

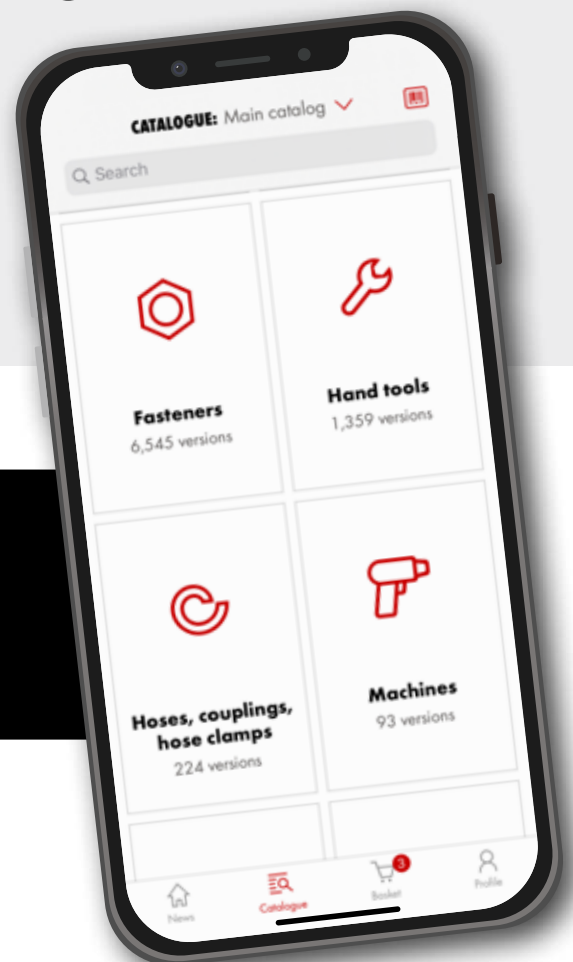
EN 388:2016 – UNDERSTANDING SAFETY GLOVE STANDARDS



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EN 388:2016 PROTECTIVE GLOVES AGAINST MECHANICAL RISKS - REVISIONS TO THE STANDARD

The EN 388, Mechanical Risks Standard, used to regulate protection classes of safety gloves was updated in 2016. This was needed as the standard was over 14 years old and since then, advances in glove materials have occurred, prompting the need for new testing procedures and classifications.



OLD STANDARD

EN 388:2003

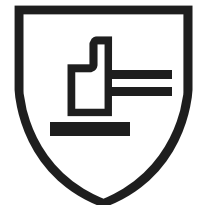


4 4 4 2

	Rating
Abrasion Resistance	1-4
Cut Resistance (Coupe Test)	1-5
Tear Resistance	1-4
Puncture Resistance	1-4

NEW STANDARD

EN 388:2016

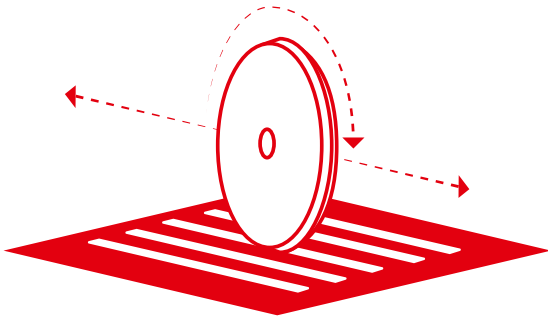


4 X 4 2 C P

	Rating
Abrasion Resistance	1-4
Cut Resistance (Coupe Test)	1-5
Tear Resistance	1-4
Puncture Resistance	1-4
Cut Resistance (ISO 13997)	A - F
Impact Protection (P or no rating)	P

- ✓ The new ISO 13997 cut resistance test method to address the shortcomings of the Coupe test.
- ✓ The Impact Protection test, to measure gloves claiming to provide impact resistance.
- ✓ The Abrasion test, which has slightly changed, as a new standardised paper is used.
- ✓ The "X" factor, meaning that the specific performance was not tested or was not relevant for the glove.

THE EN 388 REVISIONS AT A GLANCE



COUPE TEST

The second number in the series represents the cut resistance rating, using the Coupe test. A circular rotating knife is used, moving at in a linear direction at a constant pressure of 5 newtons. The amount of cycles needed to cut through the test material is measured.

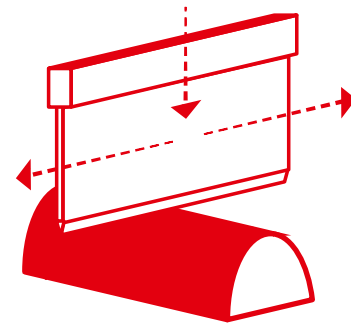
The result is expressed as an index value, and a performance rating is allocated on a scale of 0 - 5, 5 being the highest level of cut protection.

Performance Level	1	2	3	4	5
Index	≥1,2	≥2,5	≥5	≥10	≥20

If the blade becomes blunt or has not penetrated the material after 60 cycles, the ISO cut test is implemented. The glove will be marked with an **"X"** to signify that the Coupe test has not been used to measure the cut protection level of the glove.

NEW ISO 13997 CUT TEST

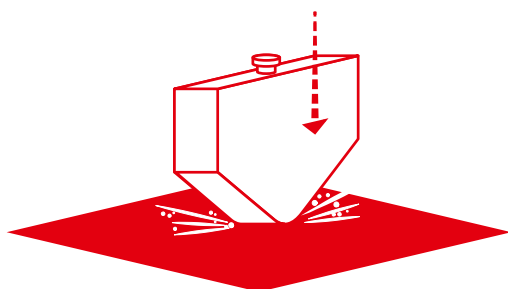
The revision to the Coupe test, is the ISO 13997 method, which uses a sharp, rectangular blade to measure the amount of force needed to cut through a protection glove in a single contact over 20mm. A new blade and increased force is used each test run ranging from 2 -30 newtons. The final result is demonstrated in newtons, which will provide a cut protection rating ranging from A -F, with F being the highest level of protection.



