

# Historical Review of the Swiss Precious Metals Control Act Focused on Platinoids

**In Switzerland, platinum and palladium finenesses have been submitted to federal control respectively since 1914 and 1995**

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“Make possible the loyal execution of any honest order”

Numa Droz, Member of Swiss Parliament  
and Federal Councillor (1877)

Precious metals are subject to great scrutiny from lawmakers because of their financial and strategic importance. Gold and silver coins have been hallmarked since ancient times but the platinum group metals (pgm) were only known from 1748, therefore their hallmarking and fineness control is more recent. This paper reviews the legal history of pgm control in Switzerland where precious metal refiners’ and fine watchmakers’ lobbying impacted Swiss regulations on precious metals trade. Platinum and palladium have been regulated since 1914 and 1995 respectively while the other pgms (rhodium, iridium, osmium and ruthenium) are not.

## Introduction

Platinum and palladium trade control and hallmarking in the UK have been discussed in earlier issues of this journal (1–2). In Switzerland, manufacturers, smelters or sellers of silver, gold,

platinum and palladium items are subject to the Precious Metals Control Act (3).

Every aspect related to precious metal is evoked in this Act: hallmarking, assaying or refining. A Precious Metals Control Ordinance and an Ordinance on the Fees for Precious Metals Control complete the Act (4–5). The Act has no fiscal dimension: protection against fraud is the main goal of the Precious Metals Control Act and the Ordinance on the Fees governs only stamping fees and determination of fineness fees. Purity is guaranteed by the manufacturer hallmark and fineness is determined by a federal licensed trade assayer working for an Assay Office or a manufacturer. The precious metal control is organised within four federal Assay Offices (Geneva, Chiasso, Bienne and Zürich), one cantonal office (La Chaux-de-Fonds) and the Central Office in Bern where the General Directorate of Customs is located. Except Zürich, all offices are in cantons with horology or precious metal industries (6).

## First Federal Laws

Geneva was the first Swiss location to establish legal control over precious metals: an ordinance of 1424 settled the requirements of silverware fineness and hallmarking. From the seventeenth century, an important watchmaking industry developed in Geneva and in the Jura mountains, especially in the district of Neuchâtel where the first law on gold fineness was established in 1754. With the emergence of the Federal State,

horologists started lobbying the Federal Assembly for better control over gold and silver fineness to maintain their commercial reputation (7).

At that time, the Swiss Federal State was a recent construction: the first Constitution was established in 1848 and lawmakers were reluctant to draft federal regulations and preferred to leave precious metal control to cantonal authorities. On 1st July, 1850, a petition of 548 firms, factories or craftsmen of La-Chaux-de-Fonds requesting a federal hallmark was addressed to the National Council. On 16th August, 1850 the Federal Council pleaded to the National Assembly the rejection of such a proposition because it was contrary to trade freedom and every citizen was to feel free to buy lower-quality, better or cheaper watch cases. The petition was ruled out but the industrialists of the Neuchâtel district continued lobbying (7).

A second Federal constitution was drafted in 1874 and the Federal State gained in importance and in influence. The economic situation was difficult for watchmakers: due to American and French concurrence, unscrupulous Swiss producers cheated on gold purity of watch cases causing great harm to the reputation of Swiss watches. The industrialisation of American watch producers made them more competitive and they seriously threatened Swiss horologists (7–8).

In 1876–1877, 2154 watchmakers or subcontractors of Romandy and Bern signed a petition to introduce control measures while their arguments were exposed in a leaflet of 80 pages (Figure 1) (7–8).

The representative of the Neuchâtel district, Numa Droz, successfully proposed a new silver and gold control: in 1880, the first federal law was enacted to assure a defined fineness for watch cases made of silver and gold (9). Article 4 of the rules of procedure mentioned that every object made of gold or silver was required to have the same fineness except external decorative parts made of silver or platinum (8). No other precious metal was mentioned.

