

A lighter way of timekeeping

Rado watches dazzle with beautiful lightweight high-tech ceramic

Rado's mission has always been to create watches of everlasting beauty – a mission that led the brand to pioneer the use of high-tech ceramic in watchmaking. Now Rado's signature material, high-tech ceramic stands out among luxury watchmaking materials for its remarkable marriage of lightness and hardness.

As one of the lightest and most durable materials used in high-end watchmaking, Rado high-tech ceramic is 10 times harder than 18k gold while being 2.5 times lighter. Steel is also no match for the impressive properties of high-tech ceramic, which is five times harder but only three-fourths its weight. Rado high-tech ceramic watches also owe their exceptional lightness to their monobloc ceramic cases, Rado's revolutionary approach to case construction that forgoes the stainless steel core in favour of solid ceramic.

Rado high-tech ceramic watches are valued not simply for their comfortable light weight and impressive scratch resistance: They're also good looking, hypoallergenic, and readily adaptable to the wearer's skin temperature. Their smooth, stylish surfaces can be polished or matte, crafted in an ever-expanding array of colours: the inaugural black, which debuted on the Rado Integral in 1986, pure white, cool grey, gleaming plasma, and chocolate brown.

Production of a high-tech ceramic watch

High-tech ceramic timepieces start their lives as ultrafine zirconium oxide powder, which is also used in other high-tech applications such as medical and space technology.

Preparing for injection

Pigments are added to the high-purity zirconium oxide powder to set its colour. These are then mixed together with a polymer binder, which acts as a moulding aid.

High-tech ceramic injection

The melted feedstock is injected under high pressure (1000 bar) into a precision mould, which is designed so that the ceramic piece has the right shape and size after sintering.

The sintering process

The polymer binder is then removed using a chemical process. Next the piece undergoes the sintering process at 1450°C, where it shrinks by 23%. It becomes fully dense and reaches its final hardness of 1250 Vickers.

Finishing

Finally, critical dimensions are reworked with a diamond wheel. The pieces can then be polished, with a perfect high-gloss finish taking several days to achieve. The result: a durable, beautiful Rado timepiece that floats on the wrist.

Plasma ceramic

The plasma carburizing process – a patented process used by Rado – is applied to fully finished white ceramic pieces, so it only begins once the labour-intensive steps described above are completed. Watch components are placed in a specially-designed plasma oven. Here gases activated by a plasma discharge at 20,000°C trigger a chemical reaction that changes the composition of the surface of the ceramic. This results in a change of colour from white to plasma, a unique metallic grey that does not contain any metal at all.

About Rado

Rado is a globally recognised brand, famous for innovative design and its use of revolutionary materials to create some of the world's most durable watches. Ever since its beginnings in Lengnau, Switzerland, Rado has had a pioneering spirit, with the brand philosophy "if we can imagine it, we can make it" still holding true today.