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This paper examines the different aspects of gold alloys fineness control, i.e. Assaying methods, marking by the producer or by an independent accredited third party, as well as other ways to guarantee jewellery fineness. In addition, future prospects for an european standard for fineness control of carat gold products are discussed.

Italy and Europe: Legal Titles and Methods of Control

Introduction

The present European standards of fineness concern commercial products made of gold, silver, platinum and palladium.

In this presentation we will discuss only the allowed standards of fineness for gold and gold alloy articles, because gold represents the typical precious metal and, in addition, the largest number of different standards of fineness are allowed for gold in the different countries.

We should also remember that Italian laws allow three standards of fineness for gold articles, but allow also “any fineness standard higher than the highest allowed for each precious metal”. The highest fineness standard stated for gold in the D. Ig. 251/99 is 750‰. Therefore we can infer that all fineness standards shown in Table A and higher than 750‰ are allowed.

Another introductory statement concerns Switzerland, that has been included among European countries, even if up today she does not belong to the European Union (EU). We have preferred this option because of evident geographic and trade reasons, because part of the Italian gold products sent to Germany passes through Switzerland.

Two aspects are immediately observable in this review of the allowed standards of fineness in the various countries of the EU.

The first one is the extremely wide number of fineness standards allowed in the EU. As can be easily seen, the standards go from 333‰ to 999‰, including the commonly accepted 585‰ and 750‰, together with the less used 625‰, 833‰ and others.

The second aspect is that only a few fineness standards are most widely accepted in the European countries.

The 750‰ is accepted in 13 countries, the 585‰ in 12 countries, the 916‰ in 11 countries, the 375‰ in 10 countries, the 999‰ in 9 countries.

The other fineness standards are relegated in a more receded and secondary position, like 833‰ and 990‰ that are accepted in 5 countries, 800‰ in 4 countries, 986‰, 900‰, 840‰, 500‰, 583‰, 417‰, 333‰ in 3 countries and, last ones, 969‰, 950‰, 875‰ and 625‰ in 2 countries.

A summary of the distribution of the various allowed fineness standards in the EU countries is shown in Table A.

Table A

	333	375	417	500	583	585	625	750	800	833	840	875	900	916	950	969	986	990	999	
Austria						■		■					■				■			
Belgium						■		■		■										
Denmark	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Finland		■			■			■						■					■	
France								■						■						
Germany																				
Greece	■	■		■		■		■	■		■			■				■	■	
U.K.		■				■		■						■				■	■	
Ireland		■	■			■		■		■				■				■	■	
Italy		■				■		■												
Holland						■		■		■				■						
Portugal		■				■		■	■					■					■	
Spain		■				■								■					■	
Sweden	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Switzerland		■				■		■						■					■	

It can be seen that Germany doesn't have allowed fineness standards. In this country the crime of undercarating is considered as a simple fraud to the consumer and a non-conformity with the marked or claimed fineness.

Figure 1 highlights the data displayed in table A.

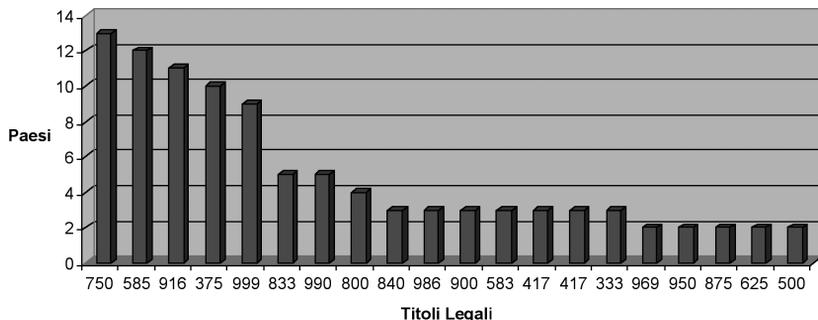


Figure 1 - x axis: allowed fineness - y axis: number of countries

Figure 2 makes more evident the fineness standards more widely used in the considered countries.