In 1886, a second law was enacted regulating silver and gold scraps (10). In the presentation of the law, it was written “one may add platinum, if that substance is used extensively, which is not the case” (11). Indeed, platinum was not widely exploited in 1886 (the global production for the 1881–1885 period was 12,725 kg for an average price of 2000 CHF kg<sup>-1</sup> (12)). Within thirty years, the situation evolved. In the 1890s–1900s, reputable jewellers such as the Frenchman Louis Cartier or the American firm Tiffany & Co started to promote platinum-made jewellery (13). Platinum

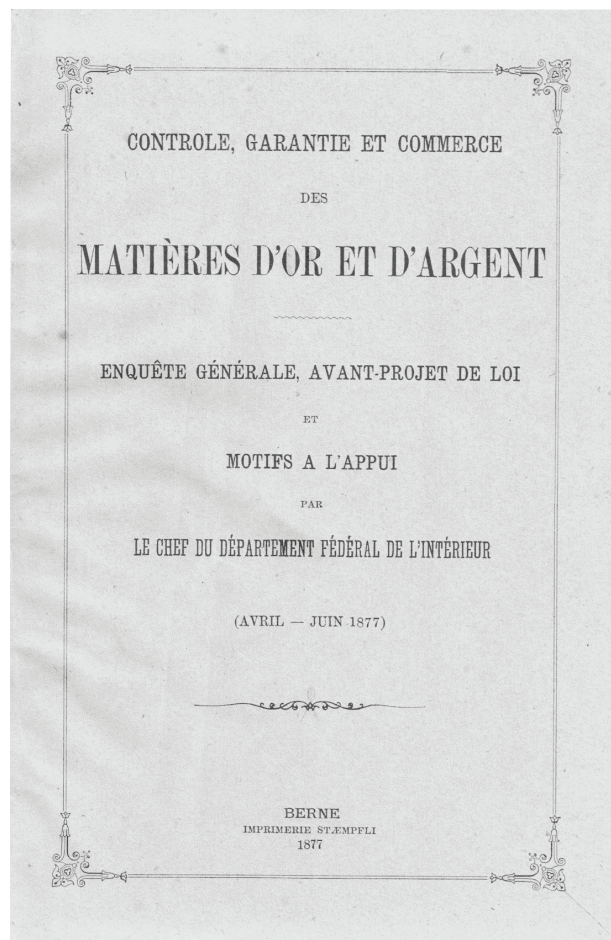


Fig. 1. Swiss leaflet petitioning for a federal Precious Metal Control Act (1877)

became very fashionable because of its colour and its improved crimping qualities compared to gold. The platinum price overtook the gold price in 1906 because of the wide demand for jewellery which consumed 70% of the global platinum production in 1922 (12).

## Platinum Control

At the end of 1909, several industrialists petitioned the Federal Council to impose a strict regime of regulations on platinum watch cases. Their request was motivated by the sale of poor alloys supposed to imitate real platinum (14). In 1911, the Swiss Embassy in Paris reported the recent French Finance Law in the Federal Gazette. Hallmarking of platinum became mandatory in France, platinum standard fineness was established at 950‰ and iridium was accounted as platinum (15).

In 1913, the representatives of the jewellery and horology industries petitioned for a strict control of platinum works (16). Quoted to 7000–8000 CHF kg<sup>-1</sup>, platinum was in competition

with white gold (3000–4000 CHF kg<sup>-1</sup>), an alloy of gold (750‰) and cheaper metals such as nickel or palladium (16). The *Chambre Suisse de l’Horlogerie* was consulted and responded positively to a control on platinum. Consequently, the Federal Council enacted a decree in February 1914 on the optional hallmarking of platinum. The decree was not limited to horology but included all platinum-made items, the minimal fineness had to be 950‰ and the responsibility mark was a chamois head (Figure 2(a)) which was delivered by the assay offices after assaying (17–18).

