HOW TO CHOOSE THE RIGHT CUT RESISTANT GLOVE FOR YOUR JOB

INTRODUCTION

Choosing the correct level of protection against cuts, in line with the latest industry standards, is key to safeguarding workers' hands against injuries. Gloves sold in Europe[1] and North America[2] clearly display their cut resistance levels[3] so now it's more clear what cut protection level you have.

However, making the right choice is not all about cut levels. Comfort, for example, from tactile sensitivity to breathability, through to the use of hypoallergenic materials, is just as important. Gloves can also help businesses cut costs, depending on how often they need to be replaced.

With so much at stake, this How to Guide outlines the four steps required to select cut-resistant gloves correctly.

STEP 1: KNOW THE APPLICATION AND ASSESS THE RISK

It may sound obvious, but the first step should always be to assess whether workers need cut-protective gloves. The reality, is that most industries, from automotive and construction, through to logistics and manufacturing, present a risk of cuts and hence, hand protection should never be overlooked. For example, even the sharp edges of paper cartons can cause mild cut injuries.

Begin by identifying all the potential hazards[4] that your workers may face during the day:

- Consider any activities, processes or equipment that could cause cut-related injuries.
- Ask your workers: they may notice hazards that are not immediately obvious to you or may have experienced first-aid occurrences in the past.
- Review official accident records to identify hazards that perhaps you haven not thought of.
- Check the manufacturer instructions or data sheets of the machinery and tools handled by your workers to identify any associated hazards.
- Think whether there are any non-routine operations (e.g. maintenance, cleaning or changes in production cycles) that may present hazards.

When looking for hazards there are other important factors to consider. Tools and machinery, for example, should be inspected to make sure they are in good condition (e.g. a broken handle or missing guard may put a worker at risk). There might also be other indirect environmental hazards to consider, for example poor lighting.

Once you have identified the hazards, consider who may be at risk[5] of hand cuts. There are different factors at play here:

- **Where** do they work? Do they work near a cut hazard?
- **What** do they do? Do they handle equipment, objects or materials that may cause hand cuts?
- **How** experienced/well trained are they? Are they new to the job or temporary contractors who may not be familiar with some of the hazards on the job?

The next, fundamental step of a cut risk assessment is to identify cut-risk levels. Think about each of the hazards you have identified and ask yourself:

- How likely is it to cause harm?
- How severe can the harm be?

Bear in mind that cut-related injuries normally come in three shapes:

- **Incision**: contact with a sharp edge that creates a smooth/neat wound.
- **Laceration**: contact with a jagged/rough edge that leaves a torn/open wound.
- **Abrasion**: when skin is scraped or rubbed away by a rough edge.

All these findings should help you come up with the most appropriate risk control measures. As we have seen in the whitepaper, the first step should always be to try and eliminate or, at least, mitigate the risk in line with the hierarchy of controls[6]. When all other options are exhausted, your workers' cut protective gloves become the last line of defence. This is where cut protection levels come in, which is why being familiar with the latest standards is paramount.

STEP 2: KNOW THE STANDARDS AND REGULATIONS

Cut-protective gloves are normally classified according to their ability to protect against cuts. To ensure the way they are classified is consistent across countries, international standards are in place, two of which have now been updated.

In North America, ANSI-105-2016[2] is the latest revision of a voluntary industry standard. Like its European counterpart, the standard references the new ISO 13997 TDM test for abrasive fibers to reduce variation and provide consistency of the ratings. This test demonstrates a far more precise cut performance and offers more meaningful results[7]. It involves a straight blade being drawn across the sample in one movement, using a new blade every time. The 'stroke length' before cut-through is recorded for a range of forces. Here, graphs are plotted to predict the force (in grams - g) required to cut through the glove.

The number of classification levels has been expanded to address the gaps in the rating levels from previous versions. There are now nine cut-resistant levels specified, from a low level A1, requiring 200-499g to cut through, up to maximum A9, where a force of more than 6000g is required.

