

# CONVENTION ON THE CONTROL AND MARKING OF ARTICLES OF PRECIOUS METALS

PMC/W 2/2001 (Rev. 9)  
Annex  
1 June 2014

## COMPILATION OF

### DECISIONS ON TECHNICAL MATTERS RELATED TO ANNEXES I AND II OF THE CONVENTION ON THE CONTROL AND MARKING OF ARTICLES OF PRECIOUS METALS

*Adopted by the Standing Committee on the basis of Article 10,  
paragraph 2, 3<sup>rd</sup> indent, of the Convention (as amended in 2001)  
at its 66<sup>th</sup> meeting in Zurich on 13 April 2010*

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Editor: Secretariat of the Precious Metals Convention

e-mail: [info@hallmarkingconvention.org](mailto:info@hallmarkingconvention.org)

web site: <http://www.hallmarkingconvention.org>

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### **NOTE TO THE READER**

This document contains technical requirements related to the proper implementation of Annexes I and II of the Hallmarking Convention (document PMC/W 2/2000 (Rev. 2)) which must thus be read in parallel.

The Convention's Annexes occasionally mention that specific rules, methods, exceptions, etc. are defined by the Standing Committee. The present document contains such specific rules, methods, exceptions, etc., which have been decided by the Standing Committee on the basis of Article 10, paragraph 2, 3<sup>rd</sup> indent, of the Convention (as amended in 2001).

Examples, which have been added, are for illustration purposes only and are not exhaustive.

If the practical application of a specific rule, method, exception, etc. in this document is unclear, the Convention Secretariat may be contacted for clarification by e-mail ([info@hallmarkingconvention.org](mailto:info@hallmarkingconvention.org)). However, interpretation can only be given by the Standing Committee as a whole.

Please note that the numbering of headings in this document (e.g. 2.4 "Use of Solder") is exactly the same as in the Convention's Annexes.

# TECHNICAL DECISIONS REGARDING ANNEX I

## *(Definitions and Technical Requirements)*

### 1. DEFINITIONS

#### 1.2 Precious metal alloy

Annex I defines a precious metal alloy as “a solid solution containing at least one precious metal”. By “solution” is meant a mixture of a precious metal with other metallic or non-metallic substances which is homogeneous<sup>1</sup> at least at the macroscopic scale<sup>2</sup>.

#### 1.8 Other definitions

A multimetal article is an article composed of:

- 1) a precious metal of a standard of fineness applied in this Convention (see Annex I, section 2.2) having
  - a) a thickness of not less than 500 micrometers
  - b) a surface sufficiently large to allow the application of the minimum marks defined in Article 4.1 of Annex II of the Convention (for marking requirements and minimum size, see paragraphs 4.2 and 4.6)

and

- 2) non-precious metals, which are:
  - a) visible
  - b) distinguishable by colour (i.e. neither coated nor treated to give the appearance of a precious metal)
  - c) not used for technical reasons (i.e. not used for a mechanical function for which precious metals are unsuitable either for strength or durability)
  - d) marked <METAL> (or equivalent) in line with the Convention’s requirements (Annex I to the Convention).

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<sup>1</sup> A substance is homogeneous when it shows no variation in properties

<sup>2</sup> i.e. seen or measured by a 10x magnifying glass but without the help of a microscope

## 2. TECHNICAL REQUIREMENTS

### 2.2 Standards of fineness applied under the Convention

2.2.1 ----<sup>3</sup>

### 2.3 Tolerance

2.3.2 ----<sup>4</sup>

### 2.4 Use of solder

2.4.2 Practical exceptions and other methods of joining:

A Practical exceptions:

A1. Wire:

In solder-filled wire where a lower solder fineness is used, the whole of the wire must be to a permitted fineness.

