
Regulatory Compliance

# Understanding the Cut Standards for Hand Protection: A Practical Guide

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A safety professional's role is to provide the support necessary to keep employees safe within their work environment. Identifying and correcting hazards and ensuring the employer is in compliance with regulatory requirements are certainly key responsibilities of a safety professional. Another key function is to provide injury-prevention measures that eliminate or reduce employee exposures to hazards while performing assigned tasks.

One effective way to identify and create preventive or protective measures against known hazards is through conducting a risk assessment. This process allows you and your employees to work together to identify all of the recognized hazards associated with a task or assignment followed by establishing controls that will protect employees when performing those tasks.

For many industries, one known hazard is exposure to cuts from handling materials. Hand injuries overall account for 15% of all injuries in the workplace. Research shows that ***cuts, punctures, and lacerations*** account for over 44% of hand injuries. Since we use our hands to perform critical life skills, any injury could be significant with loss of function, pain, and time needed to heal, hoping there is no permanent loss of function. Thus, cut-resistant gloves are a must-have in industrial work.

After following the hierarchy of controls to eliminate, substitute, and develop safe procedures that address the identified hand hazard, protection from remaining hazards is with personal protective equipment (PPE). The most common solution to cut exposures of the hands is cut-resistant gloves.

The problem is, what type of cut-resistant glove will work for the identified hazard? What glove will provide enough protection from the known hazard but not prohibit or reduce the ability to perform the assigned task?

In the market today, there are so many choices of gloves that are advertised as "cut-resistant." We all know that depending on the hazard exposure, not all cut-resistant gloves are equal. How do we know that the glove we select offers the level of needed protection?

### ANSI and CE EN Standards

There are two global organizations that safety professionals can rely on to provide testing results and ratings for cut-resistant gloves: the American National Safety Institute (ANSI 105) and the European Commission's (CE) EN 388, the standard followed by Europe, Canada, Australia/New Zealand/Pacific, Mexico, and South America. Both standards were updated in 2016 and the testing for the gloves standardized using the International Standards Organization (ISO 13997) cut test method, which better aligns the results of the testing with more consistent and clear data.

ANSI revised the cut scores from a 1-5 rating (up until 2016) to 1-9, the higher the number, the more cut-resistant the glove. For industries with high risk cut hazards, expanding the cut-level rating allows for greater accuracy in matching the glove to the identified hazard.

The EN 388 standard continues with its 1-5 numerical rating for cuts that use the Coup test and adds an alpha-identifier (A-F) to align with and provide comparison to the ANSI 1-9 rating, using the ISO test.

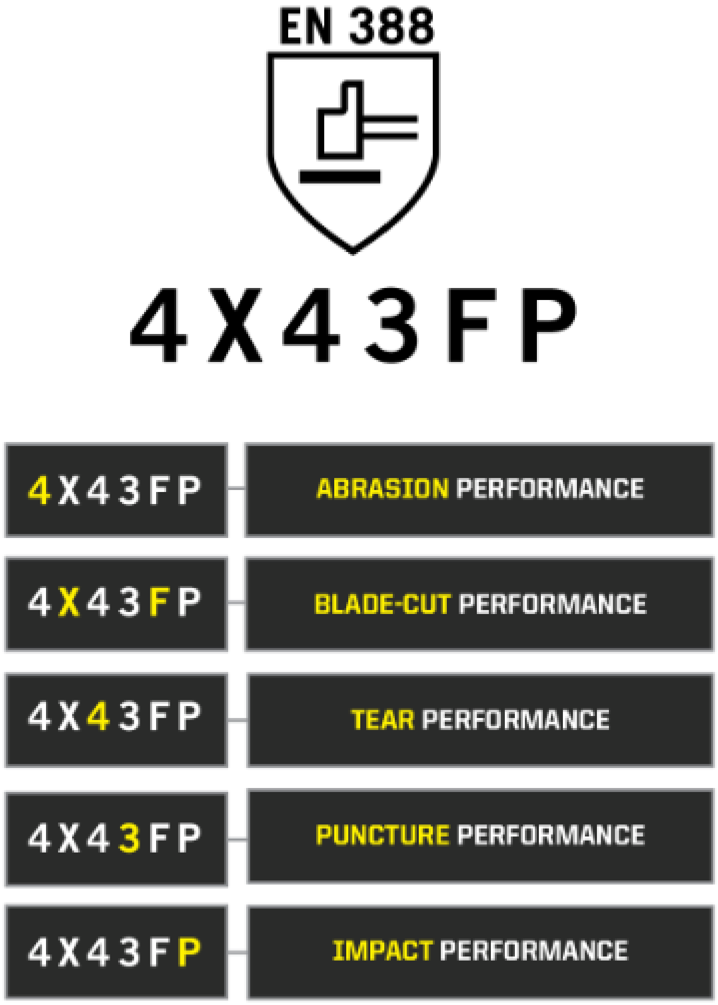
The new glove markings, using the ISO testing standard, appear like this:

