
200g - 499g	A1
500g - 999g	A2
1,000g - 1,499g	A3
1,500g - 2,199g	A4
2,200g - 2,999g	A5
3,000g - 3,999g	A6
4,000g - 4,999g	A7
5,000g - 5,999g	A8
6,000g +	A9

EN 388 CUT RATING

The European Union and many countries outside North America utilize the EN 388:2016 testing standard for evaluating cut resistant gloves. Prior to 2016, this standard utilized a cut testing method known as the Coup Test. With the advent of hardened fibers such as stainless steel, the coup test proved to have a major flaw: hardened fibers will dull the blade and cause the calculations to become dramatically skewed to the point of being useless. Thus, in 2016, the EN 388 standard was updated to include the same TDM test method found in the ANSI/ISEA 105 test method, with forces measured in Newtons instead of grams. This test is performed according to EN ISO 13997; see Table 5 for the specified cut levels and Figure 7 for the layout of the EN388:2016 cut rating symbol for mechanical hazards.

FIG. 7: The EN 388 Symbol

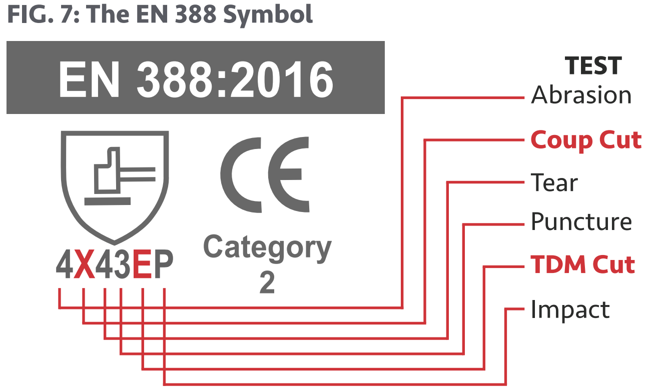


TABLE 5: EN 388 TDM RATINGS

CUT RESISTANCE (N)	CUT RATING
2	A
5	B
10	C
15	D
22	E
30	F

COMPARING CUT RATINGS

Since both the ANSI/IESA 105 and EN 388:2016 cut standards utilize the same test method, you can easily compare cut ratings between the two standards, as shown in Figure 8.

FIG. 8: TDM Cut Rating Comparison

COUP TESTING

While the coup test has its limitations for testing hardened fibers, it is still required in the EN 388:2016 testing standard. As shown in Figure 9, the coup test is performed by placing a swatch of palm fabric onto a conductive surface and using a circular, counter-rotating blade under a standard 5 Newton load to perform the test. The blade moves back and forth over the material until either cut through is achieved or 60 cycles is reached, and the number of cycles is recorded. This is repeated 5 times, and the average number of rotations is used to determine the coup cut rating – see Table 6.

Note that if the blade becomes dulled during the coup test, then a value of 'X' is recorded, and the TDM test must be used to evaluate the cut rating. Some glove manufacturers will perform both tests and provide both test ratings, whether or not the coup test results in a level 'X'.

