Your Partner for Quality and Safety on Two Wheels

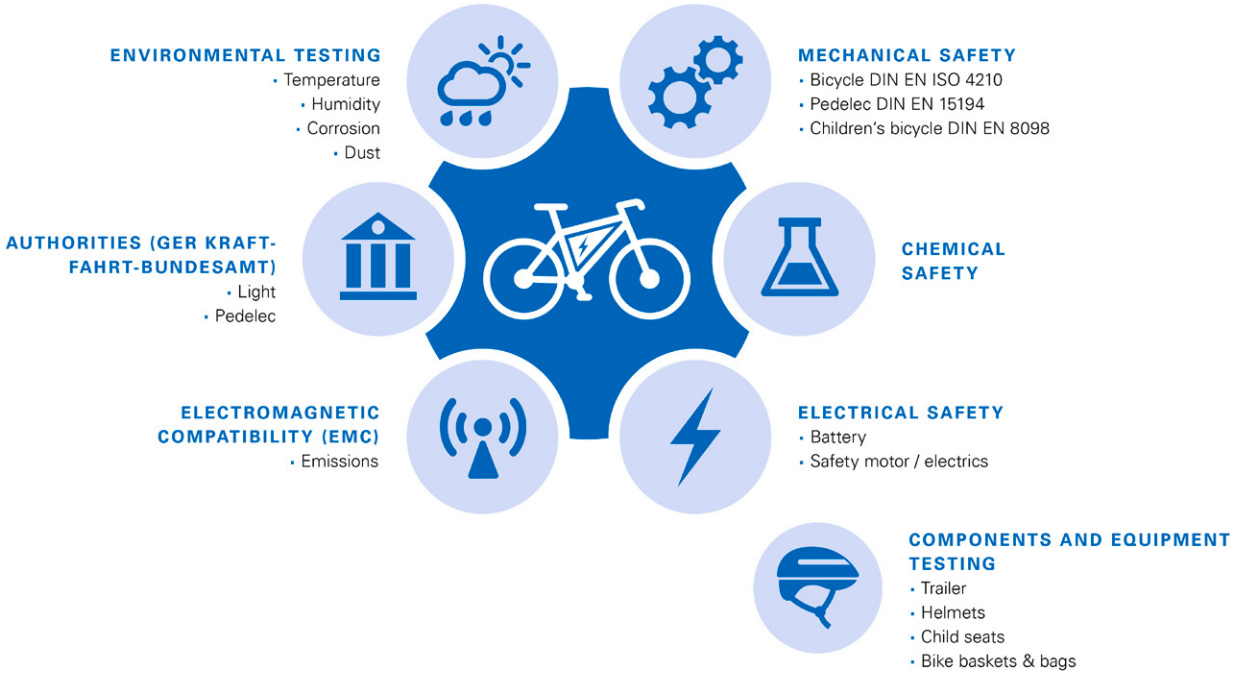
Cycling is more popular than ever, and the demands for quality and safety in bicycles and pedelecs are increasing. Therefore, manufacturers must clearly demonstrate that their bikes are safe, compliant with regulations, and reliable. The vast array of tests required to be conducted comprehensively and professionally poses a significant challenge for manufacturers.

www.tuv.com/bike

TÜV Rheinland

TÜV Rheinland supports you with a comprehensive range of tests, ensuring your products not only shine but are also safe – whether it's a city bike, an e-MTB, or accessories. Our expertise covers all relevant standards, including additional services like EMC tests and chemical analyses.

ALL RELEVANT TESTING SERVICES FROM A SINGLE SOURCE



OUR TESTING SERVICES

Our modern laboratories and testing facilities, along with our expertise and experience in testing and certification for bicycle products, are invaluable to manufacturers. With our testing services, you can enhance the marketability of your products and safely bring your bicycles and pedelecs to the road.

Here is a selection of our tests:

- City, trekking, youth, folding, and racing bikes, as well as mountain bikes according to DIN EN ISO 4210
- Electrically assisted bicycles (EPAC) according to DIN EN 15194, DIN EN 17404 (e-MTB)
- Children's bicycles according to DIN EN ISO 8098
- BMX bicycles according to DIN EN ISO 16054
- Electrical safety (EN 15194, EN 60335-1, and EN 60335-2-29)
- EMC tests (EMC Directive 2014/30/EU, DIN EN 15194)
- Chemical analyses (PAK, plasticizers, heavy metals)
- Compliance testing for children's bicycles
- Fitness for use
- Bicycle helmets according to EN 1078
- Bicycle child seats according to DIN EN 14344
- Bicycle trailers according to DIN EN 15918

OUR CERTIFICATION MARK

Set a mark for excellent standards: Our certificates, such as the GS mark, provide children's and youth bicycles, child seats, and protective equipment with a quality seal that builds trust and makes safety transparent. Additionally, qualified test reports from a renowned independent third party enhance legal certainty in liability issues.

