

Cut Tests Explained: EN 388 (CE)

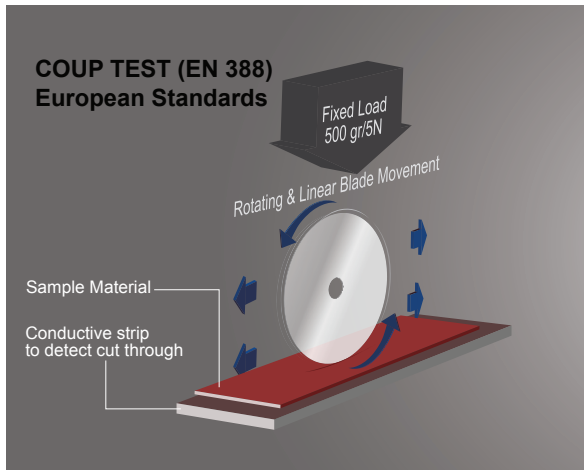
What is the EN388?

The EN388 is a compilation of 4 tests (abrasion, cut, tear, puncture) for determining the mechanical protection levels of PPE materials. It is most frequently used in European markets, but has been making its way into the United States as a widely accepted standard for measuring protective properties of industrial PPE.

PPE that use the EN388 method are marked with a CE label and 4 numbers corresponding to the scores received in each of the mechanical tests. Each test rates the material on a scale of 1 (low) to 4 (high), except in the case of the blade cut test with is on a 1 to 5 scale.

MARKING

| | Rating |
|-----------------|-----------|
| Abrasion | 1 2 3 4 |
| Cut (Coup Test) | 1 2 3 4 5 |
| Tear | 1 2 3 4 |
| Puncture | 1 2 3 4 |



HOW THE TEST WORKS

A circular blade (think pizza cutter) moves back and forth across a material sample under a fixed load of 500 grams (5N), while rotating in the opposite direction of the linear motion of the mounting device. Results of this test are calculated by recording the number of blade revolutions needed to cut through the material, which is then compared to a Cut Index which gives the material a rating from 1 (low) to 5 (high).

LIMITATIONS OF THE TEST

There are many shortcomings of the EN388 for cut-resistance. One of the major issues with the cut-test method is that the test is not necessarily representative of the hazards that end-users are exposed to in industrial applications.

- the fixed weight of 500g is very low (less than 1lb of force)
- the blade itself is a smooth edged blade, where the hazards in real industrial applications can vary in size, shape, and angle
- the blade is not changed during the test, which can skew results

Ironically, this test, designed to measure cut resistance, is not suitable for materials that have a high degree of cut resistance as the materials that contribute to cut resistance (glass fibers, steel or hard guard plates) tend to dull the blade and overestimate the real world protection provided by such gloves. Moreover, EN 388 is not suitable for high cut resistance materials. High cut resistant materials dull the blade quickly by the numerous alternating movements required to cut the sample, thus results are overestimated.