A2. Precious metal:

If a lower standard of fineness of the solder is used, the whole article must be to a permitted fineness except for:

#### *Gold*

- Gold alloy articles with a fineness of 916/1000 or more shall be soldered with solder of a minimum fineness of 750/1000 gold.
- In the case of gold articles of filigree work and watch cases of the 750 standard, the solder shall contain not less than 740 parts of gold per 1,000. For white gold articles of the 750 standard the solder shall contain not less than 585 parts of gold per 1,000.

#### *Silver*

- Solder for silver articles of the 925 standard shall contain not less than 650 parts of silver per 1,000.
- Solder for silver articles of the 800 and 830 standards shall contain not less than 550 parts of silver per 1,000.

#### *Platinum*

- For joining parts of platinum articles solder shall be used with a minimum total content of precious metals<sup>5</sup> of 800 parts per 1,000<sup>6</sup>.

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<sup>3</sup> No other standard of fineness has been recognised by the Standing Committee.

<sup>4</sup> Separate rules for special manufacturing techniques have not been established yet.

### *Palladium*

- For joining parts of palladium articles solder shall be used with a minimum total content of precious metals<sup>3</sup> of 700 parts per 1,000<sup>7</sup>.

#### A3 Mixed precious metal:

The solder can be the permitted solder for the least precious metal fineness.

#### A4 Precious metal with base metal:

Any suitable solder, including base metal, can be used.

#### B. Other methods of joining:

Adhesives may be used instead of the permitted solders.

## **2.5 Use of working base metal parts and non-metallic substances**

### 2.5.2 Further details & exceptions

#### **A. Further details:**

##### A1 Base metal parts for decoration:

Base metal parts are permitted for decoration, provided that the precious metal part is of a standard of fineness applied in this Convention (see Annex I, section 2.2) and that it has a thickness of not less than 500 micrometers and a surface sufficiently large to allow the application of the minimum marks defined in Article 4.1 of Annex II of the Convention (for marking requirements and minimum size, see paragraphs 4.2 and 4.6).

The non-precious metal part shall always be visible. It shall be clearly distinguishable by colour and not be used for technical reasons.

##### A2 Base metal parts for technical reasons:

Base metal parts are permitted as a mechanical function for which precious metals are unsuitable either for strength or durability (see examples at Annex).

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<sup>5</sup> Precious metals are defined at Article 1(1) of Annex I to the Convention.

<sup>6</sup> This rule applies to all platinum finenesses, as defined at Article 2(2) of Annex I to the Convention.

<sup>7</sup> This rule applies to all palladium finenesses, as defined at Article 2(2) of Annex I to the Convention.

A3 Non-metallic substances

In electroformed articles the kernel made of non-metallic substance (e.g. plastic, wax, etc.), which is needed for the electrochemical manufacturing process of the shell, must be removed after the process. Electroformed articles must be hollow and self-supporting.

**B. Exceptions:**

B1 Where it is impracticable to stamp or engrave "METAL", the base metal part shall be clearly distinguishable by colour from the precious metal with the exception of clock or watch movements. See also 4.3.

B2 Non visible, non metallic substances are permitted in the following cases:

Filling the base with non metallic material is permitted for better stability (e.g. candle holders, flowerpots and similar silver articles).

Filling the handles with mastic (or similar material) is allowed (e.g. cutlery, salad servers, carving knives and forks, dessert knives, manicure sets, toilet sets and similar articles).

**2.6 Coating of precious metal articles**

2.6.1 Subject to the provisions of paragraph 4.9.1 of Annex II concerning the differentiation of colours on mixed articles, the following coatings are permitted:

a) Metallic coating (for example: galvanic) in accordance with the table below:

On	Permitted
Platinum	Rhodium, ruthenium, platinum
Gold	Rhodium, ruthenium, platinum gold
Palladium	Rhodium, ruthenium, platinum gold, palladium
Silver	Rhodium, ruthenium, platinum, gold, palladium, silver

The precious metals coatings must reach at least the following minimum standards of fineness:

- Au : 375‰
- Ag : 800‰
- Pt : 850‰
- Pd : 500‰

If the alloy and the coating are made of the same precious metal, the coating's standard of fineness must be not less than the alloy's fineness.

