EN 388 – Protective gloves against mechanical risks

After EN 420, this standard is the most common found amongst protective gloves. It is tested to multiple different risks, these include Abrasion, Cut, Tear, Puncture, and Impact. Gloves, once tested, are given either a marking or a label which has the standards it has been tested to on, including the scores it achieved. The pictogram (symbol) for EN 388 is:

X – Abrasion Resistance:

Samples are cut from the palm of a glove and rubbed against a 180 grit abrasive paper using a "Martindale" type abrasion machine. The number of cycles for the samples to hole is measured.

Number of cycles	100	500	2000	8000
Level	1	2	3	4

X – Cut Resistance:

Samples are taken from the palm of a glove and the number of cycles to cut through the full thickness of the test sample by a circular rotating blade, with 5 Newtons of pressure, is recorded. Blade sharpness will vary and is assessed by using the cut test machine to cut through a standard reference fabric. This test is known as the 'Coup Test'. The cut resistance of the glove is based on a relative index that compares the number of cycles to cut through the glove when compared with the standard fabric.

Cut Index	1.2	2.5	5	10	20
Level	1	2	3	4	5

X – Tear Resistance:

Samples are taken from the palm of a glove and are torn apart using a standard tensile test machine. The score is based off the Newtons of force required to tear the sample apart.

Newtons of Force	10	25	50	75
Level	1	2	3	4

X – Puncture Resistance:

Samples are taken from the palm of a glove and the force required to penetrate the sample with a defined stylus using a tensile test machine is measured. The score is based off the Newtons of force required to penetrate through the sample.

Newtons of Force	20	60	100	150
Level	1	2	3	4

X – ISO 13997 Cut Test:

Traditionally, the level is based on the cut index gained by a test using a rotating blade being drawn along fabric samples until cut-through occurs. This is commonly referred to as the 'Coup Test'. However, where fabrics have a high resistance to cutting, this test can often create anomalous results due to blunting of the test blade. In such cases, an alternative method specified in EN ISO 13997:1999 is used. The ISO 13997 test runs a straight blade over the sample, replacing the blade after each cut, the Newtons of force applied to the blade is adjustable so that it can give a more accurate level of cut resistance for gloves that naturally blunt blades.

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

*This test is optional **unless** the blade is blunted testing to the Coup Test, then ISO 13997 is mandatory

X – Impact Resistance:

Other than the fingers, each area where impact protection is claimed shall be tested for impact attenuation by measuring the peak transmitted force. To test the glove, the area of protection is secured over a domed anvil and is impacted at an impact energy of 5J.

	Pass	Fail
Level	P	X

*This test is optional