

SEIKO – Leader in Titanium Technology

About 20 years ago, titanium frame manufacturing was invented and introduced in Japan and since then, the country has built an excellent reputation of being the centre of titanium processing. Here, most sophisticated technology and know-how meet SEIKO's vast experience in the use of titanium in watchmaking. For example, SEIKO was the first company to manufacture watchcases and wristbands of pure titanium. Our own R&D department puts enormous efforts into the improvement of manufacturing techniques and permanently pursues innovations in titanium frame making. Thus, SEIKO strengthens its position as undisputed, innovative leader in that field.

Titanium and its variations

The titanium used in spectacle frames can appear in several compounds and compositions, which largely determine the quality of a frame. The degree of purity of the titanium used, for example, is crucial to a frame's durability and style: While SEIKO only uses pure titanium as well as the high-grade alloys Titanium-Alloy and Beta Titanium, other manufacturers sometimes resort to inferior alloys for reason of cost. The rims of such low-quality frames are usually thicker and bound to break more easily under mechanical stress. SEIKO's 'Beta Titanium' frames, however, have very thin and flexible rims which can easily take all kinds of wear and tear. Moreover, cases of false labelling have been reported. Many manufacturers claim to sell 'Pure Titanium' frames, although only inferior alloys are used. With SEIKO frames, you play it safe: if it says 'Pure Titanium', it IS pure titanium!

Titanium by SEIKO

Only nickel-free alloys and pure titanium are used in the manufacturing of SEIKO Titanium frames.

Pure Titan: Pure Titanium carries 99.5 percent titanium as well as 0.5 percent oxygen and nitrogen. The compound is very light, robust and extremely durable.

Titan Alloy: Titanium Alloy is a compound of 94.5 percent titanium, 3.0 percent aluminium and 2.5 percent vanadium. It is durable, very difficult to weld and flexible (owing to the vanadium)

β-Titan: Beta Titanium consists of 74 percent titanium, 22 percent vanadium and 4 percent aluminium. Very thin frames can be made of Beta Titanium. It is also extremely flexible and hard to form and weld.

Setting Standards: High-Quality Workmanship by SEIKO

Processing titanium is a craft that only very few truly master. Therefore, many manufacturers use carriers containing nickel in their plating and welded joints, as it is cheaper and a lot easier than the handling of high-grade titanium. Additionally, the spring hinges of frames are in many cases made of chrome-nickel-alloys for ease of production. These nickel components, however, often cause immediate allergic reactions with some spectacle wearers.

SEIKO never compromises quality for cost in titanium frame manufacturing. Only 100 percent nickel-free coatings are used and titanium is only welded to titanium, without the use of any bonding agents or base metals. Of course, all hinges are made of titanium and contain mechanics made of high-grade steel. The use of these high-quality components ensures that all SEIKO Titanium frames are 100 percent allergy-free. Guaranteed!

Unique Design by SEIKO

All models of our collections are created by a team of European and Asian frame designers. Trends and zeitgeist influence the European designers' drafts, which are then checked for technical feasibility by their Asian colleagues in close cooperation with the Japanese manufacturing engineers. These synergies make the quality and style of SEIKO frames unique on the Japanese, American and European market.

Generally, SEIKO Titanium frames are characterised by their clearly defined edges and three-dimensional embossed designs. Such intricate designs can only be manufactured with extremely complex laser technology and embossing tools which require a great deal of skilled craftsmanship. Other manufacturers' frames frequently show slightly burred edges as a consequence of using inferior embossing tools.

As unique as their quality is the colour range of SEIKO Titanium frames. Our coating experts create extremely durable lacquer coatings which can be applied evenly, allowing for an innumerable number of combinations. Cheaper titanium frames are often coated with inferior, blurry colours, resulting in chipping and colour changes after only a short time of wearing.

Four different coatings are used with titanium frames:

[Galvanic](#) is mostly used for gold and silver colour coatings.

[Electronic Coating](#) can produce almost any combination of primary colours.

[Spray Coating](#) is used to apply special colours.

[Ion Plating](#) is currently used with two 'Comfort Models' and allows for a very intensive compounding of colour and frame material, making the coating extremely durable. It is the most expensive coating technique and can only be used with the colours gold, silver, grey and brown.

Quality and Design – A Trade-Off?

Many designs may look great, but are extremely hard to manufacture. If frame makers give up quality over design in such cases, customers may soon be scared away from titanium frames by apparent quality issues. Therefore, SEIKO closely examines its innovations and adheres to highest quality standards, claiming that only satisfied customers become loyal customers.

Titanium Trivia

In 1795, German chemist Martin Klapproth discovered the oxide of a hitherto unknown element. Klapproth named it 'titanium', referring a family of gods in Greek mythology, the Titans.

Physical properties:

Atomic number: 22

Atomic weight: 47.9

Density: 4.54 g/cm

Solidus: 1575°C

Boiling point: 3287°C (5949°F)

Thermal conductivity in W / (k x m): 15.1

Brinell hardness (HB): 120

Tensile strength: 343 N / m

Expansion(%): 40 percent