Table I gives an account of the gold, silver and platinum watch cases hallmarked during the period 1913–1920 (19, 20). The initial decrease of gold and silver hallmarked cases was explained by World War I and the difficulties for the watchmaking industry to obtain raw materials. Platinum prices increased from 5000 CHF kg<sup>-1</sup> at the beginning of 1915 to more than 8000 CHF kg<sup>-1</sup> a few months later because of the restrictions imposed by belligerents on platinum exports. In spite of those hurdles, the total value of platinum items made

**Table I Number of Gold, Silver and Platinum Watch Cases Hallmarked in Switzerland (1913–1920) (19)**

Year	Hallmarked watch cases		
	Gold	Silver	Platinum
1913	815,038	2,986,651	–
1914	474,296	1,911,004	650
1915	318,982	1,570,661	1180
1916	688,497	3,094,663	3147
1917	630,301	2,892,674	3064
1918	1,010,037	2,994,015	4496
1919	1,100,746	2,886,225	6827
1920	1,005,437	1,359,605	5861

in Switzerland amounted to 200,000 CHF in 1915 (20 million CHF and 5.5 million CHF respectively for gold and silver-made objects) (19).

The platinum price continued to soar between 1916–1920 (Table II) (20). In consequence, platinum scrap was included in the dispositions of the Act of 1886. The Federal Council invoked the dramatic platinum price increase over 30 years: from 2000 CHF in 1886, its value reached over 10,000 CHF in 1916 (see Table II).

**Table II Platinum Prices in Switzerland (1916–1920). 1913 Was Added for Comparison (20)**

Year	Gold price, CHF kg <sup>-1</sup>	Silver price, CHF kg <sup>-1</sup>	Platinum price, CHF kg <sup>-1</sup>
1913	3500	96	7500
1916	3520	118	12,200
1917	3600	140	21,000
1918	3640	170	27,000
1919	4000	213	21,000
1920	3900	170	16,000

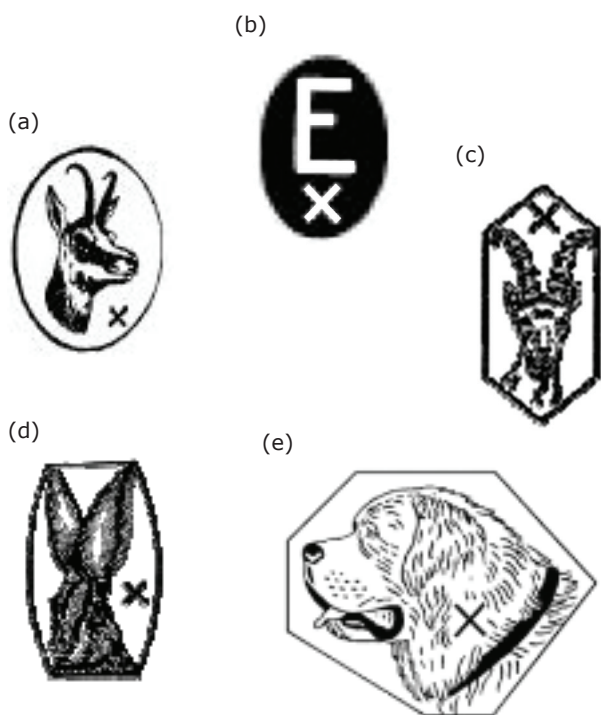


Fig. 2. (a) Chamois head: first Swiss platinum hallmark (1914–1933); (b) Swiss platinum hallmark for foreign products (1917); (c) Ibex goat head: platinum hallmark (1933–1995); (d) Hare head: Swiss platinum hallmark for foreign products (1933); (e) Saint Bernard dog head: single official hallmark for all precious metals and all fineness standards (1995–)

Two other reasons explained the extensive law-making during World War I:

- (a) War-induced rarity of platinum forced the Federal Council to regulate platinum supplies to avoid metal deprivation (21). Platinum watch cases were still very prized and every platinum item (sheet, hook, wire or pin) was collected for the domestic industry (22)

(b) Unscrupulous brokers took over Swiss platinum scraps to sell at a better price abroad: the Central Powers did not have access to Russian platinum during World War I (for example 93% (5766 kg) of the production came from Russia in 1911 (23)) so they bought it on the black market.

Platinum catalysis was essential for nitric acid production and explosives manufactured from ammonia (Ostwald Process): a production of 1000 tons year<sup>-1</sup> used about 5 kg of platinum in 1907 (23).

