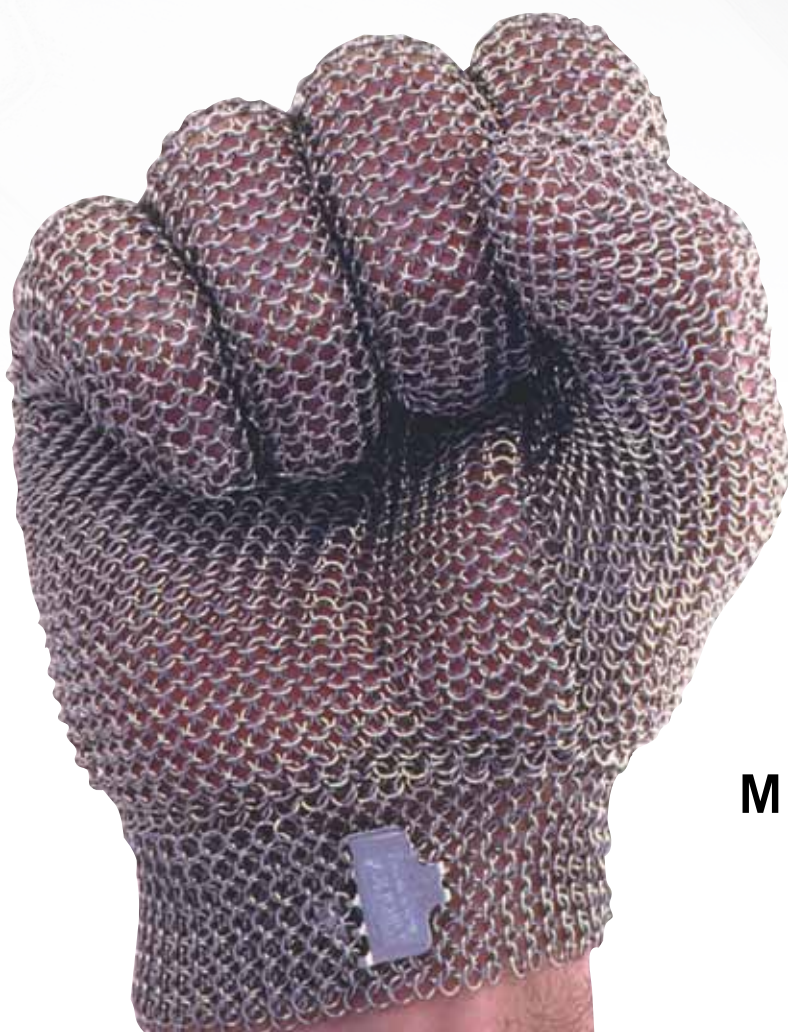




VICTORINOX



**STAINLESS STEEL
METAL MESH GLOVES**

MAKERS OF THE ORIGINAL SWISS ARMY KNIFE



The concept of mesh gloves goes back to the middle ages, when European knights wore gloves made of chain mail. Historical and mythical depictions of King Arthur and his Knights of the Round Table showed garments of metal, including chain mail that evolved into today's steel mesh safety glove.

What purpose did they serve?

The ring mesh served to protect the wearer from puncture of the swords and lances used in jousts and battles.

Leap forward 1500 years to the workers of today. Metal mesh gloves have been modernized, but at their root they are still woven together with 1000s of individually formed metal rings.



Early modern mesh gloves were manufactured of nickel plated brass. In the 1980s almost all manufacturers of mesh gloves had switched to stainless steel. The original metal mesh safety gloves had a fabric strap around the wrist to close the glove around the hand.

Who uses mesh gloves and when?

In the "food" industry, anyone who uses a hand knife or cleans/moves a slicer blade can (should) wear a metal mesh glove. Why? Just like the Knights of the Round Table learned, there is no product better at protecting from cut and puncture. But it is very important to note that even metal mesh gloves are neither cut-proof nor puncture-proof. They are cut-resistant and puncture-resistant, and they are the most cut-resistant and puncture-resistant option available. But nothing is 100%, and mesh gloves are only designed to be used around hand knives, no powered blades or saws. This is why there are warnings on the packaging that include:

WARNING: These gloves will not withstand the force of power-driven blades, saws, and tools; avoid this hazard.