Comprehensive Bicycle Testing: A Wealth of Expertise in One Place

EFFICIENT TESTING PROCESSES FOR MODERN BICYCLE TECHNOLOGY

The TÜV Rheinland site in Nuremberg has established itself as a central address for testing bicycles, pedelecs, components, and accessories. What makes this location special is that all relevant testing areas – from mechanical stress tests to electrical safety, power management, and EMC and chemical tests – are integrated under one roof. This structure allows for efficient, coordinated testing with minimal logistical effort.

LESS PROTOTYPES, SHORTER PATHS, FASTER RESULTS

Especially during the development of new bicycle models and e-bikes, prototypes are expensive and often available in limited quantities. At the same time, the requirements for safety, quality, and compliance with standards are high. Here, the TÜV Rheinland testing laboratory in Nuremberg offers clear advantages: manufacturers only need to send their products to a single location for all tests, which are conducted and coordinated on-site. This not only saves time and resources but also enables seamless communication and faster market entry.

The focus is particularly on state-of-the-art testing procedures for pedelecs and e-bikes – in areas such as power management, electromagnetic compatibility (EMC), and electrical and mechanical safety. Additionally, components and accessories like bicycle child seats, luggage carriers, helmets, locks, or lighting systems are thoroughly tested for functionality and compliance with standards.

TECHNOLOGY MEETS EXPERIENCE

Thanks to state-of-the-art laboratory equipment and years of experience, the Nuremberg site is recognized for its exceptional technical expertise and quality in bicycle testing. With its interdisciplinary team of experienced test engineers, the Nuremberg laboratory not only provides comprehensive testing services but also offers targeted support for certification processes – both nationally and internationally.

Bestseller Pedelec – Technology That Takes Responsibility

Cycling is freedom! With the pedelec, this feeling becomes practical for everyday use. What started as a trend has now become a permanent part of modern mobility. However, the added motor assistance also brings new challenges. As motor power increases, comfort and range improve, but so do the demands on technology and control.

POWER MANAGEMENT: ENSURING PERFORMANCE PARAMETERS ARE COMPLIANT

In pedelecs, power management refers to the entirety of functions that regulate the interaction of the motor, control system, sensors, and power supply. This includes, for example, limiting the maximum speed to 25 km/h, designing the rated continuous power, the response behavior of the pedal assistance, the design of the push assistance, and the correct deactivation of motor assistance during braking, or upon reaching the speed limit. These parameters directly influence ride dynamics, safety, and the legal classification of the vehicle.

For manufacturers, this means that even slight deviations can affect compliance with applicable standards and regulations, leading to potential legal and certification consequences. Therefore, pedelecs are systematically and reproducibly tested for their power management at the TÜV Rheinland laboratory in Nuremberg. All parameters are measured on our test benches, considering the relevant standards. This provides manufacturers with reliable evi-

dence of their systems' compliance, identifies potential for optimization early in the development process, and ensures reliable performance in the market.

EMC-TESTS: ENSURING SMOOTH PERFORMANCE IN URBAN TRAFFIC

In dense urban environments, pedelecs must function reliably, even when surrounded by cellular networks, radio masts, or police radio. At the same time, they must not cause any interference. With the increasing technological advancements in traffic – from autonomous cars to smart traffic lights and connected mobility solutions – electromagnetic compatibility (EMC) is becoming increasingly important. Every electromagnetic disturbance can impair performance and endanger the safety of all road users.

At TÜV Rheinland, pedelecs are therefore comprehensively tested for EMC. According to the requirements of the EMC

Directive 2014/30/EU and DIN EN 15194, the vehicles are operated on test benches while measuring both the emission of their own electromagnetic fields and their response to external influences. This allows manufacturers to ensure that their pedelecs operate reliably, without interference, and in compliance with standards, even in complex, interconnected traffic environments.