In Switzerland, fraudsters started to collect out-of-use dentures to extract their platinum frames to sell to the Central Powers, which paid the highest price for war reasons (22). Dentists had widely adopted platinum due to its physicochemical properties (rustproofing, high melting point and favourable stretching coefficient): 40% of US platinum imports were used for dental applications in 1891. After 1906 the platinum price exceeded the gold price and it became less attractive (12).

In 1917, official hallmarking was extended to all manufactured objects in platinum. As France was the main provider of platinum to Switzerland and the first refiner of Russian platinum (in the early 1910s, 80% of the Russian platinum was refined by the Parisian company Desmoutis, Lemaire & Co, France (24)), platinum sales were strictly forbidden to the Central Powers.

To ensure compliance, the *Chambre Suisse de l'Horlogerie* asked the Federal Council to enact a regulation on hallmarking. On 2nd February, 1917, the first decree was brought into force to hallmark ingots, watch cases, jewellery and tools made of platinum (25).

A second decree on 15th August, 1917 imposed a specific mark on all imported items made of gold, silver and platinum. During the war, foreign companies used to import items into Switzerland and re-export them as Swiss manufactured objects while their fineness was sometimes dubious. Such a specific mark (**Figure 2(b)**) avoided any mistake between Swiss and foreign platinum-made jewels or watch cases (26).

### Precious Metal Control Act of 1933

After the difficulties experienced during WWI, modernisation of the Precious Metal Control Act was proposed in 1925 (22). The draft law considered platinum as a precious metal like gold and silver. The Message of the Federal Council summarised the reasons to enact successive decrees on platinum

control. The price of platinum was lower compared to gold when the first Act was drafted in 1880: no control was needed at that time. The platinum price increased because its applications were no longer limited to the electrical and chemical industries but started being used in jewellery. The limited number of platinum fields (Russia) increased the price while the demand for platinum kept growing especially with the development of wristwatches.

The draft law also proposed the possibility to sell platinum alloys with a fineness between 950‰ and 333‰ if it was clearly presented as an alloy with the trademark and the real fineness engraved on the object. The denomination 'platinum alloy' was denied to lower fineness objects (22). No fineness tolerance was accorded for watch cases: foreign countries did not accept tolerances and watchmakers did not want confusion between domestic and foreign markets. 950‰ was kept as the standard fineness and any trace of iridium was considered as platinum. The draft law was special in the sense that official fineness control was made compulsory for silverware and goldsmithing.

Further discussions occurred between industrialists and the Federal Council and the final law was drafted in 1931 to be promulgated on 20th June, 1933 and to enter into force on 1st July, 1934 together with an ordinance (27–29). The legislation was softened: official hallmarking was only mandatory for watch cases. Personal hallmarking was imposed on any platinum-made objects (such as jewellery and optics). 950‰ was the only authorised fineness and the letters PT (minimum height 1 mm) had to be inscribed on every platinum-made object to avoid any confusion with white gold (28).

Like older regulations, iridium in platinum was considered as platinum (28). Iridium was used to harden platinum (5–10%) and its separation from platinum was too tedious to be performed. Furthermore, its price was high enough to consider it (unofficially) as a precious metal in the 1910s–1930s. In the early 1920s, the main US producer states (New York, New Jersey and Illinois) had drafted a regulation for platinum-made objects imposing a minimal 925‰ standard fineness which included not only iridium but all platinum group metals. However, palladium was more affordable than platinum (US\$78 against US\$116.50 in 1923 (12)) and jewellers increased palladium content in their products, raising concerns about cheaper substitution (30).

Plated articles were mentioned in the Act of 1933: they were defined as objects made of silver or ordinary metal with a layer of 8 µm of platinum or



gold (fineness  $\geq 500\%$ ). The fabrication method (mechanical or electrolytic) had to be specified. Imitations (objects made of platinum below the standard legal fineness or plated) may be described as platinised but without fineness or misleading indications (28).

The platinum symbol for export was changed to an ibex goat head (**Figure 2(c)**) and imported watch cases were marked with a hare head (**Figure 2(d)**). No fiscal dimension was introduced: every tax related to hallmarking was intended to cover the costs of the Offices for Precious Metals Control. The Precious Metals Control Act of 1933 was intended to be very pragmatic and no significant modification occurred before 1993.