- b) Chemical or long-lasting thermal treatments (e.g. sulphured silver, Physical Vapour Deposition [PVD], Chemical Vapour Deposition [CVD])

The colouring of the surface of articles of precious metal by means of chemical transformation of the alloy or its components may be permitted under the terms of the Convention as long as the standard of fineness of the article is not altered by the process.

- c) Non metallic coatings (e.g. enamel, niello)

## TECHNICAL DECISIONS REGARDING ANNEX II

*(Control by the authorised assay office(s) )*

### 2. Test Methods and Methods of analysis

2.1 The homogeneity of the batch may be evaluated by one of the following test methods:

- a) touchstone testing;
- b) testing by X-ray spectroscopy; and
- c) analysis of scraps assembled from one or more pieces taken out of the batch.

Other test methods may be used to evaluate the homogeneity of the batch.

2.2 The fineness of the precious metals content is determined by one of the following approved methods of analysis:

**Platinum:** Determination of platinum in platinum jewellery alloys -- Gravimetric method after precipitation of diammonium hexachloroplatinate (Document EN 31210 / ISO 11210:1995)

Determination of platinum in platinum jewellery alloys -- Gravimetric determination by reduction with mercury (I) chloride (Document EN 31489 / ISO 11489:1995)

Determination of platinum in platinum jewellery alloys -- Inductively coupled plasma (ICP) solution-spectrometric method using yttrium as internal standard element (ISO 11494:1995)

**Gold:** Determination of gold in gold jewellery alloys -- Cupellation method (fire assay) (Document EN 31426 / ISO 11426:1997)

**Palladium:** Determination of palladium in palladium jewellery alloys -- Gravimetric determination with dimethylglyoxime (Document EN 31490 / ISO 11490:1995)

Determination of palladium in palladium jewellery alloys -- Inductively coupled plasma (ICP) solution-spectrometric method using yttrium as internal standard element (ISO 11495:2008)

**Silver:** Determination of silver in silver jewellery alloys -- Volumetric (potentiometric) method using potassium bromide (Document EN 31427 / ISO 11427: 1993<sup>8</sup>)

Determination of silver in silver jewellery alloys -- Volumetric (potentiometric) method using sodium chloride or potassium chloride (Document ISO 13756: 1997)

**For all precious metals:** X-ray spectrometric method, when the internal method is accredited to EN ISO/IEC 17025, 5.4.4 and 5.4.5 and the measurement of uncertainty is equal to or better than that of already accepted methods.

### 3. GUIDELINES ON METHODS OF SAMPLING

#### 3.1 Screening

- 3.1.1 Visual inspection to ascertain that the articles are marked in accordance with the requirements of the Convention.
- 3.1.2 Visual inspection to detect any excessive or sub-standard solder.
- 3.1.3 Visual inspection to detect base metal parts or unauthorized filling.
- 3.1.4 Test for the presence of plating or other coating and determination of its nature by chemical or other methods.
- 3.1.5 Segregation of any doubtful articles for special tests.
- 3.1.6 Three different levels of screening are defined based on the quality level of conformity of articles detected over the rolling year. Information data should be maintained for two years minimum. The appropriate level of screening is determined according to the following formula:

$$QL = \left[ 1 - \frac{\sum(\text{articlesrejected})}{\sum(\text{articlessubmitted})} \right] \times 100\%$$

Rejected Article = Articles which do not conform with the material and technical requirements of the Convention.

Note: Such requirements include for example fineness, authorised coatings, solder composition, authorised working parts or any other technical requirements.

$\Sigma$  Articles Rejected = Total sum of articles rejected

Note: If one article of a lot is rejected, all articles of the same lot are rejected.