FIG. 9: Coup Testing

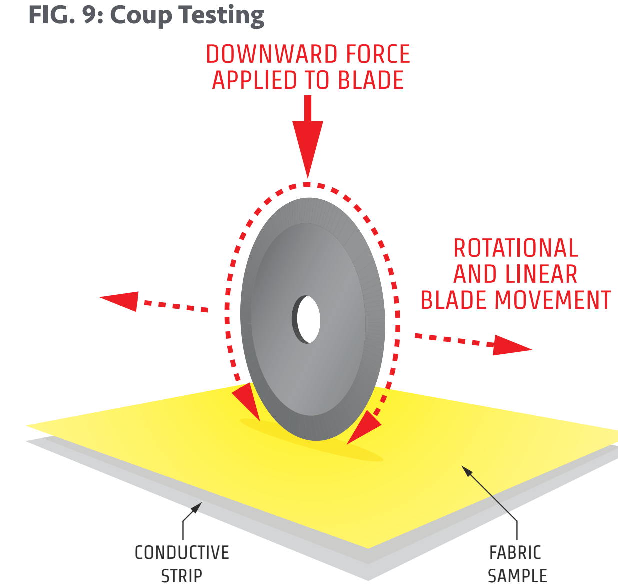
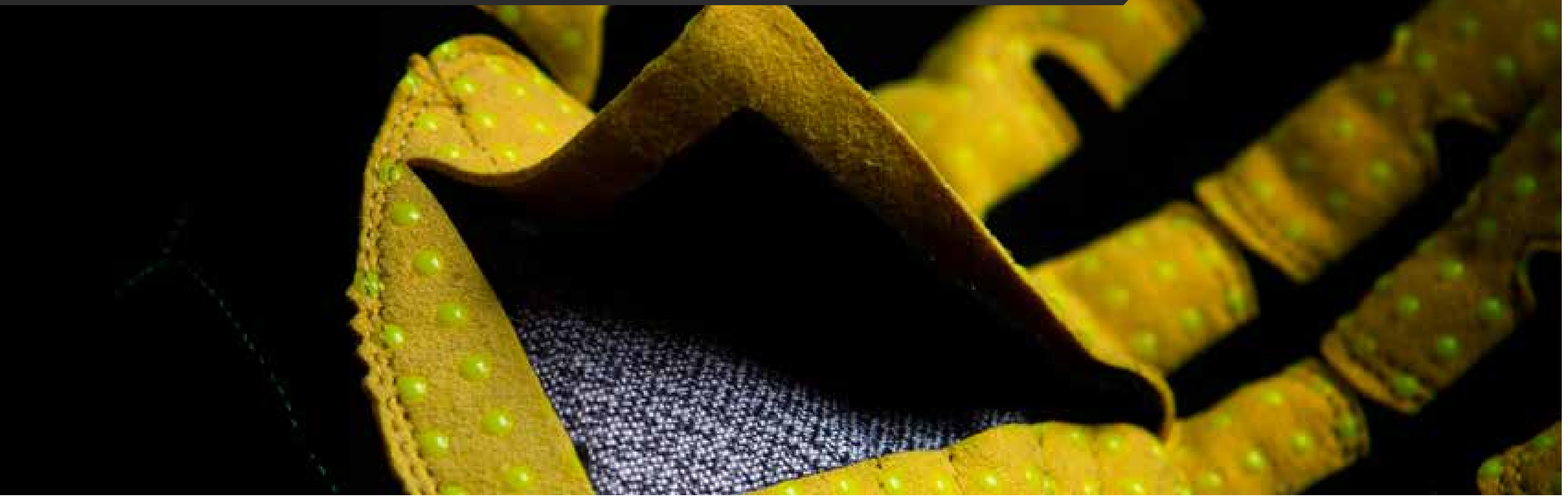


TABLE 6: EN 388 COUP RATINGS

COUP CUT LEVEL	CUT INDEX VALUE
1	1.2
2	2.5
3	5.0
4	10
5	20
X	N/A



SELECTING CUT LEVEL

Choosing hand protection for a workplace or jobsite is a critical aspect of every safety professional's job. It's extremely important to make sure that the appropriate level of cut resistance is being used for the task at hand – for example, a person handling sheet metal will need more cut resistance than a transportation mechanic. Having the right glove for the job will reduce injuries, while saving the company time and money. Figure 10 demonstrates the level of cut resistance typically used for common workplace functions.

FIG. 10: Cut Usage Guide

- **≤ A1** — **Low cut hazard jobs:** Packaging, Warehousing, Lawn Care, Gardening, General Purpose
- **A2** — **Low to medium cut hazard jobs:** Packaging, Warehousing, Automotive, Cold Storage
- **A3** — **Medium cut hazard job:** Material Handling, Construction, Paper Production, Drilling, Workover
- **A4** — **Medium to high cut hazard jobs:** Manufacturing, Construction, HVAC Work, Metal Fabrication
- **A5+** — **High cut hazard jobs:** Metal Stamping,Scrap Metal Handling, Recycling, Glass Handling

ADDITIONAL HAZARDS

There are many hazards on a jobsite, so you must consider additional factors when deciding on the right hand protection. Below is a list of important glove features to consider when making that decision. Be sure to analyze ALL hazards, environmental factors, and human interface requirements at each jobsite and workplace. These include:

- **Grip** - a critical factor for all tasks, the right grip will help prevent objects from slipping & slicing hands, and significantly reduce hand fatigue.
- **Touchscreen** - with the proliferation of paperless workplaces and mobile devices, workers must be able to use touchscreen devices without removing their gloves. This will greatly enhance hand safety compliance.
- **Impact** - in heavy industry, impact hazards are everywhere. Make sure that hands are protected from cuts as well as impacts to the fingers, knuckles, and metacarpal bones with a glove from the KONG® glove line.
- **Abrasion Resistance** - working in highly abrasive environments can dramatically weaken cut resistant gloves. Choose a glove with high abrasion leather and a full 360° cut liner, such as Ironclad's ULD-IMPC5.
- **Chemical Resistance** - knit gloves with only a palm coating will not protect users from hazardous chemicals. Choose a fully coated glove, such as the Ironclad KCHA5, when working with caustic and corrosive chemicals.
- **Cold Environments** - working in cold environments or cold storage can cause loss of dexterity and even frostbite. Choose a cut resistant glove with sufficient insulation.
- **Heat Resistance** - when handling hot objects, it is important to consider the fiber composition of the glove. HPPE can melt under high heat, so choose a heat-rated glove made from aramid fibers such as DuPont™ Kevlar®.

IRONCLAD CUT-RESISTANT YARNS

At Ironclad we are constantly working to improve hand safety, while making sure that our gloves maintain a high level of comfort and dexterity. Gloves should help you get your job done safely without getting in the way of your work.

We've developed two unique engineered yarns that maximize both safety and dexterity, and can achieve a wide range of cut resistance. Figure 11 illustrates Case Hardened UHMWPE fibers tightly wound with multiple strands of nylon and spandex; Figure 12 is a stainless steel mircrofiber core, fully wrapped in heat resistant DuPont™ Kevlar® fiber, wound with high stretch spandex. These yarns utilize premium fibers and proprietary winding techniques, producing best-in-class, premium comfort gloves.

FIG. 11: ILT Case Hardened Yarn

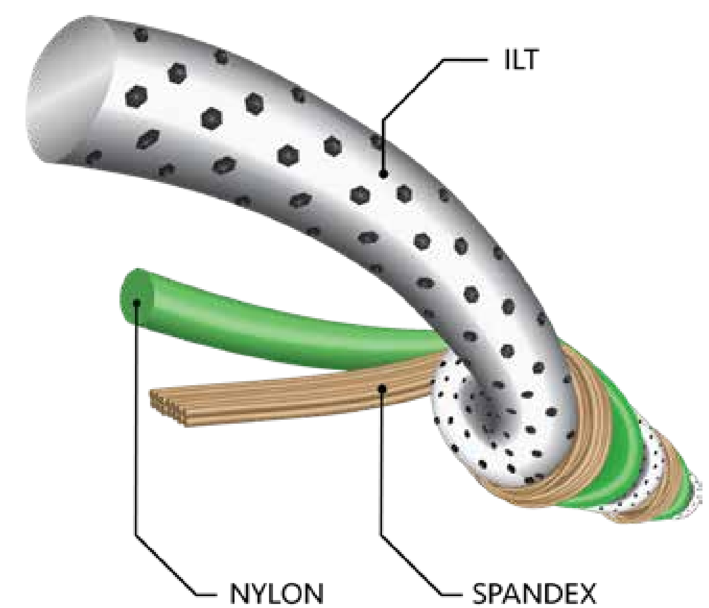
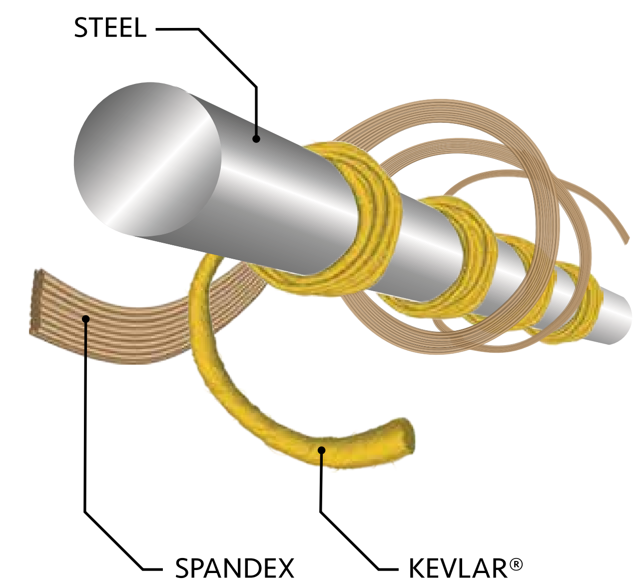