ANSI-105-2016

CUT PROTECTION LEVEL	Low	Medium	High		Extra High			Maximum	
CLASSIFICATION LEVEL MARKING	A1	A2	A3	A4	A5	A6	A7	A8	A9
FORCE	200-499 g	500-999 g	1000-1499 g	1500-2199 g	2200-2999 g	3000-3999 g	4000-4999 g	5000-5999 g	6000+ g

Europe's EN388 standard[8], introduced in 2003, covers the test requirements for safety gloves to guard against risks such as cuts and abrasions. EN388 classifies cut resistance according to a Coupe test, which involves passing a blade across the glove until it runs through. This method is, however, unsuitable for the latest innovations in glove technology, which today feature materials such as high-performance polyethylene (HPPE), or glass and steel fibers. This is one of the reasons why, in 2016[1], the standard was updated to reference the new ISO 13997 TDM test for abrasive fibers.

The force (in Newtons - N) required to cut through the glove is used to calculate a score from A to F, with F being the highest.

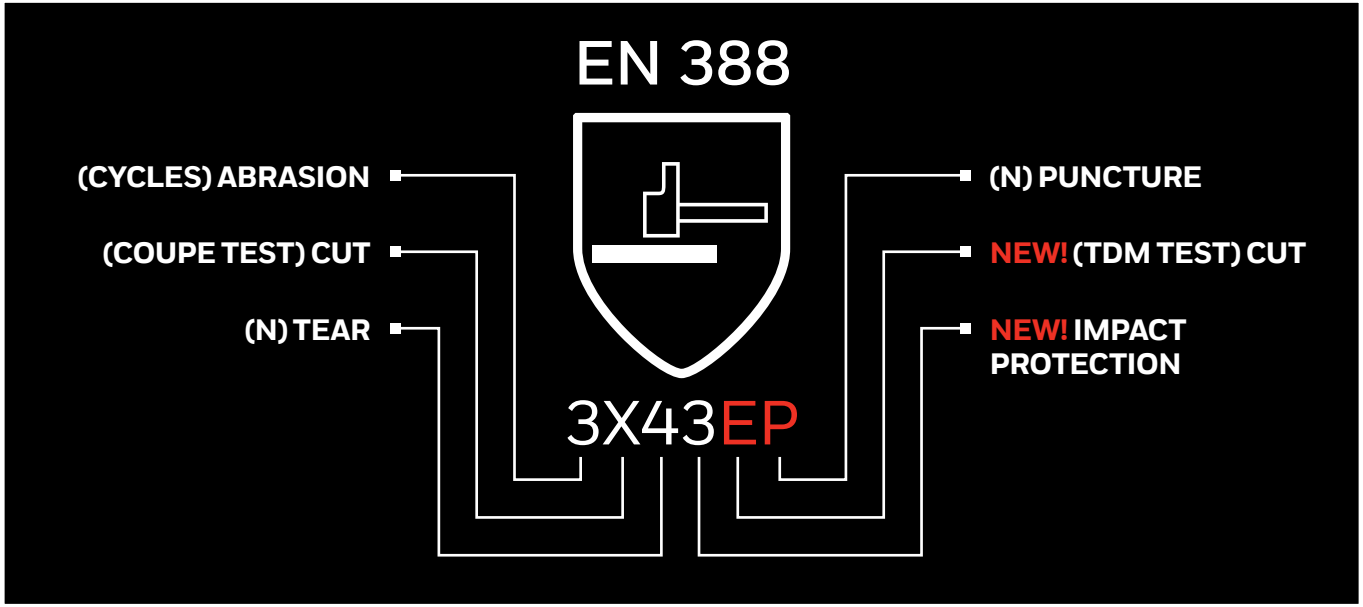
EN388:2016

CUT PROTECTION LEVEL	Low	Medium	High		Extra High	
CLASSIFICATION LEVEL MARKING	A	B	C	D	E	F
FORCE	>2N (203 g)	>5N (509 g)	>10N (1020 g)	>15N (1529 g)	>22N (2243 g)	>30N (3059 g)

In association with the updated standards, changes have also been made to the markings on cut-resistant gloves. This is to help users understand and select the most appropriate level of cut protection for the application.

For EN388[1], the marking also includes additional information on abrasion, tear and puncture resistance (from 1 to 4, with 4 being the highest), with the updated 2016 version now also indicating whether the glove is impact resistant (P) (see illustration on the right).

