

THE M E H E I A T R F T O

Keith W Strandberg *takes a magnifying glass to the extraordinarily intricate craft of hand-painted enamel on watches*

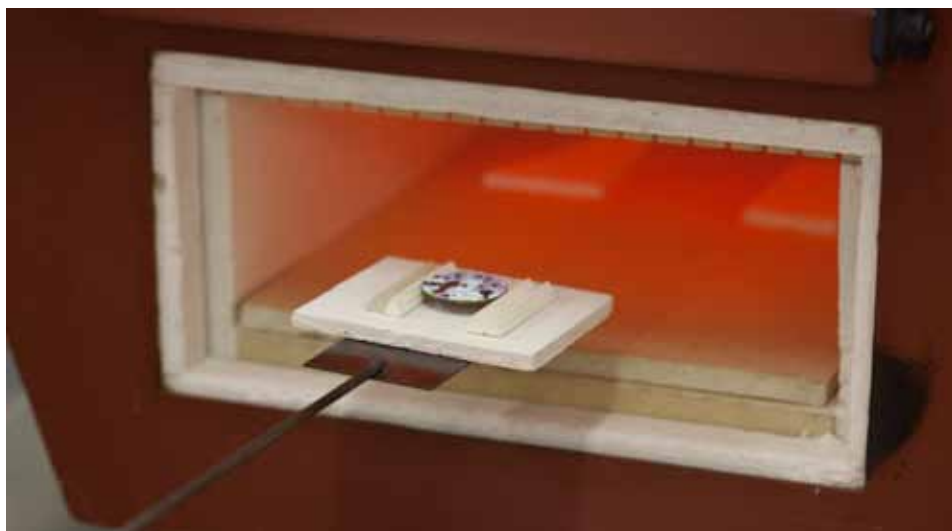
THE DIAL, THE ONLY AVAILABLE PLACE FOR CONCENTRATED decoration, is very small, even on the biggest of watches. This has not prevented some brands from putting works of art on watch dials and a technique that has become popular again is the traditional craft of enamelling. Enamel goes back at least as far as the Greeks, who used it on gold jewellery back in the fifth century BC, while Julius Caesar claimed to have found Celtic cultures using enamel in Britain in the first century B.C.

It was brought to Geneva, already a centre of jewellery and watch making, during the 17th century and the Swiss quickly made it their own. From about 1760, Genevan artists improved the techniques and invented *l'émail sous fondant* (also known as *émail de Genève* or the Geneva Technique). Watchmakers used enamel on pocket watches, and when wristwatches were introduced, after 1910 or so, enamel continued to be popular. Then, because of the hard work, technical challenges, trial and error, and expense involved, enamel work fell from favour. Now, thanks to Swiss companies like Van Cleef & Arpels, Patek Philippe, Piaget, Jaquet Droz, DeLaneau, Jaeger-LeCoultre, Vacheron Constantin and others, it is back, stronger and more beautiful than ever.

'Enamel watches are making a comeback and it is justified,' says Philippe Leopold-Metzger, president of Piaget. 'It is a real craft, a work of art, something that complements and enhances the beauty of the dials and of the cases, and this trend will continue. One of the great things about the recent high-end watch introductions is the increased use of enamel.'



*Intricate workmanship
from Van Cleef & Arpels*



The skills involved in its use are considerable. It is not paint but minute crystals that are delicately placed onto a metal dial with a fine brush or needle and the help of a microscope. Enamel begins with a mixture of silica (a type of sand), soda, potassium carbonate, borax and metallic oxides (for colouring). The recipes for enamel colours go back centuries, although some that once contained lead and even arsenic have been modified for use today.

One of the most important stages in enamelling is the preparation of the materials. First, the enamel is meticulously crushed, ground, washed and cleaned in distilled water, and then again in nitric acid, to remove impurities. Next, a metal base plate, usually gold, silver or copper, is also cleaned to remove any oxidation. At extreme temperatures, metals will warp and camber, so the enameller will start by applying a layer of transparent enamel to each side of the metal to protect it and stop it from deforming.