FIG. 12: DuPont™ Kevlar® + Steel

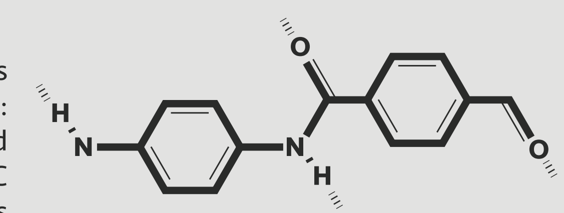


Supplier Spotlight

At Ironclad, we choose our partners carefully. When it came to partnering on engineered yarns and fibers, DuPont™ was a natural choice. DuPont™ Personal Protection scientists and engineers have been creating breakthrough technologies for decades. One of those key breakthroughs was the creation of Kevlar® fiber.

Kevlar® is a synthetic fiber belonging to a class of materials known as aramids. It is known for incredible strength and high heat tolerance: Kevlar has a strength-to-weight ratio 5 times higher than steel, and functions in temperatures ranging from -320°F to 850°F (-196°C to 450°C). Gloves made with Kevlar® fibers and engineered yarns provide excellent cut resistance, heat resistance, high dexterity, and long-lasting comfort. Additionally, DuPont™ continues to innovate, developing new Kevlar® blends that provide the perfect balance of form, fit, and function.

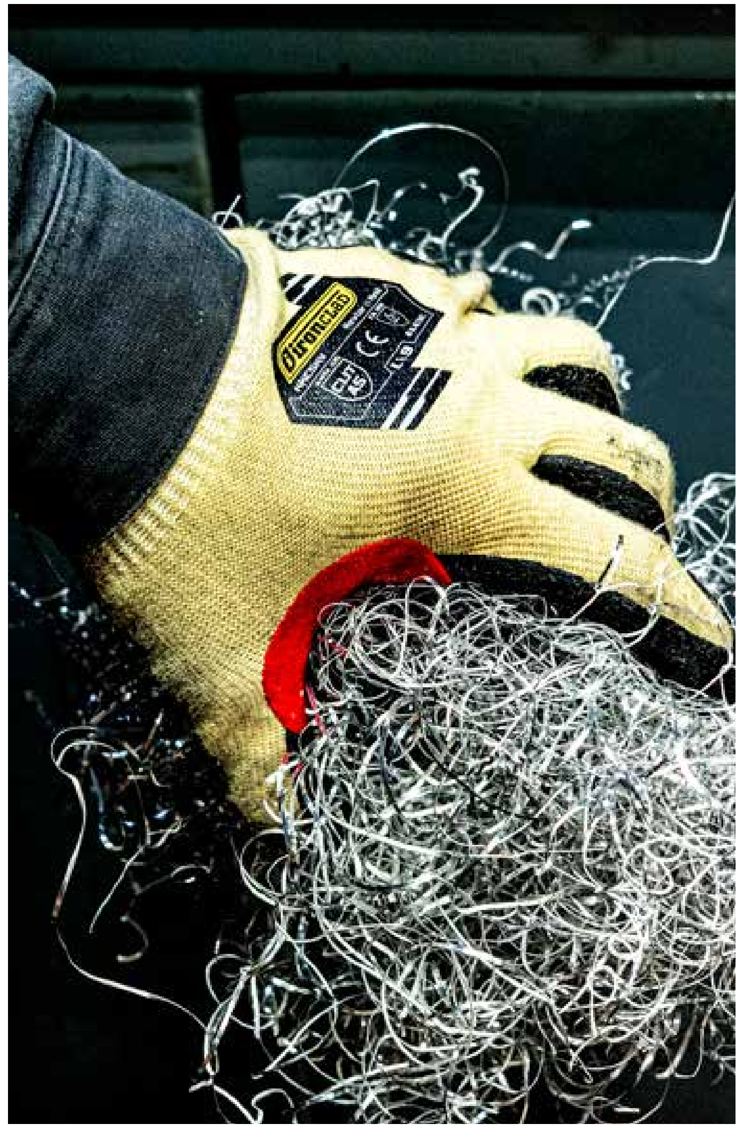
DUPONT Kevlar



Kevlar® fiber was invented in 1965, by DuPont™ scientist Stephaine Kwolek. It was originally used in racing tires and bullet-proof vests.

