
THE BEST OF BOTH WORLDS

IWC Schaffhausen looks back on a long tradition of developing and processing innovative new case materials. In the 1980s, the company pioneered titanium and ceramics. With Ceratanium®, IWC's materials engineers have now developed a groundbreaking new material that combines the unique advantages of titanium and ceramic, including their extreme corrosion resistance. And the fact that auxiliary parts, such as the crown, push-buttons and buckle, can be made from Ceratanium® has made it possible to produce watches in a sumptuous, matte, all-black design without the need for coating.

In the 1970s, IWC began researching ways of improving existing materials and using new ones. One such project aimed to increase the scratch resistance of relatively soft stainless steel by hardening it with tungsten. As part of the collaboration with the Porsche Design studio, titanium came to the attention of the engineers. In 1980, IWC unveiled the Porsche Design Titanium Chronograph, the world's first wristwatch with a titanium case and bracelet. The next premiere was not long in coming: in 1986, the Da Vinci Perpetual Calendar was the first ever wristwatch with a case made of black zirconium oxide ceramic.

Every material is different and has specific properties of its own. Titanium, for example, is lightweight and shatterproof, while ceramic is virtually non-wearing and highly scratch-resistant. So, what about combining the advantages of these two traditional IWC materials? After a development period of over five years, IWC's materials engineers finally achieved this extraordinary feat with Ceratanium®. The new material is as light and robust as titanium but as hard and scratch-resistant as ceramic.

IT ALL STARTS WITH A SPECIAL TITANIUM ALLOY

Ceratanium® is not simply a mixture of titanium and ceramic. It is rather a new material developed from scratch, based on a unique titanium alloy smelted according to IWC's stringent specifications. Various case components, such as the casing ring and case back, the crown and push-buttons, are turned and milled from bars and flat sections of this alloy. The machining process is carried out by cutting-edge, high-precision, computer-controlled

turning and milling systems. Finally, the surfaces are sandblasted by hand to give the parts a slightly uneven, matte surface.

PHASE TRANSFORMATION TAKES PLACE IN KILN

There now follows the decisive, final step in the manufacture of a Ceratanium® case. The components are placed in a kiln and baked at a precisely defined temperature for a prescribed time. The specific composition of the titanium alloy means that when certain process parameters are reached, oxygen diffuses into the material, resulting in a phase transformation. The surface then takes on properties similar to those typical of ceramics, such as a high degree of hardness and scratch resistance. The firing process also imbues the parts with their unique matte black colour.

COMPLETELY BLACK WITH NO NEED FOR COATING

One of the central reasons for the development of Ceratanium® was the desire for a completely black watch. The watch industry frequently uses coating processes like physical vapour deposition (PVD) to make black cases. Steel, for example, is coated with an ultra-thin DLC (diamond-like carbon) layer. Unfortunately, coatings chip easily or can peel off the base material if the watch gets banged or knocked, which explains why such processes do not meet IWC's strict quality requirements. With Ceratanium®, the surface is inseparably fused with the material, rather like the crust on a loaf of bread. And that means it does not come away so easily.

**EVEN TINY ADD-ON PARTS
CAN BE MACHINED**

While black watch cases can be made of ceramic, it is enormously costly or simply impossible to produce small auxiliary parts with this material. One of the reasons for this is that a ceramic workpiece shrinks by around a third when sintered. In addition, ceramics cannot be machined using just any shaping process - for example, they could easily shatter if milled or drilled. Ceratanium® is quite different: the material is based on a titanium alloy and offers virtually unlimited freedom during the shaping process. In addition to the main case parts, all the add-on parts can likewise be made from it. The result is an entirely black watch.

Ceratanium® made its debut in the Aquatimer family in 2017. Since then, the material has been used several times in the Pilot's Watch collection. More recently, IWC succeeded in producing its first multi-link bracelet made entirely of Ceratanium®. Because titanium is around 30 per cent lighter than steel, the bracelet is extremely comfortable to wear.

Ceratanium® is a trademark of IWC Schaffhausen and registered in numerous countries worldwide.

IWC SCHAFFHAUSEN

In 1868, the American watchmaker and entrepreneur Florentine Ariosto Jones travelled from Boston to Switzerland and founded the 'International Watch Company' in Schaffhausen. His visionary dream was to combine advanced American manufacturing methods with the craftsmanship of Swiss watchmakers to make the best pocket watches of his time. In doing so, he not only laid the foundation for IWC's unique engineering approach but also established the centralised production of mechanical watches in Switzerland.

Over its 150 year history, IWC Schaffhausen has developed a reputation for creating functional complications, especially chronographs and calendars, which are ingenious, robust, and easy for customers to use. A pioneer in the use of titanium and ceramics, IWC today specialises in highly engineered technical watch cases manufactured from advanced materials, such as titanium-aluminide and Ceratanium®. Preferring the principle of "form follows function" over decoration, the Swiss watch manufacturer's timeless creations embody their owners' dreams and ambitions as they journey through life.

IWC sources materials responsibly and takes action to minimise its impact on the environment, creating intrinsically sustainable timepieces that are built to last for generations. The company prides itself in training its own future watchmakers and engineers, as well as offering an excellent working environment for all employees. IWC also partners with organisations that work globally to support children and young people.

DOWNLOADS

Images can be downloaded from press.iwc.com

FURTHER INFORMATION

IWC Schaffhausen

Public Relations department

Email press-iwc@iwc.com

Website press.iwc.com

INTERNET AND SOCIAL MEDIA

Website iwc.com

Facebook facebook.com/IWCWatches

YouTube youtube.com/iwcwatches

Twitter twitter.com/iwc

LinkedIn linkedin.com/company/iwc-schaffhausen

Instagram instagram.com/iwcwatches

Pinterest pinterest.com/iwcwatches

#watchesandwonders2022

#IWCTopGun