INTERNATIONAL HALLMARKING – PIPEDREAM OR POSSIBILITY?

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ABSTRACT

A survey of international hallmarking confirms that it is in some disarray with, outside the mainly European based Vienna Convention countries, only local mutual acceptance agreements existing that may or may not be based on sound quality principles. This predominance of local hallmarking systems and standards of fineness inhibits the growth of a truly international jewellery market.

On the other hand the efforts of the Technical Committees of the International and European Standards Organisations, ISO and CEN, have enabled agreement to be reached on a wide range of matters including standards of fineness and methods of assay. While further agreement on some outstanding details is required, we have probably made more progress than that achieved in the area of hallmarking.

Yet the requirement that gold, silver or platinum jewellery contains the claimed amount of that precious metal remains prime but is probably the most abused aspect except where rigorous hallmarking systems are in force. Effective though these systems are, they impose many constraints and difficulties on the manufacturer and importer. This paper reviews the current status of international hallmarking and the options for a more open but credible system, some of which are enshrined in the proposed EU Hallmarking Directive. Ultimately however, any system must ensure that fineness marks are accurate while minimising the difficulties that manufacturers and importers face in conforming to it.

KEYWORDS

Assay Offices, Assaying, Caratage Conformance, Common Control Mark, EMAGOLD, Hallmarking, Hallmarking Council, Houtwipper, Laser Marking, Marking, The Association of European Assay Offices, The European Directive, The Vienna Convention, Trading Standards, Undercarating.

INTRODUCTION

Let me stress immediately that although I represent the Birmingham Assay Office, which to a considerable extent currently depends on the continuation of the UK Hallmarking Act of 1973 for its existence, I do not intend to present a justification of the Act and a recommendation of universal adoption. Far from it, we at Birmingham have recognised the difficulties that operation under such controls present for the manufacturer and importer and are therefore taking a far more pragmatic view of the future of Hallmarking both within the UK and internationally. At the same time we are taking all the appropriate actions that we feel necessary, particularly in the area of new technology, to provide a hallmarking service second to none for our customers. However we believe strongly in the protection of the consumer with respect to precious metal articles and their claimed precious metal content.

HALLMARKING – DO WE NEED A CREDIBLE SYSTEM?

So, is it us awkward British yet again refusing to give up outdated but very traditional practices in the face of modern international business practice or are we in fact protecting the Trade and all who sail in her, at least in the UK, from widespread fraud? Of course we could just be ensuring the continued operation of my employers, my salary, and the other three UK Assay Offices under the protection of the UK Hallmarking Act, oblivious to the needs of the real world? This then is the first issue – leaving aside those of our traditional suppliers, who have established a track record with us - how comfortable are we with self applied precious metal marks

compared to those applied by appropriately accredited bodies? We can return later to possible definitions of what "an appropriately accredited body" might be.

Personally I buy only jewellery with marks that I recognise to be independently applied and credible. Some of you may feel this to be unreasonable but in fact to purchase otherwise should cause you to ask questions regarding origin and credibility of the supplier.

My own experience, based on over 20 years working with precious metals, until recently with an international bullion refiner/supplier for jewellery and other applications, is that without some effective controls within our industry, articles containing less than the marked or claimed precious metal content will be in circulation. For instance, we at Birmingham Assay Office :-

i) have purchased items from retailers across Europe, the Middle and Far East, assayed them and confirmed that some were significantly below claimed/marked assay.

ii) seen reports from reputable bodies such as the World Gold Council and the Jewellers Vigilance Committee here in the US, Figure 1, confirm that undercarating is occurring in many if not all countries where hallmarking is not a statutory, controlled and policed operation.

iii) have received requests and enquiries from many countries for assistance in the setting up/policing of a hallmarking system in order to address significant levels of undercarating and improve the credibility of their jewellery for local, tourist and export markets.

iv) are aware that, in many parts of the world, jewellery is traded on assay and weight e.g. $20.00 per gram for 22ct chain. This is acceptable only where the gold content is as claimed.

v) detect instances of fraud and counterfeiting, even with our strong hallmarking disciplines.

