

## WHAT DOES CE MARKING MEAN?

CE is a European safety mark – it means products with the CE mark have been tested to a minimum standard. Having a CE mark is often required for Personal Protective Equipment as it indicates that a garment meets minimum standards for High-Visibility or that boots have a minimum standard of protective cap etc.



### EN420:2003 – Protective Gloves – General requirements

- Gloves certified to EN420:2003 meet the minimum standards for
- Glove design and construction
- Resistance of glove materials to water penetration (this does not mean the glove is waterproof)
- Innocuousness
- Comfort and Efficiency
- Marking and information supplied by the manufacturer (including care instructions etc)

NOTE: Whilst this standard is applied to protective gloves, it does not test the protective qualities of the glove for example, cut resistance is tested separately under standard EN388

### EN388:2003 – Protective Gloves – Mechanical Hazards

To meet EN388 standards, gloves advertised as cut or slash resistant undergo four tests and given a performance rating of 0 to 5, with 5 being the most effective. These tests are

- A) Abrasion Resistance
- B) Blade Cut Resistance (the only test that can achieve a level 5)
- C) Tear Resistance
- D) Puncture Resistance

Gloves that have been approved to EN388 standards will display the performance levels of the gloves either on the label or on the packaging. The numbers will always appear in the same order to indicate which test they apply to - A, B, C, D - and will usually show under the EN388 logo or listed as 'rating'.

#### The Abrasion Test

The glove material is fixed into place and a standard abrasive material is moved in a circular motion over the glove. The performance level is then based on the number of cycles required to abrade the material.

LEVEL	0	1	2	3	4	5
Abrasion Resistance (cycles)	<100	100	500	2000	8000	N/A

### The Blade Cut Test

A circular blade is moved back and forth over the glove material at a fixed stroke length, pressure and weight (usually about 5N/0.5kg). The number of cycles required to cut through the sample indicates its performance level. As the sharpness of the blade must be taken into consideration the blade is tested before and after use by using it to cut a sample fabric. This helps determine how much the blade may have blunted during the test.

LEVEL	0	1	2	3	4	5
Blade Cut Resistance (cycles)	<1.2	1.2	2.5	5.0	10.0	20.0

### The Tear Resistance Test

In this instance the glove material is clamped in the jaws of a strength testing machine. The jaws are then moved apart at a constant speed and the force needed to tear the material is measured (in newtons).

LEVEL	0	1	2	3	4	5
Tear Resistance (newtons)	<10	10	25	50	75	N/A

### The Puncture Resistance Test

A standard rounded point is pushed through the glove material at a fixed speed, and the force required to penetrate the material is measured (in newtons).

LEVEL	0	1	2	3	4	5
Puncture Resistance (newtons)	<20	20	60	100	150	N/A

If a glove is made of multiple layers of material, the abrasion and tear tests are carried out on each layer separately. The performance level will be based on the lowest individual result of the most resistant material. The blade cut and puncture tests will be carried out with all the individual layers assembled together as they would be in the glove. The tests are repeated a set number of times and the performance levels are then based on the lowest of the test results.

It is important to remember that all gloves of this kind are advertised as resistant and not proof. These ratings can provide a guide when buying protective gloves, but it must be remembered that this is only an indicator of how well the glove will perform. Each test is performed with an item, such as a blade that is standardised so that each test can be easily repeated under the same clinical circumstances. The tests are not carried out with a variety of blades, nor is the puncture test carried out with a selection of different gauge needles, metal or wood splinters etc.