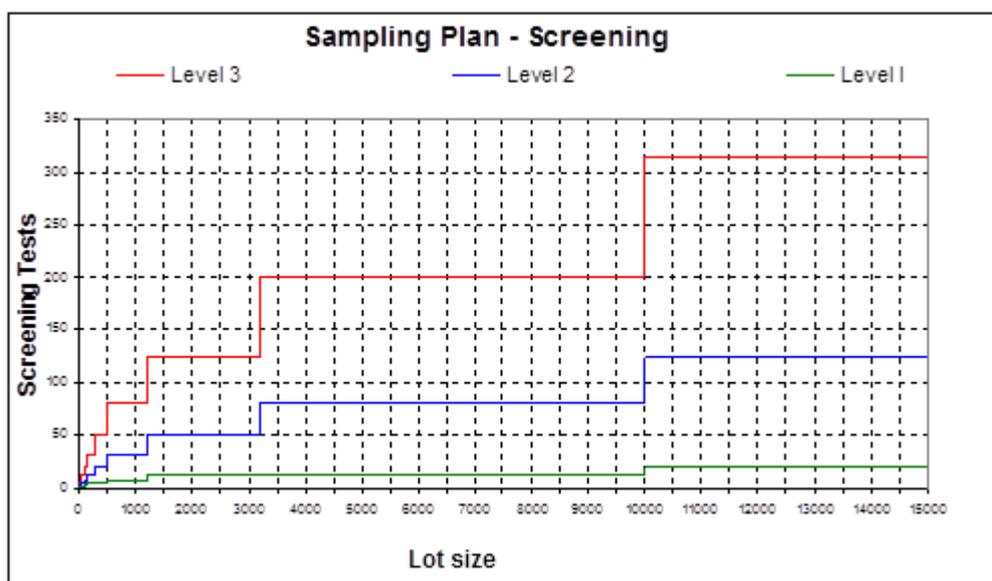
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<sup>8</sup> As amended by technical corrigendum ISO 11427 : 1993 / Corr 1 : 1994:  
“Clause 4.2: **Potassium bromide, solution**,  $c(\text{KBr}) = 0,1 \text{ mol/l}$ ”

## ARTICLES ACCEPTED as a % of ARTICLES SUBMITTED

Level 3	0 – 94.9%	Lowest confidence level	Most screening required
Level 2	95 – 98.9%	Normal confidence level	
Level 1	+ 99%	Highest confidence level	Least screening required

3.1.7 Screening should be performed according to the following plan:



## 3.2 Sampling

3.2.1 The following methods of sampling may be used:

- cutting
- scraping
- drilling.

3.2.2 Cutting is the preferred method for accuracy but it is often not practicable. In such cases, samples may be removed by scraping. In special circumstances samples may also be obtained by drilling.

3.2.3 In special circumstances when an article would be unreasonably damaged by sampling, it is permissible to carry out the assay on a sample of the material used in its manufacture. In such cases the Assay Office must take any necessary steps to ascertain that the sample is from the same batch of material as that from which the article is made (i.e. the same coil of wire, sheet, bar, etc.).

- 3.2.4 If the surface of the article has been enriched (e.g. by pickling) or if it has been coated with a permitted metal (e.g. by electro deposition), the surface layer must be removed before the sample is taken. This can be carried out by scraping, filing or buffing.
- 3.2.5 Samples may be taken from convenient positions provided that they are representative of the part being sampled. Solder may be included in the sample, except in cases where it is permitted under the terms of the Convention to be of a lower standard of fineness than the standard of the article. Other types of surface impurities such as residues of polishing media must also be removed before samples are taken. Lacquer must also be removed by a suitable solvent.
- 3.2.6 Samples from articles which have been polished or are contaminated with grease may require to be degreased in a suitable solvent (e.g. trichloroethylene) before they are assayed.
- 3.2.7 According to Annex II, paragraph 3 of the Convention the number of articles selected for sampling and the extent to which samples from more than one article are grouped together before assaying will depend on circumstances. For example, in some cases, it may be more appropriate to select one or more articles at random from a lot and to assay them separately, in other cases it may be preferable to sample a greater number of articles and group the samples together before assay. Experience of the likely variation in fineness within a lot and the extent to which the articles may be damaged by sampling will be the deciding factors. In general, there should be a recommended number of articles selected according to the size of the lot and the screening level (see 3.1.7). The following table gives recommended numbers of articles to be selected from lots of different sizes.