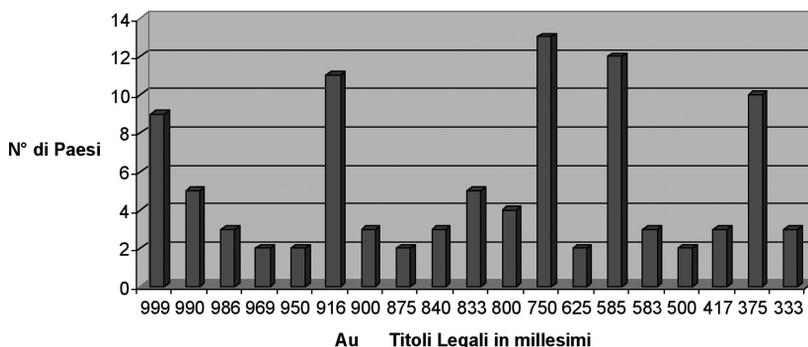


Figure 2 - x axis: allowed fineness - y axis: number of countries

It can be seen that, apart from the 999‰ standard, 4 other standards are more commonly accepted: in order of importance they are 750‰, 585‰, 916‰, 375‰.

If we consider the countries that will probably join EU, we can see that 750‰ and 585‰ will be the leading fineness standards (9 and 8 countries respectively), followed by 375‰, 900‰ and 916‰ at a considerable distance (5 countries each). The remaining standards share the little bits.

The distribution of the allowed fineness standards in the countries that will join EU is shown in Table B.

Table B

	333	375	417	500	583	585	625	750	800	833	840	875	900	916	950	969	986	990	999
Cyprus		■				■		■						■					
Estonia						■		■						■					
Latvia	■	■		■		■		■					■						
Lithuania		■				■		■					■						■
Poland	■	■				■		■							960				
Czech Rep.						■		■					■					■	
Slovakia						■		■					■					■	
Slovenia	■	■	■	■		■		■	■		■		■	■				■	■
Hungary		■				■		■						■					

Table C shows the whole set of allowed fineness standards in EU and EU candidate countries. This is a complete picture of the situation when the new countries will join the EU.

Table C

	333	375	417	500	583	585	625	750	800	833	840	875	900	916	950	969	986	990	999	
Austria						■		■					■				■			
Belgium						■		■		■										
Cyprus		■				■		■						■						
Croatia						■		■			■		■		■					
Denmark	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Estonia						■		■						■						
Finland		■			■			■						■					■	
France								■						■						
Germany																				
Greece	■	■		■		■		■	■		■			■					■	■
U.K.		■				■		■						■					■	■
Ireland		■	■			■		■		■				■					■	■
Italy		■				■		■												
Lithuania		■				■		■					■						■	
Latvia	■	■		■		■		■					■							
Norway						■		■												
Holland						■		■		■				■						
Poland	■	■				■		■							960					
Portugal		■				■		■	■					■					■	
Czech Rep.						■		■					■					■		
Slovakia						■		■					■					■		
Slovenia	■	■	■	■		■		■	■		■		■	■					■	■
Spain		■				■								■					■	
Sweden	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Switzerland		■				■		■						■					■	
Hungary		■				■		■						■						

Procedures for fineness control

Widely different control procedures are applied in Europe to guarantee precious metals fineness. These come from traditions and laws that became settled in the course of the years and sometimes in the course of the centuries.

Irrespective of the precious metal type, there are practically two types of control procedures: presumptive (a priori) and control on the market (a posteriori).

“A priori” control procedure (Hallmarking)

“A priori” control of the precious metal articles is carried out by public or privately owned government accredited third parties, before putting them on sale.

Some of these organizations are very ancient. In England, in the remote 1327, by royal decree the Goldsmiths Guild took on the job and the honour to control and mark the precious metals, and even today assaying and marking of precious metal articles are carried out in the Goldsmiths Hall in London. If the proverbial independence of this organisation would not be so well known, we could hypothesize a conflict of interest!

For the sake of simplicity, we will call these organisations “Assay Offices”, remembering the most ancient assay offices, that are English, but they have different names and different origin in the different countries.

For example, in Portugal, in Lisbon and in Porto, there are two “Contrasterie” that are public offices.

Also in France the “Garantie” offices are public, and are in the number of 25.

In England there are 4 Assay Offices: in London, Birmingham, Sheffield and Edinburgh, that are private. In Sweden, like Austria, control and marking by a third party are on a voluntary basis.

In all cases, the Assay Offices approximately follow the same procedure: after assaying for fineness, when conformity is observed, the items are marked with the standard of fineness and the symbol of the marking office.

Precious metal goods without mark cannot be put on the market.

The articles cannot be marked unless they go through the Assay Office. The system seems to be bulletproof.