## International Conventions

In 1972, seven European countries (nineteen in 2017) adopted a common mark through the Vienna Convention (31). Each object made of silver, gold or platinum marked with the Common Control Mark was allowed for importation into any contracting State without fineness control. Swiss watch cases intended for the British market had previously been systematically controlled by the UK Assay Office and re-exported to Switzerland to receive their mechanism before final exportation to the UK. Such complications were cancelled when both countries applied to the Convention (31). In Switzerland, the Convention entered into force on 27th June, 1975 (32, 33). At that time, only silver, gold and platinum were classified as precious metals (31). A 2001 amendment entered into force in 2010 introduced palladium as a precious metal (32). As late as 2012, 10 participants out of 19 recognised palladium as a precious metal (33). The Convention Secretariat of the Vienna Convention, which supervises the activities relating to the Convention, is located in Geneva, Switzerland (33).

Between 1935 and 2011, Switzerland separately adopted five bilateral conventions (still active) with Austria, France, Italy, Spain and Russia for mutual recognition of official control marks of watch cases or jewellery (34).

## Palladium Control

In 1993, an important revision of the Precious Metals Control Act was operated to adapt the law to new international regulations and economic considerations (35). Two years earlier, ISO 9202:1991 (Jewellery – Fineness of Precious Metal Alloys) was drafted and classified palladium as a

precious metal. To be consistent with such norm, the Federal Council proposed during the revision of the Precious Metals Control Act to add palladium among the precious metals subjected to Federal Customs Administration control. Two finenesses for palladium were accepted: 500‰ and 950‰ as defined in the ISO 9202:1991 standard and two finenesses for platinum were added: 850‰ and 900‰ (35). Controversies on possible competitions with white gold, platinum or gold were not taken into account (35).

Palladium was mentioned as early as 1918 in a decree on the Fees for Precious Metal Control where it was measured together with gold and silver but was not classified as precious metal (36). Palladium production increased during the second half of the twentieth century: around 1950, the annual global production was estimated to be 6 tonnes against more than 200 tonnes in 2016 (37, 38). In the 1940s–1950s, the mining of palladium-rich nickelous ores motivated Canadian producers like the International Nickel Company to promote palladium in jewellery as an alternative to platinum (38). Consequently, Canada was the first country to classify palladium as a precious metal in 1950 (38).

Palladium supplies are now mainly used by the automotive sector (80% of global palladium production in 2016) and palladium demand for jewellery amounted to less than 7 tonnes in 2016 (37). That demand has been declining: this was very striking in China where the market was non-existent in 2016 while the demand for palladium jewellery in this country peaked at 38 tonnes in 2005 (37). The hardness and brittleness of palladium together with the ranking of its price between those of silver and gold made it less attractive to jewellers and investors (39).

Iridium was excluded from the new Act and was no longer treated as platinum because new analytical techniques enabled a separate quantification of iridium. Iridium-platinum alloys are still entitled to platinum hallmarking in other jurisdictions: for example iridium-platinum alloys are treated as platinum in France while Canadian regulations entitle iridium or ruthenium-platinum alloy to platinum hallmarking if the total precious metal content is minimum 950‰ (40, 41).

As for platinum, articles made of palladium must show the complete name of the metal or an abbreviation such as 'Pd' ('Pt' for platinum). The official national hallmark for watch cases sold in Switzerland was changed to a Saint Bernard dog head (**Figure 2(e)**) (35).

Palladium was the first precious metal to have a precise definition given by the Federal Council:

"With a grey-white colour, palladium belongs chemically to the six precious metal of the platinum-group. It is used today mainly in electrotechnics and petrochemistry. Mixed with low amount of copper or other metals, it acquires remarkable properties (for example inalterability, hardness, brightness). These qualities make palladium interesting for jewel-manufacturing, watches, etc, especially since its price is between silver and gold prices" (35).