WARNING: These gloves could be caught in moving machinery and should not be used where such contact is possible.

Mesh gloves provide different protection from knit cut resistant gloves. Knit cut resistant gloves can offer some cut protection, but some of the fibers used can abrade over time. Additionally, cut resistant gloves offer no puncture protection, as knife points can easily find their way in between the knit fibers. Metal mesh gloves offer the ultimate in cut protection and also puncture protection. Only the smallest point of knife can penetrate a mesh glove, as the rings have an inside ring diameter of only 3.1mm.

What does the law state about mesh gloves?

OSHA 3108 is the "Safety and Health Guide for the Meatpacking Industry." It can be accessed online at:

<http://www.osha.gov/Publications/OSHA3108/osha3108.html>

If you look at the section labeled "Protective Clothing and Equipment" in the last sentence of the first paragraph, you will find this, *"In addition, workers who use knives must be provided with metal mesh gloves and aprons, and wrist and forearm guards to protect them from knife cuts."*

How different is the meat packing industry from food service or grocery or several other industries? There are workers in all of these industries using hand knives to cut food. So if OSHA says that mesh gloves should be worn in meatpacking, it seems quite logical that it would be a best practice to wear them in other similar industries.

How to tell one mesh glove from another?

Currently, there is no US or State government standard about how to make a mesh glove. So manufacturers can produce gloves that appear to do the job, and let the end user decide if the gloves suit their needs.

Saf-T-Gard and **Niroflex2000** branded mesh gloves follow the European standard EN 1082. This standard covers several performance and design criteria, including ring weld (tensile) strength and ring assembly.

The tensile strength requirement, section 4.3.1 states that "When tested... no ring, link or plate shall break open when a force of 100N is applied." (An "N" is a Newton, a measure of force. 1 N is roughly 0.22481 pounds of force. So 100N, the minimum requirement is roughly 22.481 pounds of force).

All **Saf-T-Gard** and **Niroflex2000** gloves meet at least twice the minimum requirement, or at least 200N of force would be required to break a ring.

Additionally, section 4.2.1 states that "Chain mail....shall have 4 rings passing through each ring." Again, because there is no standard in the US for mesh gloves, some mesh glove manufacturers only connect their pieces of mesh using 1 ring and not four. This is a less expensive way to make the gloves, as it is faster to assemble. However, as a result, the gaps at glove seams are as large as **6.3mm** through which a knife point could protrude.

Saf-T-Gard and **Niroflex2000** gloves are assembled by weaving the joining ring around (over and under) at least four adjacent rings, in exactly the same way as the basic mesh material is interlocked. As a result, the seams on Saf-T-Gard and Niroflex2000 gloves are as strong, safe and secure as any other part of the glove and the maximum gap is **less than 3.1mm**.



Niroflex2000 & Saf-T-Gard vs. Other Mesh Gloves



When you consider a mesh glove, be sure to inquire if the glove is compliant with EN1082. If it is the only question you ask make sure that the gloves are the safest possible to protect you and your workers.

Hygienic concerns

Now that you understand what a mesh glove is used for, and how to tell safe gloves from those not as safe, it is appropriate to reconsider the environment where these gloves will be worn. In most cases mesh gloves are worn in a food processing or food service environment, a kitchen cut-up or grocery – all locations where they come in contact with food.

In each of these environments almost all of the tools and knives used are stainless steel. Many of the surface materials, transport bins, etc.

Why? Because stainless steel is a non-porous material that is relatively simple to clean and will not harbor bacteria.

However, as mentioned previously, original metal mesh gloves had a fabric strap around the wrist to close the glove around the hand. With a fabric strap you are introducing a porous material to a purportedly hygienic environment. The fabric straps are challenging to clean and they can be a place for bacteria to hide and grow – even after the most thorough cleaning processes.