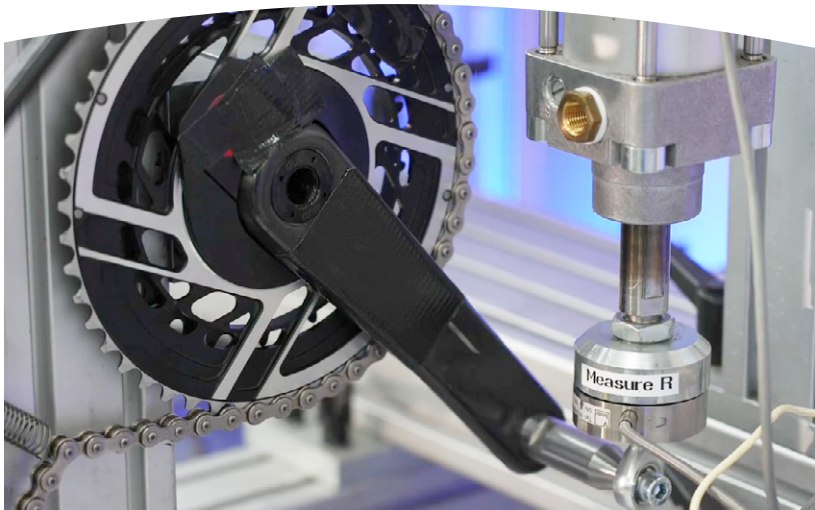
Component Testing: Safety and Quality Down to the Details

Frames, saddles, handlebars, forks, wheels, brakes, or luggage carriers – every individual bicycle component plays a crucial role in safety, riding comfort, and durability. Whether in daily use or under athletic stress, components must withstand high mechanical forces while meeting relevant standards. Component testing is therefore a central tool for manufacturers and suppliers, serving both internal quality control and the verification of new suppliers.

TESTS UNDER REALISTIC CONDITIONS

At the TÜV Rheinland testing laboratory in Nuremberg, bicycle components and complete bicycles are tested under conditions that closely resemble real-world scenarios. These tests include static and dynamic load tests, vibrations, swinging and jolting movements, as well as tests on the roller test bench, which allows for a comprehensive assessment of the entire bicycle's quality. Additionally, special tests are conducted – such as the evaluation of children's bicycles according to DIN EN ISO 8098, performance measurements for pedelecs in accordance with DIN EN 15194, or range measurements (R200) according to DIN/TS 31064.

We not only check the applicable standards but also incorporated additional test scenarios to identify potential weaknesses and comprehensively evaluate practical suitability. This enables early detection of risks, optimization of product safety and quality, and easier access to international markets.



Safer Transportation on Two Wheels: Luggage Carriers and Bicycle Bags

The demands on modern bicycle components are continuously increasing, particularly in the areas of transportation and practicality. Luggage carriers and bicycle bags, for instance, must withstand heavy loads while ensuring safe usage.

NEW STANDARD, STRICTER TESTING REQUIREMENTS

The new standard DIN EN ISO 11243:2024, published last year, sets safety requirements and testing procedures for luggage carriers on bicycles and pedelecs. A key new feature is the clear identification of carriers intended for use with child seats, which now must undergo additional load tests. The focus is clearly on practical suitability: How does the system respond to repeated load changes? Do the mounts remain secure even under vibrations, shocks, or one-sided loads?

Bicycle bags are also under increased scrutiny: They are tested for maximum load capacity and the stability of their attachment systems. The entire system – bag, mount, and carrier – must be assembled on the test bench with the original attachment to precisely capture the interaction of the components during riding.

REALISTIC TESTS FOR MAXIMUM SAFETY

At the TÜV Rheinland laboratory in Nuremberg, these questions can be analyzed and answered under controlled conditions. The testing methods are precisely aligned with the requirements of the new standard and based on real-world usage scenarios to ensure the safety and practicality of the various components. Both static and dynamic load tests are conducted. In addition to vertical and lateral forces, the tests under the new standard also include test cycles with swinging and jolting movements that simulate real-world stresses as realistically as possible.

Safety for the Youngest: Bicycle Child Seats as defined in EN 14344:2022

Bicycle child seats are among the most critical safety components in the bicycle category, with correspondingly high demands on their design, materials, and usability. With the revised European standard EN 14344:2022, which came into force on June 1, 2022, significantly stricter requirements now apply to the construction, materials, and safety of bicycle child seats.

NEW REQUIREMENTS AND TESTING METHODS

The fully revised EN 14344:2022 places particular emphasis on potential hazards associated with the use of bicycle child seats. Manufacturers must now adapt to new testing areas, such as strangulation risks, thermal hazards (flammability), protection against trapping, and the safe adjustment of footrests. New specific testing requirements also apply to models with a reclining function. Key innovations include the introduction of new test probes and footblocks, as well as a new test procedure for measuring the tilt angle of the backrest. Additionally, there are changes to requirements for packaging, user manuals, labeling, and the definition of a new protected volume to minimize risks.

We naturally offer all relevant tests according to the new standard and the criteria of the GS mark. The tests are conducted under realistic laboratory conditions: load tests, functional tests, and simulated everyday situations ensure a thorough evaluation of product safety from the first use to long-term durability.