Remember: markings are not optional, they are a legal requirement. Any new personal protective equipment (PPE) sold in the European Union must now bear the relevant CE marking and documentation[3] that evidences conformity with the latest industry standards and gloves are no exception. In North America, the marking is still optional, but most manufacturers already supply information on cut levels to help users select gloves.

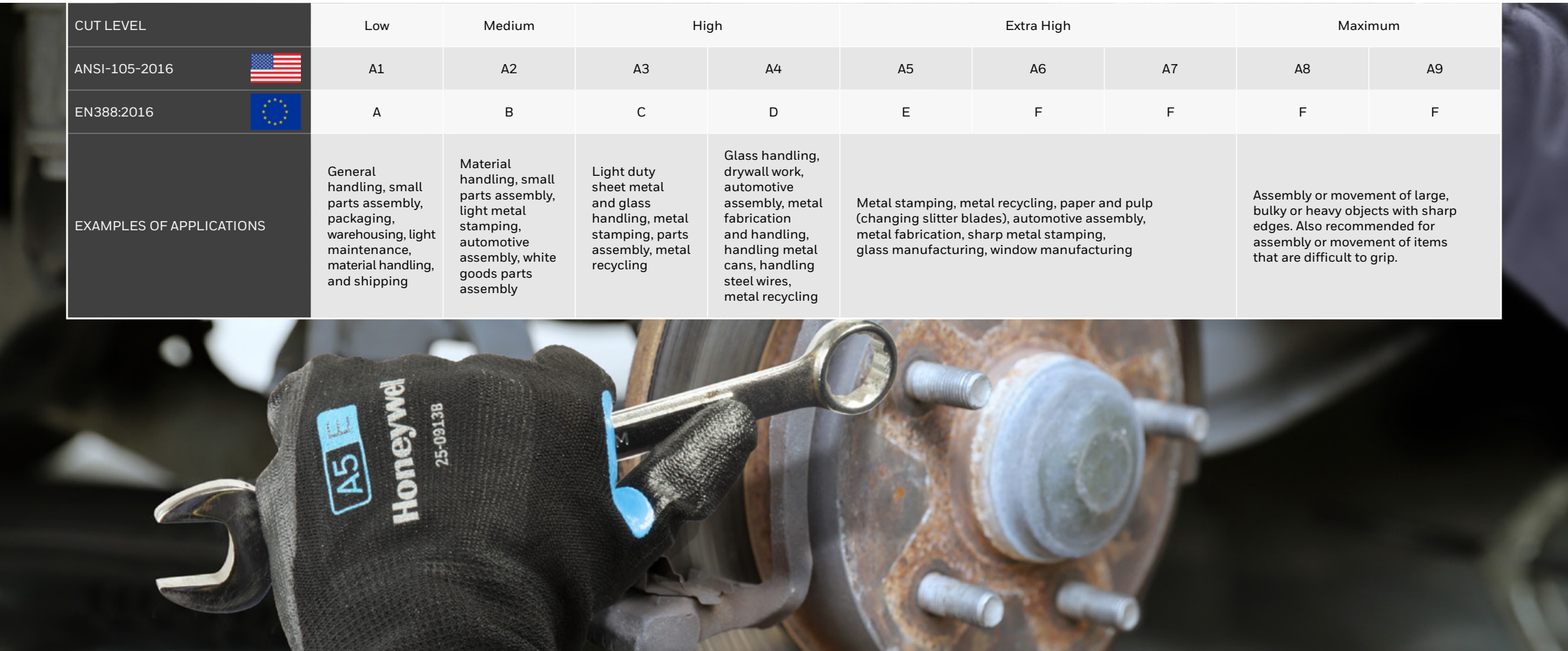


STEP 3: MATCH GLOVES AND APPLICATION

While completely cut-proof gloves are a myth, significant advancements in technology and materials mean that, if selected correctly, gloves can now offer a high level of protection.

Ultimately, correct selection comes down to the application. The table below offers some initial guidance on typical applications for each cut protection level[9]. The appropriate gloves, however, can only be selected on a case by case basis, depending on the specific hazards that have been identified on the job. Even two workers performing the same tasks, for example, may be facing different hazards and require different cut protection levels.

