



Global Alliance of NGOs for Road Safety

Helmet testing results

Tested April 2025

In April 2025, the Global Alliance of NGOs for Road Safety (the Alliance) had eleven helmets from ten countries tested at an ISO-accredited laboratory, with funding from FIA Foundation and technical expertise from Galeatus, LLC. The helmets were sourced from local shops or donated by riders to members of the Alliance.

Nine of the helmets tested originated from countries that have a specified helmet standard. For helmets to be certified, they must pass all the tests required by the relevant standard. The eleven helmets were evaluated in the laboratory against three core tests that are common to many helmet standards, including UN Regulation No.22 (ECE 22.06). They are indicative of whether the helmets will protect riders in a crash.

The tests undertaken were:

1. Helmet stability (rolloff) test
2. Dynamic retention system strength test
3. Impact attenuation test







Most standards require that helmets also pass a number of other performance tests to receive certification, which may include tests on the visor, shell, and rigidity. Tests may be conducted under different environmental conditions (e.g., hot, cold, wet, and UV exposure) to confirm that the helmet remains protective in different environments.

About the tests

| Test Type | What happens? | What it checks | Criteria to pass | Fail means... | Watch |
|----------------------------|--|---|--|--|---|
| Helmet Stability (Rolloff) | A hook and strap are attached to the back of the helmet on a test headform. Then, a 10kg mass is released from 50cm. | To check whether the helmet stays on the head as it whips forward (first impact) and the rider falls onto the ground (second impact) in a crash. | Depending upon the standard, the helmet must either remain on the headform or must not rotate more than 30 degrees. | The helmet will not stay on your head, exposing it in a crash. | Explainer Pass Fail |
| Retention System Strength | The helmet is attached to a test headform, and the buckle is fastened beneath the chin. A 10kg weight is then dropped from 75cm. The strength and elongation (how much it stretches) of the retention system (the strap and buckle that keep the helmet on the head) are measured. | To check that the retention system does not break or extend too much, such that the helmet comes off the head in a crash. | Dynamic displacement (measuring the maximum amount the retention system stretches when the weight is dropped) must not exceed 35mm. Residual displacement (measuring the recovery position of the retention system two minutes after rebounds and settles back into place) must not exceed 25mm. | The helmet's strap, buckle, and/or stitching will break. It will likely come off your head. | Explainer Pass Fail |
| Impact Attenuation | The helmet is secured to a test headform and dropped onto a flat metal anvil at a target velocity of 7.5 m/s. This simulates the velocity of a rider hitting the ground in a crash. A three-dimensional accelerometer (a triaxial accelerometer) inside the test headform measures how much of the force of the crash is absorbed by the helmet, thus preventing those forces from being applied to the skull and brain. | As a rider's head reaches the ground, it will keep moving in the direction of the fall. The helmet's inside liner is meant to help slow the head down, absorbing the force of the impact. | Peak g—a metric of acceleration experienced by the head as a rider falls to the ground in a crash—cannot exceed 275g. ¹ Head Injury Criterion (HIC)—a metric combining the amplitude and duration of acceleration to estimate potential brain injury—cannot exceed 2,400. | The energy-absorbing material in the helmet failed to absorb a sufficient amount of impact energy. Instead, the impact forces are absorbed by the skull and brain, which can result in skull and brain injury. | Explainer Pass Fail |






¹ Example real life scenario peak g levels: roller coaster / sharp curve on the road: 2g; boxer's punch: ~120g; permanent brain injury: >200g

Test results

| Country | Helmet | Price | Source | Stability test pass/fail | Retention system strength test pass/fail | Attenuation impact test pass/fail | National helmet standard ² | % of motorcyclist deaths ³ |
|---------------|---|---------|------------------|---------------------------------------|---|--------------------------------------|---|---|
| Benin |  | US\$ 20 | General store | Fail | Fail | Fail | No | Data not available |
| Cote d'Ivoire |  | US\$ 14 | Motorcycle store | Fail | Not tested due to buckle broken in the stability test | Fail | Yes | 35 |
| Ethiopia |  | US\$ 12 | Motorcycle store | Not tested due to no retention system | Not tested due to lack of retention system | Fail | No | Data not available |
| Ghana |  | US\$ 19 | General store | Fail | Not tested due to buckle broken in the stability test | Fail | Yes | 32.8 |
| Greece |  | US\$ 29 | General store | Pass | Not tested due to damage from the impact attenuation test | Fail | Yes | 36.8 |
| India |  | US\$ 2 | Street stall | Not tested due to no retention system | Not tested due to lack of retention system | Fail | Yes | 45.1 |

² Global status report on road safety 2023 (World Health Organization, 2023). <https://www.who.int/teams/social-determinants-of-health/safety-and-mobility/global-status-report-on-road-safety-2023>

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|---------|--|---------|------------------|---------------------------------------|--|--|---------------------------------------|---------------------------------------|
| Kenya |  | US\$ 7 | General store | Not tested due to no retention system | Not tested due to lack of retention system | Fail | Yes | 37.6 |
| Mexico |  | US\$ 15 | Online | Fail | Not tested due to buckle broken in the stability test | Fail | Yes | 15.2 |
| Nigeria |  | US\$ 13 | Motorcycle store | Fail | Not tested, as it slips off and cannot be loaded onto the headform | Fail | Yes | Data not available |
| Nigeria |  | US\$ 17 | Street stall | Fail | Not tested due to damage from the impact attenuation test | Fail | Yes | Data not available |
| Vietnam |  | US\$ 2 | Online | Fail | Not tested due to risk of damage to test equipment | Not tested due to risk of damage to test equipment | Yes | 57.44 |