In the practice there are two drawbacks making the system not failure proof.

Drawbacks of the hallmarking system

As has been said by Mr D.E. Evans itself (the Director of the London Assay Office), the first drawback is that “the total range of pieces submitted and the variation in number of articles per packet make it impossible to do more than outline the sampling frequency and method” (1).

This means firstly that not all articles are assayed, but a non-statistical sample is taken from each batch, and, secondly, that different methods are used for assaying.

It is true that all articles are submitted to a screening test, but of course a screening test must be nondestructive, so it should be performed by means of the touchstone or of X-Ray fluorescence.

We will not discuss the advantages or disadvantages of these test methods, that are very different and have different levels of accuracy, but it should be said that both methods have some limitation: they make surface analyses, so are not valid for hollow or electroformed items or articles produced with mixed techniques.

The items giving a questionable result in the screening test are assayed with the destructive method, according to the UNI EN ISO 11426/00 standard.

When it is said that the British Assay Offices have “hallmarked over 34 million articles in 2002” (2), it should be referred to the total number of items marked and not to the number of items for which a definite result of the assay, carried out in conformity with international standards, is available. It could not be different, because this kind of assay is destructive, and the market could not tolerate the destruction of 34 million articles!

Obviously no system is failure-proof. If properly marked items are found, that are proved to be under the stated fineness, the Assay Offices are responsible and must compensate for the damage. In this case too a deeper investigation shows that this rule holds true for some Assay Offices only (e.g. U.K.). In these cases the Office will refund only the value of the precious metal difference between true and claimed fineness. To give an example, consider a necklace weighing 20 grams and marked 750‰. If the assay shows that the true fineness is only 740‰, the refunded damage will correspond to only 0.2 grams of gold!

On the other side, it is clear that a company producing 10 kg of necklaces only 740‰ fine, instead of 750‰, will make a fraudulent saving of 100 grams of gold (about 1000 Euro), with severe perturbation of the market against honest producers.

The second drawback of this system is that frequently it is considered as an alternative to the control on the market.

It means that, in many countries where hallmarking is in force, nobody controls that only marked articles, guaranteed by the system, are sold to the final customer and nobody keeps an eye on illegally imported goods or counterfeited marks.

Control on the market

In this case a public office assigns an identification mark to the person responsible for impressing fineness and maker's marks, who can be the producer or the importer.

The articles are marked by the responsible person and are put on sale.

The inspectors of the metric office have free admittance to producing factories,

wholesalers and retailers and can check the correct marking of the articles. Samples of finished products and raw materials are taken and sent to authorized laboratories for assaying, to verify the conformity of the marked fineness with the result of the assay. The assays are exclusively carried out in accordance with internationally accepted standards and are destructive.

This circumstance strongly limits the number of articles that can be subjected to the assay, but it guarantees the market and the consumer for the correctness of the precious metal fineness of the sampled articles.

Present situation in Italy

In the year 1999 a new law (3) came into force and the related enforcement regulations came into effect in the year 2000. This law contains innovative rules, as compared with the preceding law, and the requirement of checking fineness and marks by the Metric Offices has been strengthened. The Metric Offices are now offices of the Chamber of Commerce, because of preceding laws.

Therefore the effective control of fineness and of correct marking of the articles put on sale is committed to the net of 103 Metric Offices which are present in Italy.

The Metric Offices will also exert the same type of control over everybody sells fine precious metals or precious metal semifinished products in Italy. Since November 2002, an ambitious program of sampling has been put into action on the whole Italian territory, to check a significant percentage of the producers. The same control operation will be extended later to wholesalers and retailers.

We will not go into the matter of the percentage of incorrect fineness marking that has been found so far, which is relatively low, but we should emphasize that silver is the most frequently "undercarated" metal rather than gold, that we will more easily suspect, because of its high value.

The undercaratage cases, frequently of small entity, but more frequent for silver rather than gold, let us think that, in spite of the relatively low value of the raw material, in some sectors of the production there has been so far less attention to silver fineness, as compared to gold.

Drawbacks of the control on the market

Practically the only drawback of the system used in Italy for market control is the relatively small number of destructive assays that can be carried out.

To give an idea, we speak about tens of thousands assay operations, in comparison with millions of articles that are put into circulation.

To further increase the number of control operations, the possibility is being studied of using non-destructive assaying methods on specific and selected types of items,

that should be investment cast or formed from sheet.

