

22

Ti

Titanium

Symbol: Ti

Atomic number: 22

Transition metal

Melting point: approximately 1,668 °C (3,034 °F)

Boiling point: approximately 3,260 °C (5,900 °F)

Aggregate state under normal conditions: solid

Density: 4.50 g/cm³ at 25 °C
(0.162 lb/in³ at 77 °F)

Use: microalloyed steel



Robust in terrain

The new Wörwag coating system for bicycles can do one thing above all: handle anything. It withstands even the stiffest tests.

For Thorsten Bollinger, cycling represents relaxation combined with freedom. “I decide where to go, how fast I move, and how long I’m in the saddle,” says the market manager. Yet his off-road excursions on his mountain bike always have a professional element as well: Bollinger played a key role in developing a coating system that is stirring things up in the growing bicycle market. An endurance test of this sort is always a welcome opportunity. The clear coat in the system sets new standards—both in terms of curing and the brilliance that withstands even the most extreme off-road demands.

The powder coating clear coat W845 high-gloss and W847 dull matt have been used in the bicycle industry for more than 15 years. The water-based curing primer has been on the market since early 2015. The customer can choose between a water-based curing primer that can be combined with the paint

systems of competitors on the market, or select a combination of powder-based primer with a liquid base coat and an acrylic powder clear top coat. Another option is the two-coat combination of powder coating W898 primer and base coat in one product, finished with a colorless acrylic powder coating top coat.

The system of primer, base coat, and clear coat protects the product like a shell. But even more than that: “In low-temperature curing, our clear coat is the market leader,” emphasizes Bollinger. “While the industry standard for curing is 170 degrees Celsius (338 °F), the acrylic paints from Zuffenhausen can do with just 140 °C (284 °F; high gloss) and 150 °C (302 °F; matt). That not only saves energy, but also gives the bicycle manufacturers greater flexibility in the early application of decorative decals. The excellent coverage of the surfaces and the smooth leveling both of the primer and the base coat enable easy and bubble-free application of undercoat decals.

Like the Dutch bicycle group Accell, the Hermann Hartje company of Hoya, Lower Saxony also relies on the Wörwag system, which gives customers a choice between three primers (black, white, gray) and two clear coatings. Beyond robustness and flexibility, the product is also impressive for its universal compatibility: “Customers who use our primer can continue to use their previous base coat without any problem,” assures Bollinger.



THORSTEN BOLLINGER is convinced that the cycling boom is a lasting one. Speaking of raw titanium, which high-end bike manufacturers use primarily for hardtail (unsuspended) frames, three words spring to the market manager’s mind: “light, strong—and expensive.”

The system coating is primarily used on aluminum and chromoly alloys. But it would also work with titanium, which some exclusive bicycle manufacturers use for their frames. Titanium forms a compact oxide layer on the surface that inhibits further corrosion. It is almost as strong as steel, but weighs 40% less. Bollinger would certainly appreciate a bicycle frame made of this material on some of the steeper ascents ...

32,000

**SQUARE METERS
(345,445 SQUARE FEET)**

is the size of the façade of the Guggenheim Museum in the northern Spanish city of Bilbao. Situated on the banks of the Nervión River and shaped to resemble a stylized ship, the building is clad in titanium tiles and limestone. To appreciate the effect of the titanium, observing the building at different times of day is advisable. Sunlight and other light reflections change the perception of the building’s color from a cool gray to a warm gold tone.

The defenses are in place: the Wörwag coating system for bicycles defy mud and stones.

