## A GLOBAL BRAND MEANS **GLOBAL STANDARDS**



Around the world, SHOWA gives ordinary hands, extraordinary abilities.





100

÷

RESEARCHERS



## SHOWAgroup.com

Europe SHOWA International WTC - Tower I - Strawinskylaan 1817 1077 XX Amsterdam - Netherlands P: +31 (0) 88 004 2100 | F: + 31 (0) 88 004 2199

565 Tohori, Himeji-City Hyogo 670 0802, Japan P: +81-79-264-1234 F: +81-79-264-151

USA 579 Edison Street Menlo, GA 30731, USA P: 800-241-0323 | F: 888-393-2666

Latin America P: +1 404 364 1833 | F: +1 404 364 1892

> Canada 253 Rue Michaud - Coaticook Quebec J1A 1A9 - Canada 800-565-2378 819-849-638



# CUT PROTECTION GUIDE



# **CUT THROUGH** THE CONFUSION

UNDERSTANDING YOUR **PROTECTION AGAINST** MECHANICAL RISKS

In November 2016, the international standards for testing against mechanical risks were updated. The market saw a drastic need for improvement due to several limitations offered within the outdated assessment of protective gear:

- Previous standards were over 12 years old (EN 388: 2003 and ANSI/ISEA 105-05)
- PPE manufacturers have developed materials and fibres with increased resistance against mechanical risks, which are more frequently used than ever.
- The Coup Test sometimes report an over-estimated cut level due to the dulling of the circular blade when testing the stronger new fibres.

Important changes were therefore introduced to the norms, enabling notified bodies to better assess and identify gloves that perform better in various degrees of mechanical risks. As more PPE manufacturers display the new norm pictograms on their products,

safety managers need to understand and recognize the differences in order to make well-informed decisions about protecting their workers from the risks involved.

This guide will help you navigate these changes to the new standards and enable you to make better choices about your cut protection needs. You will see the tests explained, how to read the results on your glove and which cut level you need for the task at hand.

# **MEET OUR NEWEST IN CUT PROTECTION GLOVES**



EN 388:201

2X42C

EN 388:201

L L

4X42C

## DURACoil 6

#### Natural latex coating over engineered **DURACoil liner reinforced with HPPE**

- Natural latex coating protects the palm and fingers from liquids, snags and abrasions
- Breathable back of hand reduces perspiration and keeps hands drv
- Rough texturing on palm ensures exceptional grip performance
- Lightweight and durable with excellent resistance to tearing



#### Microporous nitrile coating over engineered DURACoil liner reinforced with HPPE

- Microporous nitrile coating protects the hand from grease, hydrocarbons and abrasions while remaining aerated
- Embossed nitrile palm finish disperses oil to increase grip and longevity in light oily environments
- Breathable back of hand reduces perspiration and keeps hands dry
- Good resistance to punctures and nicks on the fingers and palm

and keeps hands dry

EN 388:201

4X42C

## DURACoil 576

Foamed nitrile over <sup>3</sup>⁄<sub>4</sub> dipped nitrile coating, over engineered DURACoil liner reinforced with HPPE

- Foamed nitrile coating protects the hand from oils and abrasions while remaining breathable Good resistance to abrasions, punctures and nicks on the fingers and palm
- Optimal grip performance in wet & oily conditions
- Liquid-proof to end of coated area: full hand and wrist coverage

SHOWA



Foam nitrile coating over spandex/ engineered cut resistant liner reinforced with HPPE

Excellent cut resistance performance due to cut resistant liner - Level D/A4 Foam nitrile coating protects against oils, hydrocarbons, grease & abrasions, while offering excellent grip in wet & dry conditions <sup>•</sup> Cooling HPPE properties & breathable back of hand reduces perspiration & keeps hands dry • FDA & EU Food Contact approved



#### Foamed nitrile over fully dipped nitrile coating, over engineered DURACoil liner reinforced with HPPE

- Foamed nitrile coating protects the hand from oils and abrasions while remaining breathable Good resistance to abrasions, punctures and
- nicks on the fingers and palm • Optimal grip performance in wet & oily conditions
- Liquid-proof to end of coated area: full hand and wrist coverage





#### Foam nitrile coating over spandex liner reinforced with stainless steel and aramid

 Exceptional cut protection due to superior blend of aramid & stainless steel - Level F/A7 • Foam nitrile coating protects against abrasions, snags & punctures, offering optimum grip in dry & oily applications • Plated-knit liner avoids scratchy fibres touching the skin for long lasting comfort Contact Heat level 2





4X42C

EN 388:2016

# WHAT YOU NEED TO KNOW ABOUT THE NEW GLOBAL CUT STANDARDS

## ANSI/ISEA 105-16 (ASTM F2992-15)

- Uses TDM-100 cut machine to test cut level
- Measures in GRAMS of force up to 6000g (previously 3500 g)
- Reporting is in 9 levels instead of previously 5 to accommodate stronger cut-protective fibres.
- Tests under the new standard have an "A" before the cut level