ANSI: Cut-level A9 = EN: Cut-level F

If you were familiar with the pre-2016 standard, you know the four EN numbers on a glove are for abrasion-resistance, cut-resistance, tear-resistance, and puncture-resistance. The second number, cut-resistance, was based on the Coup test method.

As the photo indicates, the new EN 388 six-digit display continues to follow the pre-2016 markings, but the "X" as the second digit means it was not tested for cut-resistance by the Coup method; the "F" (5th digit) means it was tested for cut-resistance using the ISO testing method. The "F" designation in EN 388 indicates the highest cut-resistance level and compares to the ANSI A9 marking.

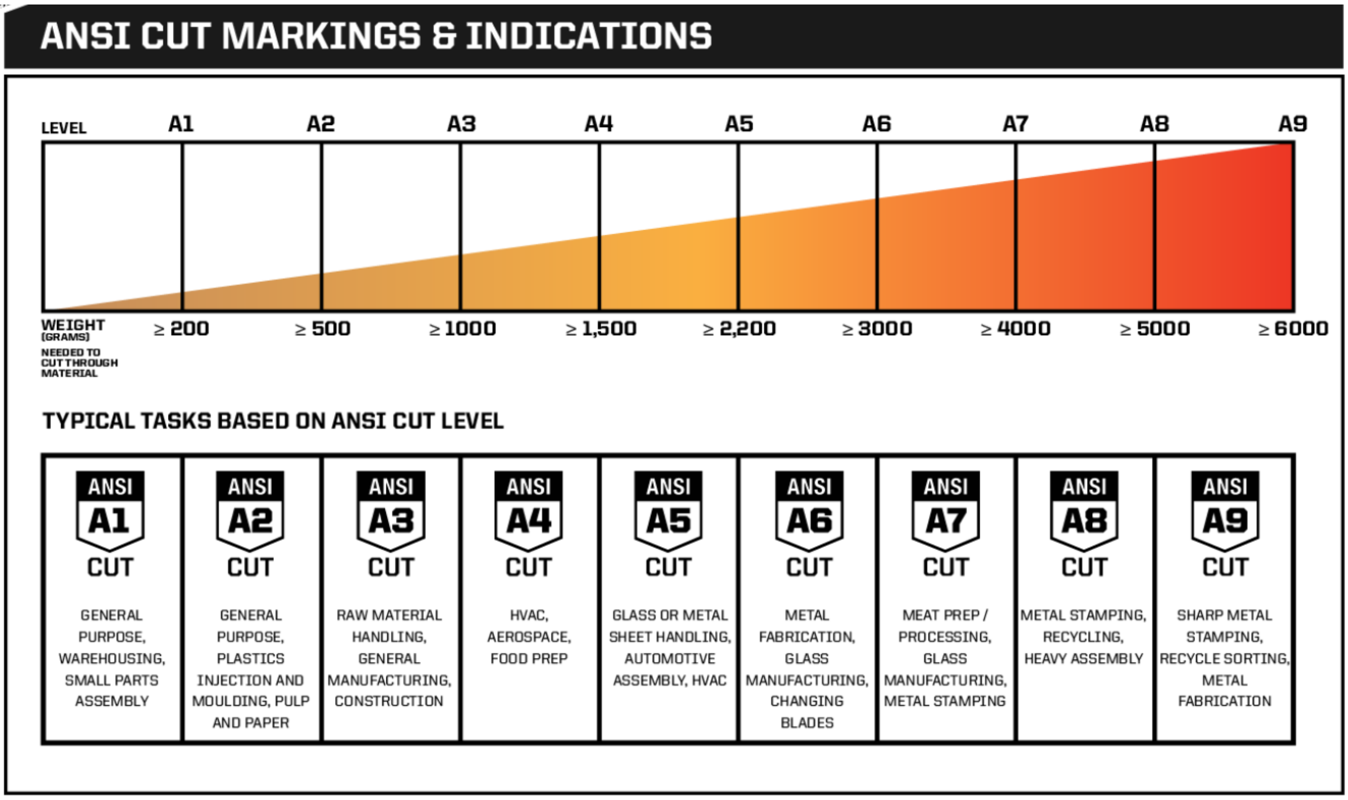
An "Abrasion" rating may also appear on the glove. An ANSI rating will be in a separate marking, identified as "ABR" and the EN 388 standard will add a sixth alpha-digit after the cut-resistance letter, with a "P" (passed), an "F" (failed), or an "X" (not tested), as depicted in this chart:



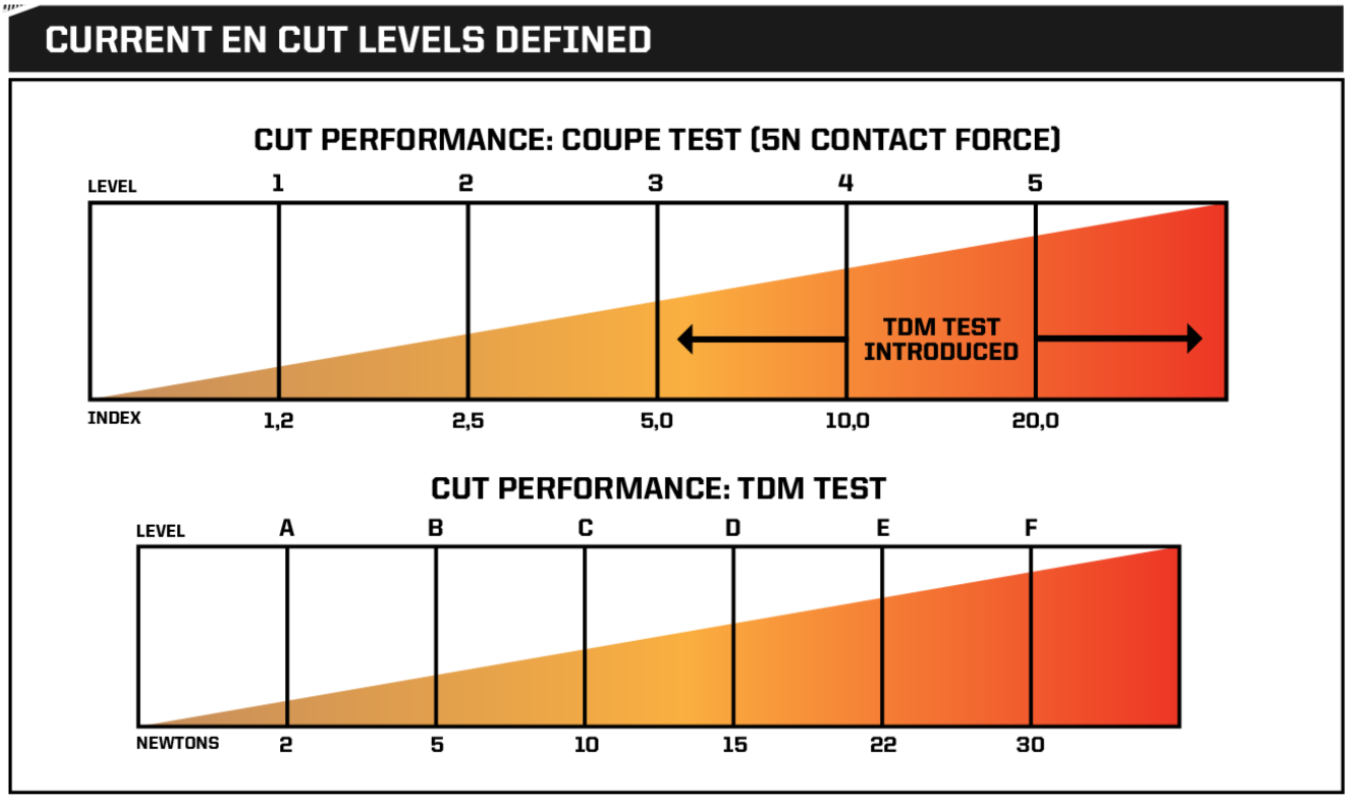

In a nutshell, as you conduct your risk assessment and determine the cut-level hazards, you can use the revised ANSI and EN markings to better select the right level of protection for the hazard.

The charts below offer a quick reference guide, regardless of how much you understand or know about the actual testing methods. You can also reach out to your manufacturer or distributor representative for assistance in your selection and needs (or just call Mechanix Wear).

## CURRENT ANSI CUT LEVELS DEFINED, USING THE TDM 100 (ASTM) TEST:




## CURRENT EN CUT LEVELS DEFINED, USING THE COUP TEST (2ND DIGIT) AND TDM 100 TEST (5TH DIGIT):




Remember, it is your responsibility to select the PPE that best protects from the hazards identified in your risk assessment. The wrong glove – whether insufficient or over-rated for the hazard – can create additional hazards while providing a false sense of protection for your employees.

Matching the correct glove and protection level to the hazard will reduce your frequency and severity of injuries, reduce your injury and workers' compensation costs, and actually save your budget and your profits by purchasing the right PPE. Price point alone should never be your guide as buying the least expensive item generally proves to be very expensive in the long run. Base your selection on form, fit, and function for the identified hazard.

## CUT-RESISTANT GLOVE TESTS AND SCORES

Both ANSI and the CE revised their cut glove testing standards in 2016 to provide synchronization between testing and scoring. This synchronization provides clarity for the end-user to select the glove most appropriate for the identified hazards.

The global standards address the testing and classification of hand protection gloves for the following performance properties:

- **Mechanical Protection**:
- Cut Resistance
- Puncture Resistance
- Abrasion Resistance
- **Chemical Protection**:
- Permeation Resistance
- Degradation
- **Other Performance Characteristics:**
- Ignition Resistance
- Vibration Reduction

## HOW DOES THE TEST WORK?

The ANSI/ISEA 105 and EN 388 are now synchronized by both organizations following the ISO 13997 standard using the Tomodynomometer machine (TDM 100) test. This allows for the end users to compare cut-resistant levels knowing the testing for each standard is the same.

Pre-2016, each standard followed different test methods: the TDM method uses grams (mass) of weights applied vertically with a horizontal cutting motion to measure how much a glove could withstand from a sharp blade prior to penetrating it. The greater the grams, the more weight that is needed to cause a glove to be damaged.

The Coup method uses newtons (force) with a circular cutting motion to measure how much applied energy was needed to cause damage to the glove. The greater the newtons, the more force that is needed to cause a glove to be damaged.

*Continue reading this* ***blog*** *in its entirety to learn more about the different ANSI and EN 388 cut levels and how to choose the right glove for your application.*

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