Performance Level	A	B	C	D	E	F
Newtons	≥2	≥5	≥10	≥15	≥22	≥30

Note: If an "X" is marked anywhere on the pictogram, it means that the specific performance was not tested or was not relevant for the glove.

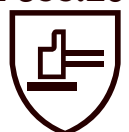
IMPACT PROTECTION TEST



NEW IMPACT PROTECTION TEST

The new Impact Protection test is aimed at gloves designed for protection against impact. If a glove has passed the Impact Protection test, the letter **"P"** will be shown. If it failed the test or does not provide impact protection, the sixth space will be blank.

EN 388:2016



4 X 4 2 C P

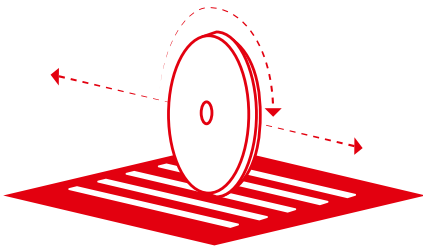
READING THE NEW MARKINGS



AT A GLANCE:

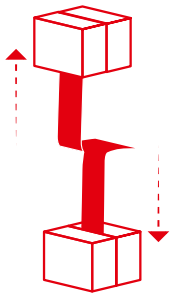
1. ABRASION RESISTANCE:

The first marking represents abrasion resistance, measured on a scale of 1 – 4, with 4 being the maximum abrasion resistance. This test uses a new, standardised abrasive paper for more reliability.



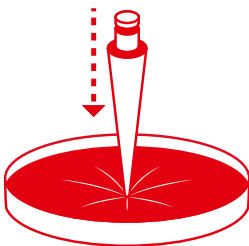
2. COUPE TEST:

The second marking represents the cut resistance performance level, using the Coupe test, measured on a scale of 1 – 5, with 5 being the highest. If the blade becomes dulled during this test, the ISO 13997 test is implemented.



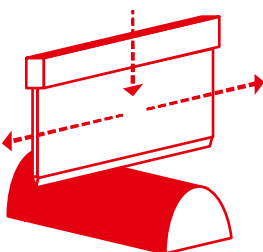
3. TEAR TEST:

The third marking represents the tear resistance on a glove, measured on a scale of 1 – 4, with 4 providing the maximum tear resistance. No changes have been made to this testing method.



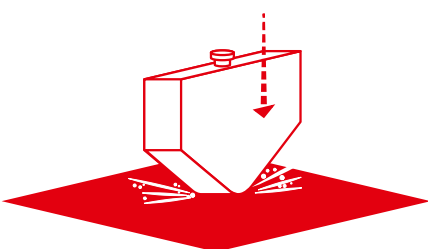
4. PUNCTURE TEST:

The fourth marking represents the puncture resistance level on a glove, measured on a scale of 1 – 4. A needle with a standardised diameter of 4.5 mm is used to determine how much force the glove can withstand. No changes have been made to this testing method.



5. ISO 13997 CUT TEST (NEW):

The new fifth marking measures a glove's cut protection level by ascertaining the amount of force required to cut through a glove with a straight blade over a distance of 20 mm in a single contact. Each subsequent test run, the blade is passed over the test material with more force, ranging from 2 -30 newtons. The result of the new test method is expressed in newtons. Based on this information, the safety glove will be allocated one of six cut protection ratings, expressed as classes A – F.



6. IMPACT TEST (NEW):

The sixth new marking represents impact protection. If a glove claims to have impact protection and passes the test a "P" will be shown in the sixth place. If the space is blank, the glove either failed the test, or the test was not applicable.

CHOOSING THE RIGHT GLOVE UNDER THE NEW ISO 13997 STANDARD

Selecting the right glove is critical when handling sharp objects and materials. It is important to remember that it is not possible to compare the cut performance levels of each standard. The Coupe test is useful for gloves being used for sharp and fairly lightweight objects whilst the ISO test provides a better overview of gloves that are used for more heavy duty objects, and impact induced dangers with more force.

Below is a general guideline of which level of protection you will need to choose the right glove for each job.

EN 388:2016 Level	ISO 13997 Test (N)	Reference Applications
A	≥2	Multi - purpose gloves: No cut resistance
B	≥5	Light weight gloves: Medium cut resistance
C	≥10	Medium weight gloves: Medium cut resistance
D	≥15	Medium weight gloves: High cut resistance
E	≥22	Heavy weight gloves: Very high cut resistance
F	≥30	Heavy weight gloves: Ultra-high cut resistance

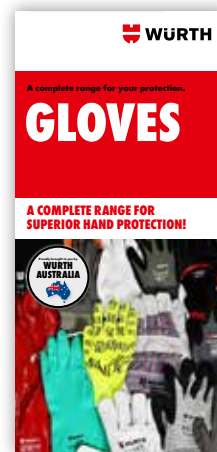
Notice:

Additional testing based on operational risk assessment is absolutely necessary for the selection of appropriate cut protection gloves. This is due to the fact that conditions within the workplace can differ from those used during testing. It is important to note that when working with heavy weights and very sharp-edged and pointy objects, cut protection gloves cannot eliminate all dangers of cuts and punctures.



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