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Guide to EN 388:2016 Main Revisions



Revision to EN 388 Glove Standard

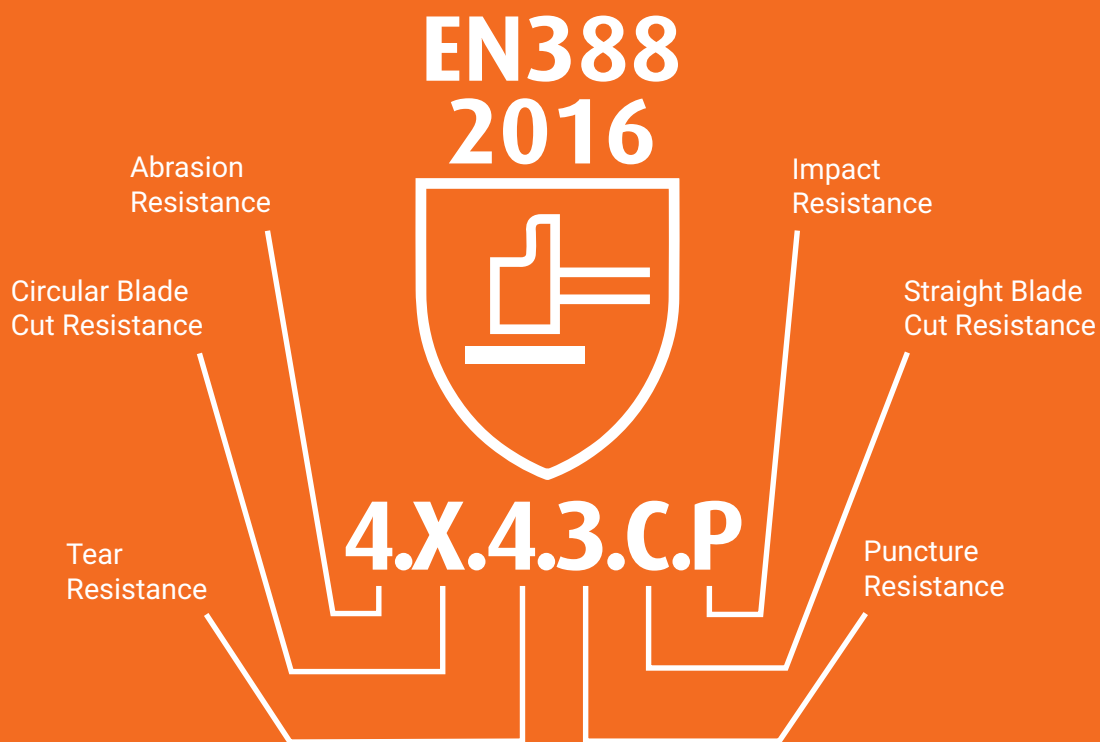
Over recent years changes in the manufacturing process of protective gloves has meant that the well established method for testing them (EN388:2003), and in particular the test to assess protection against cuts, has now been deemed no longer fit for purpose.

EN388:2016 seeks to update the standard and by doing this, two tests are revised and two new tests are included. From May 2017, all new gloves have to be tested in accordance with EN388:2016, however reference can still be made to the 2003 version for existing products.

Updates to certifications are required by April 2019 under the PPE Regulation, Portwest aim to have all our existing range re-certified by then.

EN 388:2016 specifies requirements, test methods, marking and information to be supplied for protective gloves against the mechanical risks of abrasion, blade cut, tear, puncture and, if applicable, impact. The test for abrasion resistance and the Coup Cut Test have been revised and there is now a 2nd blade cut test plus an optional impact resistance test.

Below are the major changes to the 2016 edition of the EN 388 standard:



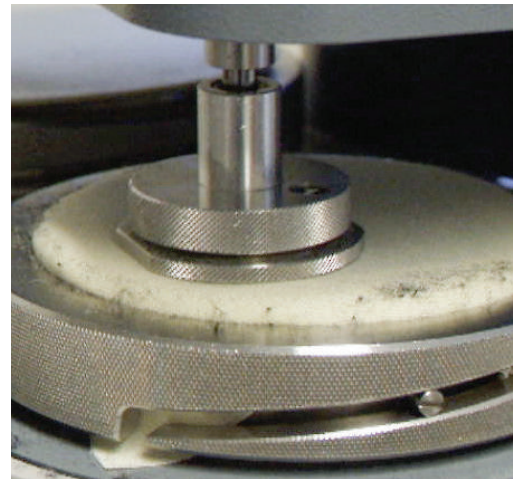
Abrasion Test

The Abrasion Test is designed to give an indication of the durability of the gloves. The performance levels are still the same but the sand paper that is used to perform the test has been changed from 100 Grit to a finer 180 grit material. This may affect some results.