**3.3 Lot consisting of one part or several parts of the same material:**

LOT SIZE	SCREENING*			Recommended ASSAYS
	Level 1	Level 2	Level 3	
1	1	1	1	1
2 to 8	2	2	2	1
9 to 15	2	2	3	1
16 to 25	2	3	5	1
26 to 50	2	5	8	1
51 to 90	2	5	13	1
91 to 150	3	8	20	1
151 to 280	5	13	32	1
281 to 500	5	20	50	2
501 to 1,200	8	32	80	2
1,201 to 3,200	13	50	125	3
3,201 to 10,000	13	80	200	4
10,001 to 35,000	20	125	315	5

\* By either touchstone or XRF

Note 1: In cases where sampling may damage the article, non-destructive testing is permissible.

Note 2: For the definitions of lot, screening and assay, see glossary in Compilation of Acts of the Standing Committee (PMC/W 1/2001)

- 3.3.1 Where an article selected for sampling is made of several parts, each part of the article shall, where practicable, be sampled.
- 3.3.2 Samples taken from separate parts of an article may be mixed if it appears that the parts are made from the same material. If the separate parts appear to be made of different materials, the samples from such parts should be assayed separately as far as possible. For articles produced by electroforming the marked standard of fineness shall not be higher than that of the lowest tested fineness.
- 3.3.3 If articles are suspected of containing an unauthorized filling, they shall be tested by drilling or cutting or by immersion in a suitable reagent. If the article is suspected of containing iron or steel, it may be tested with a magnet.

#### **4. Marking**

##### **4.2 Exceptions and other methods of marking<sup>9</sup>**

###### **A Exceptions:**

An assay office may apply the three marks a), b) and c) minus the fineness mark d) in the following circumstances, provided that the fineness indication, contained in the CCM, is legible (i.e. readable with a 10x magnifying glass):

- (i) where there is insufficient space on an article to apply all four marks a), b), c) and d) mentioned in paragraph 4.1 of Annex II; or
- (ii) where there is a risk of damage to an article by applying all four marks a), b), c) and d).

###### **B Other methods of marking:**

- 4.2.1 A gold pen nib shall be considered as a separate article from the pen.
- 4.2.2 A pendant incorporating a gold or silver ingot fitted with a frame shall be considered as two separate articles, provided the ingot is loosely fitted and not permanently fixed. The frame may be accepted as a separate and complete article and marked with the Convention marks.
- 4.2.3 The Common Control Mark may be of a lower fineness than the national hallmark.

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<sup>9</sup> Marks are identifiable if they are legible by means of a 10x magnifying glass.

**4.3** The precious metal part of Multimetal Articles can be marked with the mention <METAL> next to the minimum marks. The mention can be preceded by a sign e.g. + or /.

**4.6** The minimum size (height) of the Common Control Mark for all precious metals is 0.5 mm.

**4.7 Articles consisting of more than one fineness of the same precious metal (exceptions)**

Gold nuggets

Native gold in the shape of nuggets is allowed -unmarked- on precious metals articles, irrespective of the standard of fineness and of criteria for the determination of colours.