COLOR CODED CUT RESISTANCE

Compliance vs Catastrophe: When it comes to hand safety, compliance is the fine art of making sure that all workers are wearing protective gloves – and that they are wearing the right type of gloves for the hazards they encounter.



For example, Sandra works in the warehouse, so she needs cut level A1 touchscreen gloves. Roger handles sheet metal, so he requires cut level A4 gloves. Dewayne pulls hot metal parts off an assembly line, performs a brief grinding operation, and enters QC data on a tablet, so he needs heat resistant, touchscreen capable, cut level A5 gloves. Finally, there's Julia. Julia's job is to make sure that Sandra, Roger and Dewayne are all wearing gloves with the appropriate cut resistant level for the hazards they face on a daily basis. Therefore Julia needs a quick and efficient method of ensuring hand safety compliance across the entire workplace - and that's why we invented color-coded cut resistance.

So how did we do that? We started by adding a reinforcement to the saddle of our gloves, where the highest wear takes place. This reinforcement will double or triple the lifespan of the glove, reducing the overall cost of a hand safety program. Then, we developed a system of color coding that reinforcement, so safety professionals like Julia can rapidly scan the entire job site and easily evaluate if each worker is appropriately protected. Not only that, but Sandra, Roger and Dewayne can also perform the same quick check at the start of each shift.

Color-coded cut resistance, exclusively from Ironclad - the difference between compliance and catastrophe.

Ironclad Cut Resistance Color Guide

CUT RESISTANCE - ENHANCED

Cut resistance is just one factor to consider when choosing a glove. To make sure your hands are protected, we incorporate cut resistance along side several other Ironclad technologies. See our tech line up below!

Ironclad Limitless Technology

Pushing glove technology to the edge is what we do. It's what allows us to innovate and create the most badass gloves possible that meet the needs of some of the toughest people around. We aren't afraid to experiment and see what works, and what doesn't, to grow the field and create gloves without limits.

Flawless Fit

Our industry leading Flawless Fit is a proprietary measurement system that is unique to every one of our glove styles. It's comprised of up to 32 measurements per pair, per size, all with a tolerance measured at 1/10 of an inch. Why do we do it? Because it means our gloves will fit like no other glove on the market. That is the Ironclad Flawless Fit, that is Ironclad.

Command™ Touchscreen

We fuse conductive nanoparticles into the fibers of our synthetic leather & directly into our coatings. We **guarantee** that conductivity is present throughout our fabrics and coatings, and that our gloves stay conductive throughout their usable lifespan. Our touchscreen won't wear out or wash off like other touchscreen work gloves.

Ironclad Visual Engineering™

High Visibility is more than using bright fluorescent colors, it's also about the environment in which it is being used. Ironclad IVE™ is a patented high-visibility impact design that maximizes hand and finger visibility at a distance; applying increased contrast, brightness, fluorescence, and pattern recognition. Knowing where your hands are is the first step in avoiding impacts and associated injuries.

Limitless Leather™

Our Limitless Leather Technology utilizes proprietary tanning and sourcing methods, resulting in a leather that has 10x the durability of traditional glove leather. Constructed from only premium hides that are held to the highest standards possible, Limitless Leather consistently provides extreme durability while still being flexible and comfortable.

KONG® Impact Protection

Designed in conjunction with the Oil & Gas Safety Committee, our patented KONG® impact protection is designed to help protect against various impact hazards. Through extensive testing with the University of Wisconsin, we have determined the optimal combination of materials to greatly reduce the effect of impacts; thus ensuring that your hands are safe. Our patented impact protection reduces impacts by up to 90%.