GS MARK AS OBJECTIVE PROOF OF SAFETY

In a sensitive product category like bicycle child seats, trust is crucial for both retailers and end consumers. The GS mark (Certified Safety) from TÜV Rheinland offers a clear advantage: It confirms compliance with legal requirements and demonstrates that the product has been thoroughly tested in an independent inspection.

For existing GS certificates, re-certification is required in light of the new standard. TÜV Rheinland supports manufacturers early in the process by evaluating existing certifications, conducting the necessary tests, and ensuring a smooth transition to the new standard.

New Requirements for Bicycle Helmets: Update to EN 1078

Bicycle helmets are central safety components in cycling, both for sports and everyday use. Manufacturers are therefore responsible for developing products that meet both legal requirements and the high expectations of users. With the update to the helmet standard EN 1078:2012+A1:2012, new requirements are being introduced for the industry. The revision aims to make accident scenarios more realistic and further enhance actual protection in everyday situations. For manufacturers, this means that testing methods and technical specifications will change, and timely preparation is essential to ensure market access and safety.

MORE REALISTIC TEST SCRENARIOS, HIGHER REQUIREMENTS

The revised standard is expected to include more comprehensive testing methods to evaluate head protection under realistic conditions. This includes the use of new test heads and the consideration of rotational forces, which play a central role in crashes. Additionally, the requirements for materials and damping properties will be adjusted. These changes aim to improve the actual protection offered by bicycle helmets in accidents and overall safety for cyclists.

For manufacturers, it is crucial to adapt to the new testing conditions early on. Re-testing and potential adjustments to existing product lines will be unavoidable. Early planning allows for shorter development times, a smooth certification process, and timely adaptation to the new standard.

TESTING COMPETENCE AND SUPPORT FROM TÜV RHEINLAND

With comprehensive expertise, TÜV Rheinland accompanies manufacturers on their way to the new helmet standard. The experts are familiar with the upcoming requirements in detail and are equipped with state-of-the-art testing technology to test bicycle helmets under realistic conditions. TÜV Rheinland's laboratories are already prepared for the expected changes, allowing manufacturers to gain early confidence in the compliance of their products.

Chemicals Under Control: Safety of Bicycle Components

Safety plays a very important role in cycling – but have you ever thought about chemical safety? There are risks that bicycle and bicycle equipment manufacturers should exclude.

Bicycle clothing may be coated with PFAS to make it water- and dirt-repellent. Their content can now be determined through the „Textile Chemical Testing and Fiber Separation" procedure based on the standard EN 17681-1:2025 to demonstrate compliance with legal requirements.

Grips and saddles are often made of PU, PVC, or PP and may contain critical substances such as phthalates, chloroparaffins, PAHs, and heavy metals like lead or cadmium. Some of these substances can be absorbed through the skin.

QUENCHING THIRST WITHOUT BPA: THE CONSEQUENCES OF THE BAN

Drink bottles are in focus. They are considered food contact materials and are subject to strict requirements (e.g., REACH Annex XVII, EU 1935/2004, EU 10/2011), as critical substances could be absorbed not only through the skin but also orally. Common materials used for bottles include PP, PE, silicone, coated aluminum, and PC.

Of particular consequence for manufacturers: The EU Commission has banned the intentional use of Bisphenol A (BPA) and other hazardous bisphenols and derivatives in materials and articles intended for food contact (FCM). Additionally, substances with SML values, those with sensory detectability, lead in screw connections and soldering, and coatings on metals or bisphenols in polycarbonate are also critical.

STRINGENT MONITORING OR TESTING AT THE END

For manufacturers and retailers, compliance with REACH (Annex XVII), the POP Regulation, and other regulations is essential. Compliance can be ensured through consistent chemical management and targeted testing along the supply chain. The testing of food contact materials includes sensory tests, global migration testing, and migration tests for substances with SML values.

Why TÜV Rheinland?

INTERNATIONAL BRAND
With over 150 years of experience in testing, inspection, and certification, we are a long-respected and recognized company serving major brands worldwide.

EFFICIENT AND RELIABLE SOLUTIONS
Our international team of qualified experts provides clarity on the specific regulations for your product and simplifies the testing process for access to multiple markets.

A TEAM
Our highly experienced experts possess practical knowledge of the entire product development cycle and testing and certification requirements.

PARTNER FOR QUALITY
Our global network of accredited laboratories offers our customers access to a comprehensive range of services with additional support in key production and target markets.

TAKE THE NEXT STEP
Would you like to learn more about our testing services for bicycles, components, and accessories? Visit our website to explore our full service portfolio.
Or take the next step and request your non-binding offer today!
We support you in making your product quality visible.

CONTACT US NOW

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