**4.9 Articles consisting of different precious metal alloys**

**4.9.3 Exceptions**

a) White gold parts permitted on platinum articles for technical reasons:

On platinum articles, the following parts may be in white gold (750/1000):

- \* tongues for bracelets and necklets
- \* moving parts of clips for earrings and brooches
- \* pins for brooches
- \* joints and catches for brooches

b) A precious metal watch-case and attached bracelet may be considered as two separate articles provided that the bracelet is attached by pinning (barrette).

c) The application of pure silver on gold articles by electro-chemical process is permitted for the technical reason of fixing mounted diamonds and enhancing the reflection of light. The application of the silver must be restricted to the internal surface of the setting only.

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### Examples of precious metals unsuitable for technical reasons

#### A. General examples:

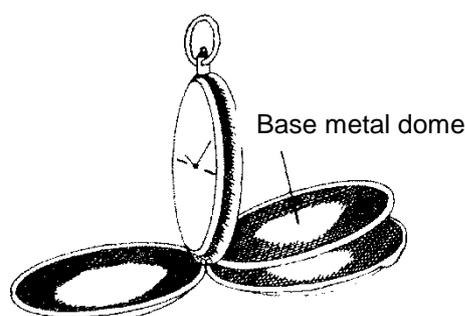
- steel wires used for the assembling of necklaces (the steel wires must not be used as decoration);
- magnets for clasps;
- security retainers for tie tacks or badge buttons;
- screws and springs;
- the internal mechanism of lighters and similar mechanisms;
- blades of knives and such parts of bottle openers and corkscrews and similar articles.

#### B. Examples specific for silver articles

- clasps only the tongue in a box snap;
- pins for silver badge buttons and silver brooches;
- clips for hair clasps, tie clasps, etc.;
- wire for joints of silver hinges.

#### C. Examples specific to horology (clocks, watches & and similar mechanisms)

- parts of movements such as dials, crowns, winding-shafts and push-pieces;
- bars for fixing the bracelets to the wristwatches;
- screws for fixing the watch back;
- screws for changing the length of the bracelets;
- separable tubes for winding-mechanisms on watch-cases made of gold, platinum [and palladium];
- separable or inseparable tubes for winding-mechanisms on silver watch-cases;
- movement-holders and casing-rings;
- domes (double back covers of pocket-watch cases, see drawing below) under the condition that they bear the designation of their composition, for example "METAL" or "STAINLESS STEEL".



D. Pens / biros / roller-balls / propelling pencils

The following applies to writing instruments when the cap, if there is one, is detached from the body (see also drawings below).

- D1. The movements of propelling pencils (and similar mechanisms) may be of base metal.
- D2. For items with a continuous precious metal sleeve, the interior barrel may be of base metal, plastic, resin, or resin covered base metal. The inside parts in non precious metal must not be used to reinforce the precious metal sleeve.
- D3. For items with pierced sleeves, the interior barrel may only be plastic, resin, or resin covered base metal.
- D4. Clips - may be of base metal and, if so, must be marked "METAL". They may be plated.

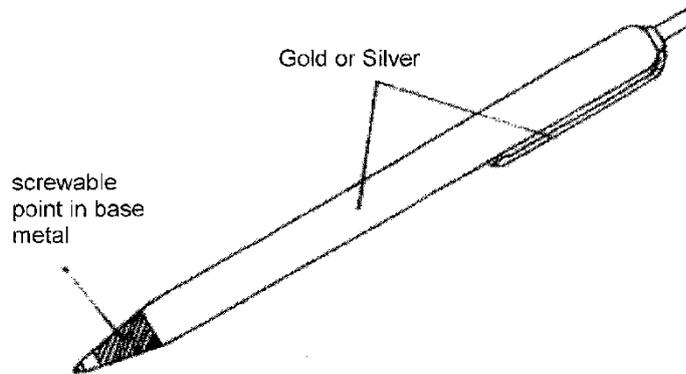
Note: Detachability is irrelevant.