IRONCLAD CUT-RESISTANT GLOVES

Ironclad Performance Wear is the leader in high-performance, task-specific work gloves. We created the performance work glove category in 1998 and continue to leverage our leadership position in the safety, construction, and industrial markets. We design, develop, and distribute specialized, task-specific gloves for industries such as oil & gas extraction; automotive repair; police, fire, first-responder and military; construction and more. We engineer and manufacture our products with a focus on innovation, design, advanced material science, dexterity, and durability. Our gloves are available through industrial suppliers, hardware stores, home centers, lumber yards, automotive stores, and sporting goods retailers nationwide; and through authorized distributors in North America, Europe, Australia and Asia.

Ironclad: Built Tough for the Industrial Athlete™.

FOR MORE INFORMATION VISIT IRONCLAD.COM


KNIT CUT 3
IKC3


COMMAND A2 FOAM NITRILE
SKC2FN


COMMAND ILT A2 FOAM NITRILE
KKC2FN


COMMAND A2 INSULATED
KC1SNW2


COMMAND A2 SANDY NITRILE
SKC2SN


COMMAND A2 PU
SKC2PU


COMMAND A2 PU HI-VIZ
SKC2PU-Y


COMMAND ILT A2 PU
KKC2PU


COMMAND ILT A2 PU HI-VIZ
KKC2PU-Y


INSULATED A2 LATEX
KC1LW


KNIT CUT 5
IKC5-BAS


COMMAND A3 FOAM NITRILE
SKC3FN


COMMAND ILT A3 FOAM NITRILE
KKC3FN


COMMAND A3 FOAM NITRILE
KKC3KV*


COMMAND A4 NITRILE
SKC4N


COMMAND ILT A4 NITRILE
KKC4N


COMMAND A4 FOAM NITRILE
SKC4FN


COMMAND ILT A4 FOAM NITRILE
KKC4FN


COMMAND A4 PU
SKC4PU


COMMAND ILT A4 PU
KKC4PU


KNIT CUT A4
KKC4


COMMAND A5 SANDY NITRILE
SKC5SN


COMMAND A6 FOAM NITRILE
SKC6FN


COMMAND A5 FOAM NITRILE
KKC5KV*


INSULATED A6 LATEX
SKC4LW


COMMAND ILT A6 FOAM NITRILE
KKC6FN


COMMAND A7 INSULATED
SKC4SNW2

KONG 360° CUT A3 IVE
INDI-KC5

KONG 360° CUT A3 GRIP IVE
INDI-KC5G

KONG 360° CUT A5 IVE
KKCA5

KONG 360° CUT A4
KKC5B

EXO INSULATED LEATHER CUT
EXO2-HVIP5

LIMITLESS LEATHER
ULD-C5

KONG 360° CUT A4 INSULATED
KKC5BW

KONG 360° CUT A6 CHEMICAL IVE
KCHA5

KONG PRO A6
SDX2P*

KONG RIGGER GRIP A5
KRC5*

360° CUT LEATHER IMPACT REINFORCED IVE
INDI-ILD-IMP5R2

LIMITLESS LEATHER IMPACT
ULD-IMPC5

KONG DECK CREW A4
KDC5*

KONG DECK CREW WATERPROOF A7 IVE
KDC5W

KONG CUT RESISTANT A5
SDXC*

KONG WATERPROOF A5
SDX2WC

360° CUT LEATHER IMPACT
ILD-IMPC5

360° CUT LEATHER IMPACT IVE
INDI-ILD-IMPC5

KONG RIGGER A5 IVE
INDI-RC5

KONG LPI OPEN CUFF A4 IVE
LPI-OC5*

KONG LPI CLOSED CUFF A4 IVE
LPI-CC5*

INSULATED LEATHER CUT A6
IEX-HVIP5

COMMAND IMPACT 360° CUT A5
IEX-MIGR5

DUPONT Kevlar
* Made with DuPont™ Kevlar®

FOR EXTENDED DURABILITY

- ✓ MACHINE WASH COLD
- ✓ LINE DRY
- ✓ DO NOT BLEACH
- ✓ DO NOT IRON

INSTRUCTIONS MAY VARY BY STYLE
SEE ORGINAL PRODUCT PACKAGING

GLOVE SIZING

USE A RULER TO MEASURE YOUR HAND (A–B)