0

0

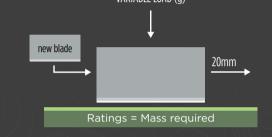
I

## EN 388: 2016 (ISO 13997)

- Uses Coup Test as well as the TDM-100 cut machine (ISO 13997) to test cut level to accommodate limitations (dulling of the blade) in the Coup Test when testing strong cut-resistant fabrics
- Coup Test measures number of cycles required to cut through the glove
- > Reporting is 1 5
- TDM-100 measures NEWTONS of force up to 30+N > Reporting is A - F

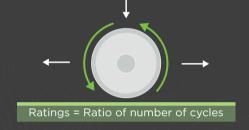
THE NEW NORM STATES THAT IF BLADE DULLING **OCCURS DURING THE COUP** TEST, THE ISO 13997 TEST **METHOD USING TDM-100** MUST BE PERFORMED.

## **TDM-100 CUT MACHINE** VARIABLE LOAD (g)



The Tomodynamometer (TDM-100) is used to determine the load required to cut through a glove sample using a straight-edge blade that moves along a straight path within a distance of 20mm. The sample is cut 5x each at three different loads

## COUP TEST CUT MACHINE FIXED LOAD (500g/N)



Using a circular blade that moves back- and-forth and under a fixed load of 500 grams, the Coup test machine measures the ratio of the number of cycles required to cut through the test sample vs. the reference material.

# **UNDERSTANDING YOUR CUT GLOVE**

**IDENTIFYING YOUR PROTECTION: REPORTING & MARKINGS** 

ANSI/ISEA 105-16 (ASTM F2992-15)	-A1	
Abrasion: 0 – 4		
Puncture: 0 – 4		
Cut Resistance <b>–</b> F2992-15(TDM-100): A1 – A9	СUТ	

EN 388: 2016 (ISO 13997)	
Abrasion: 0 - 4	Ґ
Blade cut resistance	
Tear: 0 - 4 -	
Puncture: 0 – 4 -	
Cut Resistance – also ISO 13997	



RATING SCALES

## N=gx0.00981

force = mass x 0.00981

ANSI vs. EN ANSI/ISEA 105: measures MASS using grams EN 388: measures **FORCE** using newtons

<b>88</b> tested to ISO 13997		ANSI/	ANSI/ISEA 105-16	
newtons	grams		grams	
2-5	204-508	A1	200-499	
5-10	509-1019	A2	500-999	
10-15	1020-1529	A3	1000-1499	
15-22	1530-2242	A4	1500-2199	
22-30	2243-3058	A5	2200-2999	
30+	3059+	A6	3000-3999	
		A7	4000-4999	
		<b>A</b> 8	5000-5999	

# **ACROSS THE SCALE, SHOWA HAS YOU COVERED**

в

Έ

MEDIUM LOW CUT LEVEL CUT LEVEL NEEDED

**HIGH CUT LEVEL NEEDED** 

6000+

A9

ANSI/ISEA 105-05 cut level 4 has

been divided into three levels

under the 2016 revision

#### The updated standards allow for more precise and accurate measuring of cut protection levels, which are easy to read on your glove.

For example, ANSI cut level 4 used to range from 1500 up to 2199 grams. This categorized a glove with ANSI A4 cut level as being suitable for both manufacturing as well as metal stamping -two applications with very different cut resistance requirements.

(TDM-100): A - F/ X Impact: P / blank

EN 388's testing method using only the Coup Test would at times result in two different gloves both having a cut level 5. However, after being tested with the ISO 13997 method where the TDM machine is used, the same gloves could score a cut level 5/C while the other an 5/E-a difference of up to 2000 grams of force! The new levels make it much easier to identify the different cut protection levels.

# **SHOWA CUT INNOVATIONS FOR PROTECTION & COMFORT**

## **DURACoil SERIES**

#### **MULTI-PURPOSE CUT PROTECTION** FOR CUT LEVEL C/A3

The liner of every DURACoil glove is engineered by tightly wrapping multifilament polyester around a cut resistant fiber, then reinforcing it with High-Performance Polyethylene (HPPE). The soft properties of HPPE combined with the unique coating styles of each model provides ultracomfortable multi-purpose gloves with durable cut resistant properties for precision handling.



## **S-TEX SERIES**

#### **STAINLESS STEEL PROTECTION** FOR CUT LEVEL D/A4 AND UP

Hagane Coil<sup>®</sup> technology enables us to provide high levels of cut resistance without sacrificing comfort. The key ingredient in each S-TEX glove is the unique coiling technique that binds an attending yarn to a stainless steel core. This provides better protection than any natural or synthetic fibre, yet is thin enough to allow flexibility and free movement as the hand bends and



EN 388: 2016

 Attending yarn 2 Stainless steel



flexes

1 DURACoil 2 HPPE