- D5. End parts, e.g. caps, pushers - may be of base metal and, if so, must be marked 'METAL' if they are part of the interior mechanism. They may be of resin, plastic, or resin covered or plastic covered base metal.
- D6. Bands - On the barrel, when the band forms part of the closing mechanism of the cap or to assure tightness of a pen, the band may be in base metal. It may be plated. The band shall be clearly distinguishable by colour from precious metals.
- Any other band, on the body or the cap is decorative and must be in precious metal.
- The only exception is a clip with an integral band secured by an end cap.
- D7. Point - A base metal point is permitted provided it is a different colour. If plated, it must be marked "Metal". Resin or plastic covered base metal is permitted.

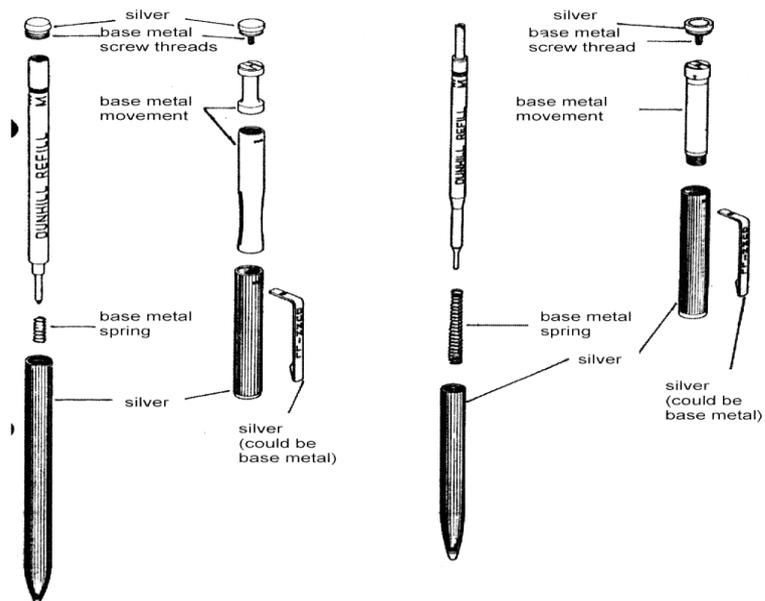
If all base metal parts are the same colour, only one part need be clearly and visibly marked 'METAL'.

Note: The intention of these consents is to define permitted visible base metal parts, and to provide a choice to manufacturers. Resin covered base metal is considered to be clearly distinguishable to the consumer as not being precious metal.

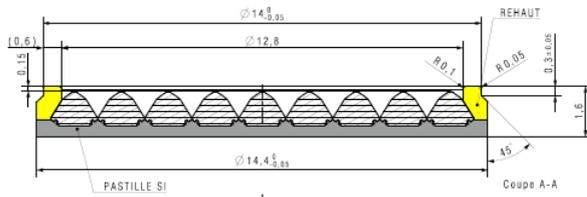
Base metal points for propelling pencils and ballpoint pens



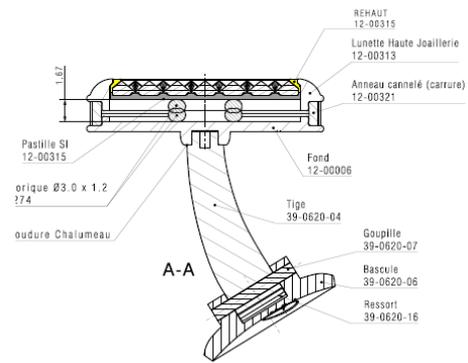
Base metal parts of precious metal writing instruments



Diamond settings made of fine silver on 18 carat gold cufflinks



**Figure 3:** Image of a pure silver plate surrounding the stones by their crowns. An 18 cts white gold elevated rehaut (yellow color) then surrounds the circumference of the pure silver plate (grey color).



**Figure 4:** Image of how the pure silver plate is integrated into the 18 cts white gold cufflink.