The Federal Message of 1993 defined precious metals in the following terms:

"...strongly-resistant metals from the chemical point of view. Their physical properties play also an important role as their aesthetic characteristics. Precious metals are gold, silver and the platinum-group metals, namely platinum, palladium, rhodium, iridium, ruthenium and osmium" (35).

After the revised Act entered into force in 1995, no other precious metal was subjected to legal control in Switzerland although ruthenium and rhodium coating is allowed on precious metals (42). One has to admit that the Federal Act against Unfair Competition of 1986 protects Swiss consumers against any dishonest sale of fake osmium, iridium, ruthenium or rhodium ingots (43). In comparison, the US Code of Federal Regulations Part 23 Guides for the Jewelry, Precious Metals, and Pewter Industries is more precise and imposes strict measures to jewellers:

"(a) It is unfair or deceptive to use the words "platinum," "iridium," "palladium," "ruthenium," "rhodium," and "osmium," or any abbreviation to mark or describe all or part of an industry product if such marking or description misrepresents the product's true composition. The Platinum Group Metals (PGM) are Platinum, Iridium, Palladium, Ruthenium, Rhodium, and Osmium.

[...]

(c) The following are examples of markings and descriptions that are not considered unfair or deceptive:

(1) The following abbreviations for each of the PGM may be used for quality marks on

articles: "Plat." or "Pt." for Platinum; "Irid." or "Ir." for Iridium; "Pall." or "Pd." for Palladium; "Ruth." or "Ru." for Ruthenium; "Rhod." or "Rh." for Rhodium; and "Osmi." or "Os." for Osmium" (44).

## Conclusion

Platinum and palladium as well as gold and silver are subject to strict control by the Swiss customs administration. Precious metal control was mainly introduced because of a need to protect consumers when these expensive platinum group metals started to be widely used by jewellers. Switzerland was first influenced by the French hallmarking of platinum after its value surpassed that of gold, while palladium control was achieved to comply with international standards (ISO 9202:1991 and its subsequent revisions). The actual law, originally drafted in the 1930s, was modernised in 1995 but its core remained unchanged, illustrating the early pragmatism of Swiss legislators. The timetable of introduction is summarised in **Table III**. Self-regulation has been the main method of precious metal control: for example apart from watch cases, precious metals may be certified by a sworn assayer and this person is responsible in front of the federal authorities. This self-compliance is highly regarded by Swiss refiners, contributing to the success of this industry (45).

Although major changes in Swiss precious metal legislation are very unlikely, an extension of hallmarks for the remaining platinum group metals is a hypothesis that cannot be ruled out. As discussed before, laws were issued to protect industrialists and consumers from fraud and unfair competition. If a new precious metal began to gain significant market share, regulations would have to be drafted to maintain trust between sellers, buyers and investors.

## Acknowledgements

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**Table III Timetable of Platinum Group Metals Control in Switzerland (1880–2017)**

Year	Fineness and platinum group metal	Hallmarking for platinum group metal made articles (such as jewellery, optics and horology)	Official hallmark
Precious Metal Fineness Control Act of 23rd December, 1880	-	-	-
Federal Council Decree of 10th February, 1914	Platinum (950‰, iridium included)	Official hallmarking voluntary	-
Federal Council Decrees of 2nd February, and 16th June, 1917	Platinum (950‰, iridium included)	Official hallmarking mandatory	Mandatory for exported and imported items
Precious Metal Control Act of 20th June, 1933	Platinum (950‰, iridium included). PT is marked on every article	Responsibility hallmarking mandatory	Mandatory for Swiss or foreign watch cases marketed in Switzerland
Revision of 1933's Act 1st August, 1995	Platinum (999, 950, 900, 850‰), palladium (999, 950, 500‰). Articles of platinum or palladium must also bear a reference to the type of precious metal used (Pd, Pt). Iridium not included	Responsibility hallmarking mandatory	Mandatory for Swiss or foreign watch cases marketed in Switzerland

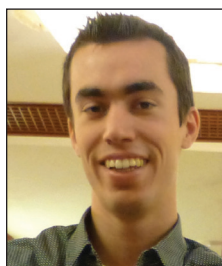
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