CUT LEVEL	Low	Medium	High		Extra High			Maximum	
ANSI-105-2016	A1	A2	A3	A4	A5	A6	A7	A8	A9
EN388:2016	A	B	C	D	E	F	F	F	F
EXAMPLES OF APPLICATIONS	General handling, small parts assembly, packaging, warehousing, light maintenance, material handling, and shipping	Material handling, small parts assembly, light metal stamping, automotive assembly, white goods parts assembly	Light duty sheet metal and glass handling, metal stamping, parts assembly, metal recycling	Glass handling, drywall work, automotive assembly, metal fabrication and handling, handling metal cans, handling steel wires, metal recycling	Metal stamping, metal recycling, paper and pulp (changing slitter blades), automotive assembly, metal fabrication, sharp metal stamping, glass manufacturing, window manufacturing			Assembly or movement of large, bulky or heavy objects with sharp edges. Also recommended for assembly or movement of items that are difficult to grip.	



STEP 4: FIT LIKE A GLOVE

Of course, selecting the right level of cut resistance is only half the story when it comes to protective gloves. There are other important factors to consider, not least comfort and dexterity. Here, lightweight is key as is breathability, while glove sizes should be easily identifiable.

Grip is also essential. If it is low it may expose workers to other types of risks (e.g. falls from a height when climbing up slippery ladders) or increase their fatigue as they need to apply excessive force when handling tools. With this in mind, check for a suitable coatings that help to enhance oil and dry-grip performance.

Another feature worth looking for is the absence of glass fibre, as this material can trigger skin allergies. In fact, seek out gloves that are skin friendly and meet STANDARD 100 by OEKO-TEX®[10].

Other considerations include touchscreen capability. Can the wearer operate a smartphone touchscreen using the gloves? Here touchscreen capacitive gloves are the answer.

Furthermore, are the gloves washable? If not, the gloves could well change in performance or size during a wash cycle, leading to the cost of replacement.

By considering these factors, alongside the appropriate level of cut resistance, worker safety and comfort will not only be assured, but productivity will be boosted and costs saved, all without impacting on quality. A top tip is to always involve workers in the glove selection process and monitor their level of satisfaction over time.

It is also vital to ensure that workers continue using their gloves consistently and correctly over time. One effective way to achieve this is to install, in visible locations across the facility, glove boards that explain which glove is needed for which task. This is something Honeywell has implemented successfully across its own manufacturing facilities and could be easily replicated in most workplaces.

It is also essential to develop and implement procedures for the inspection, cleaning, maintenance and storage of gloves. This is key to ensuring that workers can always count on hand protection that is entirely fit for purpose.

CONCLUSION

This How to Guide has illustrated the four key steps to select cut-resistant gloves correctly in light of recently-updated industry standards.

Although, in a number of instances glove selection may seem straightforward, there is no substitute for experience. It is to your advantage to seek the advice of a reputable glove supplier. Use the points outlined in this guide to challenge potential glove suppliers and see how many requirements they can meet.

To learn more about why cut risk matters and how to protect workers' hands, download the **whitepaper here**.

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REFERENCES

1. https://shop.bsigroup.com/ProductDetail/?pid=000000000030390236
2. https://webstore.ansi.org/Standards/ISEA/ANSIISEA1052016
3. The PPE Regulation (EU) 2016/425 mandates that new personal protective equipment, including protective gloves, sold in the European Union from April 2019 must comply with the latest industry standards and bear "the CE marking and is accompanied by the required documents". The regulation also states that "the CE marking and, where applicable, the identification number of the notified body may be followed by a pictogram or other marking indicating the risk against which the PPE is intended to protect". For more information see: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016R0425 and www.honeywellsafety.com/PPEregulation/.
4. http://www.hse.gov.uk/risk/identify-the-hazards.htm
5. http://www.hse.gov.uk/risk/decide-who-might-be-harmed.htm
6. https://www.osha.gov/shpguidelines/hazard-prevention.html
7. http://www.bsif.co.uk/wp-content/uploads/2016/12/EN-388-Protective-Gloves-Digital-Brochure-Landscape.pdf
8. https://shop.bsigroup.com/ProductDetail/?pid=000000000019983761
9. Source: based on customer surveys and observations conducted by or on behalf of Honeywell
10. https://www.oeko-tex.com/en/business/certifications_and_services/ots_100/ots_100_start.xhtml

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