Test	Level 1	Level 2	Level 3	Level 4
Abrasion resistance (number of cycles)	100	500	2,000	8,000

Summary of Abrasion Test changes

- No change to the test method
- Change from 100 grit paper to 180 grit paper
- Could affect some abrasion test scores

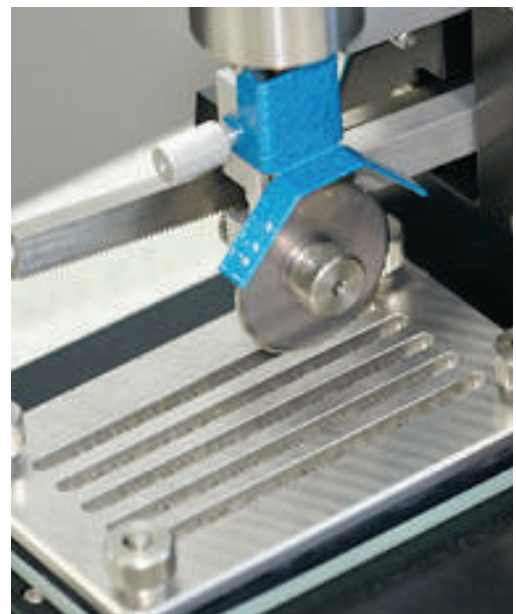


Cut Test

The need to change the Cut standard has driven the revision of EN388. Whilst the old system and its 1-5 numbering system was simple to understand, the development of newer cut resistant materials, combined with a drive from industry to provide the highest level of cut protection wherever possible often at the lowest possible price point meant that the method for testing the gloves needed to be revised.

The method for testing the cut resistance of gloves has been typically carried out using a circular blade which moves back and forth across the surface of the gloves. This test is commonly referred to as the Coup Test. Gloves were tested on this machine and the performance levels were recorded as follows;

Test	Level 1	Level 2	Level 3	Level 4	Level 5
Circular blade cut resistance (index)	1.2	2.5	5	10	20



There are 2 main issues with this test

- The amount of force applied to the cutting blade is fixed at 5 newtons which is equivalent to approximately 500 grams
- There is no upper limit

Newer cut resistant materials such as steel and glass fibre reinforced yarns can have blunting effects on the circular blade so that as the test progresses the blade becomes less effective at cutting. As there is no added pressure applied the blade often cannot cut through the material. The result of the test is that the gloves are awarded the highest cut level despite there being a significant flaw in the test.

EN388:2016 now incorporates a revision to the Coup Test and includes a Straight Blade Test (ISO 13997).



CHANGES IN MORE DETAIL

The revisions to the Coup Test are:

- A reduction in distance travelled of circular blade (approx. 50%) to reduce the blunting effect
- Reducing the distance of travel makes the blade more effective and typically cut performance reduces i.e. 5 downgraded to 4, despite the gloves material not having changed. This revision makes it very difficult for a glove to achieve level 5 without the below 2 points coming into effect
- Circular blade test stops at 60 cycles
- If cutting factor of greater than 3 occurs (i.e. difference in performance of the reference material against the test material)

A manufacturer may choose not to reference the coup test if they are referencing the straight blade test, if so they will mark that with an X.

Straight Blade Test (ISO13997)

The Straight Blade Cut Test provides a more accurate indication of cut protection against an actual cut. Comparing the Coup Test and Straight Blade Test is like comparing a Pizza Cutter and a Stanley Knife. Both are effective for the task they are designed for but there is a significant difference in the type of cut they will administer.

The Straight Blade Test can be used in lieu of the Coup Test. It should also be used if the Coup test reaches 60 cycles or if the cutting factor is greater than 3.

- The test is conducted on a TDM 100 Machine
- Tests are conducted using a new blade every time, blunting is not a factor
- Increasing levels of force are applied, 2 newtons up to 30 newtons
- Letter score is applied A – F, F being the highest
- The letter reference is applied in lieu of or along with the cut number reference



TDM Test Method: EN ISO 13997	Level A	Level B	Level C	Level D	Level E	Level F
Straight blade cut resistance (N)	2	5	10	15	22	30



Summary of Cut Test Changes

- Revision of the Coup Test can result in downgrading of performance levels
- Inclusion of the new Straight Blade Test is designed to be more representative when referring to high cut protection
- The 1-5 cut scoring system is not comparable with the new A-F scoring system

Impact Test

Gloves that provide protection against impact have become increasingly popular over recent years and as such it was necessary to include an impact resistance element to the EN388 standard.

The key points to note are:

- No change to the test method
- Impact applied to the palm, back or knuckles area of the hand
- Uses the existing motorbike Impact test EN13594:2015
- 2.5kg weight is dropped to exert a 5 joules energy impact
- Pass is achieved if the gloves reach level 1
- P is added to the gloves certification markings



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