After each colour or series of like colours is applied, the dial is fired up to 30 times in a kiln at 1,544°F (840°C). Starting with the most resilient colours (those that can stand successive firings) and finishing with the most delicate hues, the enameller fires the dial after each application. It is not only a fine art but also a science, because each dial requires extensive research into how the enamel colours will react to the heat, both individually and collectively. A dial can easily burn, bubble or explode if the calculations are incorrect, and this happens quite often, requiring the enamellist to start again from scratch.

'Even now, I hold my breath and cross my fingers each time a piece goes into the kiln,' says enamel artist Dominique Baron of l'Atelier, who is happy to share her magic – or at least explain it. Self-taught, she perfected her art in the workshops of some of the watch industry's most famous brands, before going independent and then setting up l'Atelier with the support of the Richemont Group. Employing 10 people, l'Atelier works for a number of brands (not only Richemont companies) in search of artistic alchemy.

Only a very small handful of artisans like Baron know how to make enamel dials, resulting in a very limited annual production. l'Atelier is an independent concern, though several companies, Jaeger-LeCoultre for one, have created workshops in their *manufactures* to do this painstaking work.



One of the more popular uses for enamel is to produce coloured dials: enamel provides an incredibly lustrous colour which cannot be achieved by other means. Also the enamel will not fade, because of the protective coating of translucent enamel applied after each colour. Nature themes are very popular, with flowers and landscapes leading the way. Portraits of humans and animals, and reproductions of famous paintings are the hardest to make. Most of these watches are limited editions or one-of-a-kind pieces because of the difficulty and the expense involved.

The best combine this extraordinary artistic skill with the finest materials, movements and craftsmanship. Patek Philippe, for example, pairs its complicated world time movement with a stunning world map in enamel. Van Cleef & Arpels uses enamel heavily in its poetic complications – the Four Seasons features an enamel dial that makes one turn in one year. Jaeger-LeCoultre's Master Minute Repeater Grand Feu Venus mates a meticulously reproduced painting in enamel with the brand's magnificent minute repeater.

It is great news for those who value artisanal techniques that watch companies are rediscovering enamelling. With luck, more people will be trained to perform this delicate and artistic job, so these incredibly beautiful dials can continue to adorn the finest timepieces. ■ ■

ABOVE: *applying enamel with a brush.*

OPPOSITE: *the art of enamelling at Jaeger-LeCoultre; enamel is often fired many times*

ENAMEL TECHNIQUES

CHAMPLEVÉ

This is the oldest enamelling technique. Cavities are milled into a thick metal plate, leaving cells that are then filled with opaque or translucent enamel. When all the cavities are filled to the top, the piece is placed in the kiln. After cooling, the piece is sanded down, leaving a matte surface, then fired once more to re-glaze the enamel.

CLOISSONNÉ

Fine ribbons of metal are fixed onto a metal base creating the lines of a design. The enamel is then placed into the different cells and fired.

ÉMAIL DE BASSE TAILLE

The base plate is decorated with engraving or guilloché and then covered with translucent or opalescent enamel, so that the pattern on the metal can be seen through the enamel.

GENEVA TECHNIQUE

Transparent enamel goes on top of an enamel painting to protect it and create a perfectly smooth finish. It requires up to three layers of clear enamel and several firings in the kiln. It is an art in itself, and if it isn't done properly, the intensity of the colours can be lost, the dial can bubble or the painting can be distorted.

ÉMAIL PLIQUE À JOUR

'Open to daylight,' is similar to the cloisonné method. Metal wires or ribbons are attached to a thin copper plate, and translucent enamel is added. After firing is completed, the copper plate is dissolved in acid, leaving a stained glass window effect.

GRISAILLE OR CONTRE JOUR

This technique uses only two colours, black and white. It was developed in Limoges, France, in the 16th century and used to decorate dishes. The enameller will start by applying the black and then add layers of white Limoges enamel. After each firing, the white fuses with the black to create shades of grey. The thinner the layer of white, the darker the shade of grey.

PAILLONS

These are small gold leaf motifs, such as flowers, leaves or stars that are placed between two layers of enamel to decorate a dial.

MINIATURE PAINTING

The base plate is covered with a single-coloured enamel, usually white. Once the base is enamelled, the coloured enamels are then mixed with an oil binder and painted onto the surface. The work is done under a microscope for precision.