Because of this concern, a new generation of metal mesh gloves was born – gloves without fabric straps. The first 100% stainless steel glove was the Niroflex2000. Niroflex2000 replaced the fabric strap with a patented all stainless steel closing system.

By eliminating the fabric strap, Niroflex2000 reduces the risk of bacteria and cross contamination. This helps facilities become compliant with the USDA FSIS (Food Safety and Inspection Service) which states that “All plants must develop, adopt and implement a HACCP (Hazard Analysis and Critical Control Point) plan for each of their processes.” Additionally, FSIS, in their Standard Operating Procedures for Sanitation states “All plants must prepare and implement plant-specific standard operating procedures (SOPs) for sanitation to ensure they are meeting their responsibility to keep their facilities and equipment clean.”



Other manufacturers have tried to copy the idea of a “strapless” glove. Some use springs or rubber bands in the cuffs. Just like elastic in shirt cuffs or socks, these springs become stretched out over time and lose their tension. When they do, they become a safety hazard as the glove no longer fits properly. Additionally, users have commented that the springs in some gloves can end up locking food particles in, rather than allowing them to slow freely upon cleaning.

Recently, Niroflex2000 became the **first and only** metal mesh glove approved for the USDA Accepted Equipment List. Being listed means that USDA confirms that Niroflex products meet or exceed ANSI/NSF/3-A 14159-2-2003, Hygiene Requirements for the Design of Hand Held Tools Used in Meat and Poultry Processing.





Mesh glove opportunities?

Think about your customers? Are they using hand knives? Are they cutting up food? Any restaurant, cafeteria, or cut up operation is a potential customer for a metal mesh glove. Most people only wear one glove, as they hold the knife in their dominant hand, and wear the glove on the hand holding the food. (Those wearing mesh gloves to change slicer blades will often wear mesh gloves on both hands.)

Initially the cost may seem prohibitive, as wrist length gloves can cost more than \$100 each. But if you stop and think about the costs that it can save, what is that glove really worth?

- What is the cost of cut injury to a worker? The insurance, the workman's compensation coverage, the short term disability coverage, the lost productivity?
- What is the cost to your business if the injured person contaminates the food with blood or other biohazards?

According to a 2005 report from the Bureau of Labor Statistics 25% of all injuries resulting in days away from work were hand related. The average cost per reportable hand injuries is a staggering \$4200, according to the National Safety Council. BLS data had the cost of hand injuries at \$8,500 for combined medical and indemnity costs! (This includes everything from a couple of stitches to severed tendons.) An even more shocking statistic is 70% of workers suffering hand injuries were not wearing gloves! For the remaining 30%, injuries occurred because the gloves used were either inadequate or worn out.

Specifically, in the food service industry, in 2005 the federal Occupational Safety and Health Administration estimated that hand injuries cost the foodservice industry about \$300 million a year in medical costs, lost time from work and workers' compensation insurance payouts. The U.S. Bureau of Labor Statistics reported that in 2003, nearly 24,000 restaurant workers lost at least a day of work because of a cut, burn or scald, predominantly to the hands.

Suddenly the \$150 cost of glove does not seem so large....

As examples of what some end users are implementing for their workers, many grocery stores who cut their own meat give mesh gloves to their butchers. We know of some grocery chains that issue mesh gloves to everyone in the store who uses a knife – meat department, bakery, fish, floral, etc.

Many restaurant chains issue mesh gloves to their workers that use knives. We know of a large national Mexican food restaurant that issues mesh gloves to all workers in the kitchen who cut up the meat. We know of restaurants who even issue them to the bartenders for cutting up drink garnishes.

The opportunities are numerous. According to published data, there are nearly 750,000 restaurants in the United States who purchase their supplies from over 3,000 food service distributors. While some restaurants have no need for mesh gloves because they purchase portion-control provisions, many other restaurants and catering organizations do cut their own meat and poultry.

niroflex 2000®