The effect of starting the control operations on the whole production system has been much wider than the bare numbers could let us believe.

Going from a situation where the control operations were sporadic and very few, to another situation, where tens of thousands control operations are carried out, may be compared with the introduction of the driving licence “by points” in the highway code. More self-control, more discipline for complying with the rules, awareness of the limits set by the law.

The most important support to this increased control activity came by all associations in the field of precious metals, which have always requested a stronger protection against unfair competition and also against the precious metal imports from non EU countries.

Alternative procedures for fineness guarantee

Timid attempts to introduce alternative procedures for fineness guarantee or procedures supporting the control operations of the Garantie (France) or of the Metric Office (Italy) are present in Italian and French laws.

In France, Garantie gives the companies having a certified quality system the permission to mark the produced articles directly, reserving the right to verify the efficiency of the system.

In Italy, the companies can obtain an Additional Certification of the Fineness on a voluntary basis, following a favourable result of the surprise assays carried out by legally recognized bodies in the course of the year. Presently, this certification is not a substitute for the official controls.

Future prospects for the European fineness control procedures

Like many other fields, also in the field of precious metals different procedures for controlling goods are enforced in Europe and different procedures are used by public or private bodies.

This circumstance often causes duplicate control operations when goods are “exported” from an EU country to another EU country, because the control operations are carried out both in the exporting and in the importing country.

The word “exported” has been put between quotation marks intentionally, because in theory it should apply only to Switzerland, which does not belong to EU. On the other side, in Switzerland we can read in the booklet distributed by the Central Office

for Precious Metals Control, General Customs Direction:

“On import in Switzerland, the parcels containing goods subjected to obligatory control for precious metal are declared to a Control Office, which will decide from time to time if the goods should be verified fully or by sampling, or if they could be imported without verification. The large majority of goods are not verified when crossing the frontier and the consignee will take on the responsibility for the legal conformity of the goods he will put on the market”.

As we can see, the decision about the control of the imported goods is delegated to the control office and it is stated that the large majority of the goods are not verified when they cross the frontier.

The activity of the Swiss customs offices aims mainly to dissuade dishonest producers from their proposal, if they know that can be subjected to a verification. Therefore the control by the Swiss customs gives the customer a protection similar to a mild control on the production in the country of origin.

Such control operations appear even more absurd when there is no more a true frontier, since the principle of free circulation of persons and goods inside the whole EU has been clearly accepted.

In the practice duplicate controls occur among all European countries, with serious consequences on delivery delay and cost that are no more bearable by the producers. To obviate this inconvenience some European countries (10 till today) having similar control procedures, based on the “a posteriori” principle, since 1975 joined in the so-called “Vienna Agreement”.

According to this agreement, that has been ratified by the different countries, goods marked by a Control Office and recognized by a common mark will be accepted by the receiving country without further verification.

This is a good idea, but there are several problems: firstly this agreement does not include countries having “a priori” control procedures, like France, which never joined. Moreover it excludes also countries having control procedures different from the “a priori”, like Italy, which is the largest European producer of precious metal articles.

In any case, even if we ignore the problems arising also among the countries of the Vienna Agreement, caused by different sampling and/or assaying and/or assaying accuracy evaluation methods, we should remember that the problems arising from counterfeited marks and undercarated goods illegally introduced in the EU are not considered by the Vienna Agreement.

In short, in the opinion of the author, an European Directive is needed, to harmonize this sector of trade and to improve the free circulation of goods, still guaranteeing the protection of the market and of the consumer. This Directive should recommend only

internationally standardized assaying methods. It should also consider the control procedures used by the member countries as equivalent and strengthen the control on the market, where required, and start it where it is not present, also by means of a quality bonus recognized to all companies that are on the way of certification by an independent third party.

Unfortunately up today this option appears to be waning, because of the firm opposition of some countries as U.K., Ireland, Portugal and Spain, which strongly insist on a presumed better protection of the consumer obtained with their control procedures.

We should also say that all countries that will soon become partners of the EU have Hallmarking control procedures.

Within these prospects, the Italian Government is studying the possibility of coming to multilateral agreements with all countries that are favourable to the idea of a Directive.

References

- 1) Gold Technology No 3, January 1991, p. 3
- 2) "The Anchor", Winter 2002/03
- 3) Decree/Law 251/99