MEN'S

SIZE	PALM WIDTH (A-B)
XXS (5)	2⅛in or less (5.4cm or less)
XS (6)	2⅛-2½in (5.4-6.6cm)
S (7)	2½-3in (6.6-7.6cm)
M (8)	3-3⅜in (7.6-8.7cm)
L (9)	3⅜-3⅞in (8.7-9.8cm)
XL (10)	3⅞-4⅜in (9.8-11.1cm)
XXL (11)	4⅜-4¾in (11.1-12.1cm)
XXXL (12)	4¾-5¼in (12.1-13.3cm)

IF BETWEEN SIZES - SIZE DOWN FOR A SNUG FIT

IRONCLAD PERFORMANCE WEAR

USA

ATLANTA, GA
250 HORIZON DR.
SUWANEE, GA 30024
TEL. 678-459-3700
FAX: 678-459-3720
WATS: 800-275-0056
ATLANTA@BRIGHTONBEST.COM

BOSTON, MA
928 WEST CHESTNUT ST.
BROCKTON MA 02301
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FAX: 774-296-8685
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BOSTON@BRIGHTONBEST.COM

CHARLOTTE, NC
1810 WEST POINTE DR., UNIT A
CHARLOTTE, NC 28214
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FAX: 704-393-6715
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CHARLOTTE@BRIGHTONBEST.COM

CHICAGO, IL
940 NORTH ENTERPRISE ST.
AURORA, IL 60504
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FAX: 630-898-9601
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21855 COMMERCE PKWY.
STRONGSVILLE, OH 44149
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FAX: 440-238-2336
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3225 ROY ORR BLVD., STE. 200
GRAND PRAIRIE, TX 75050
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DENVER, CO
9700 E. 56TH AVE., UNIT 120
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SHELBY TOWNSHIP, MI 48316
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6911 FAIRBANKS N. HOUSTON RD.
STE. 150
HOUSTON, TX 77040
TEL: 713-466-0336
FAX: 713-466-0385
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HOUSTON@BRIGHTONBEST.COM

LOGAN TOWNSHIP, NJ
1222 FOREST PKWY.
WEST DEPTFORD, NJ 08066
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LOS ANGELES, CA
12801 LEFFINGWELL AVE.
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MIAMI, FL
3426 WEST 84TH ST., STE. 203
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446 METROPLEX DR., STE. A120
NASHVILLE, TN 37211
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FAX: 615-834-1157
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SALT LAKE CITY, UT
2179 S. COMMERCE CENTER DR. STE. 400
WEST VALLEY CITY, UT 84120
TEL: 801-972-1313
FAX: 801-972-5114
WATS: 800-935-1402
SALTLAKE@BRIGHTONBEST.COM

SAYREVILLE, NJ
200 KENNEDY DR.
SAYREVILLE, NJ. 08872
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FAX: 732-525-8408
SAYREVILLE@BRIGHTONBEST.COM

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20308 59TH PLACE SOUTH, BLDG. 1A
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FAX: 253-872-3415
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ST. LOUIS, MO 63146
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FAX: 314-205-0857
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STLOUIS@BRIGHTONBEST.COM

TAMPA, FL
4915 DISTRIBUTION DR.
TAMPA, FL 33605
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FAX: 305-512-3450
WATS: 800-275-0035
TAMPA@BRIGHTONBEST.COM

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QLDSALES@BRIGHTONBEST.COM.AU

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FAX: 613-9587-7255
VICSALES@BRIGHTONBEST.COM.AU

PERTH, WESTERN AUSTRALIA
UNIT 3/420 VICTORIA RD.
MALAGA, WESTERN AUSTRALIA 6090
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FAX: 618-9248-4766
WASALES@BRIGHTONBEST.COM.AU

SYDNEY, NEW SOUTH WALES
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RUA DOS MISSIONÁRIOS, 410
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FAX: 55 11-5641-2444
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TOLL FREE: 844-200-5664

CORP. HEADQUARTERS

LONG BEACH, CALIFORNIA
5855 OBISPO AVE.
LONG BEACH, CA 90805
TEL. 562-808-8000
FAX: 562-808-8137

GLOBAL HEADQUARTERS

TAINAN, TAIWAN
NO.122, YI-LIN ROAD,
RENDE TOWNSHIP,
TAINAN, 71752 TAIWAN
TEL. 886-6-270-1756

IRONCLAD®
PERFORMANCE WEAR