Further, I was present on one occasion at a serious discussion between the members of newly established Assay Office Board concerning the provision of bodyguards and bulletproof cars for them. They were concerned that once the local Hallmarking Law was implemented and new items were "Government Accredited", the status of product in the shops with less credible quality marks would be undermined. The potential loss to manufacturers/ retailers of a substantial amount of "value added" revenue could result in one or other of them taking extreme action. This indicated to me the probable extent of undercarating in that country.

All this serves to show that while many operate honestly there are always those who will undercarat, and the weaker the controls the more extensive the practice.

THE STATUS OF INTERNATIONAL HALLMARKING

So where do we stand with respect to hallmarking systems worldwide? Many countries operate credible hallmarking systems backed by legislation, Figure 2. These include several European countries, although many, it could be argued, are not renown for their jewellery industry, and one or two others in the Far East. I am not fully up to date on the efficiency of some of these systems now. A number of other countries are now active in establishing precisely what system is appropriate to their jewellery industry, some of which are significant producers notably in the Middle East, Figure 3.

There are also a number of "big" players, in terms of producers and buyers, who are not, as far as I am aware, considering the introduction of an accredited and controlled marking system at this time, Figure 4. This is not to say that the established, major and reputable manufacturers in these

JVC Discloses Underkarating

The Jewelers Vigilance Committee (JVC) has uncovered nationwide underkarating of gold jewelry through its year-long "Project Mall" investigation.

JVC undercover investigators inspected 74 malls in 13 states and purchased more than 150 gold charms, bracelets, and earrings. The jewelry items, most of which were stamped as 10k gold, were then sent for analysis to the assay office at Goldsmiths' Hall in London.

Test results found that all jewelry bearing a manufacturer's registered trademark assayed to the gold content stamp. But about 90 percent of those without registered trademarks were underkarated, some as low as 7k. JVC presented the results to retailers, the attorneys general of the respective states, the mall managers and owners, and the licensors (which included the Walt Disney Co., Warner Bros., Nike, and professional sports organizations).

JVC has revisited the offenders, and it says that 80 percent of them are now in compliance. The association will now expand its monitoring to include other gold jewelry products and classifications, as well as to investigate diamond Underkarating.

Figure 1. Undercarating in the United States.

Austria	Netherlands
Cyprus	Norway
Czech Republic	Portugal
Denmark	Singapore
Finland	Spain
France	Sweden
Hong Kong	Switzerland
Ireland	United Kingdom
Malaysia	Uzbekistan

Figure 2. Countries with Independent Hallmarking Systems.

Abu Dhabi	Saudi Arabia
Dubai	South Africa

Figure 3. Countries Considering an Independent Hallmarking System.

Canada	Taiwan
Germany	Thailand
Italy	United States
Japan	

Figure 4. Major "Jewellery" Countries Without an Independent Hallmarking System.

countries are not including the appropriate amount of gold, silver or platinum in their products. Some of these countries have hallmarking-type legislation and penalties where offences are detected. Here in the US for instance there is such a system; however, the policing of this is not clear or efficient. Some of these countries also accept negative tolerances on precious metal content, 3 parts per thousand here in the US for instance, and also the Netherlands which has a system otherwise very similar to the UK. Yet there is no doubt that jewellery manufacturing competence in these countries is excellent, comparable to best available, obviating the need for this tolerance. So why have it? Does this type of approach not just allow all "smart" operators to reduce their make-up precious metal contents accordingly? After all if you are a large user, saving 3 parts of gold per thousand on say, 20 tonnes per annum of fine gold processed gains 60 KGs.

I have always appreciated, throughout my technical career within the Trade in the UK that we all started off on the same basis i.e. the same precious metal alloy make-up, in order to ensure successful subsequent hallmarking of the finished article. All the other aspects that make up the quality of of an item of jewellery are of course open to competition – colour, design, finish, production method, efficiency and productivity etc, as Chris Corti discussed earlier. I have yet to be convinced that negative tolerances benefit anyone except the supplier in the long term. Just to underscore this point, of the 26 million articles hallmarked in the UK in 1996 only 25,000 were rejected for being below the required standard, i.e. 0.1 percent.

It is quite probable that in most enlightened countries, even where there is not any credible system, the major players, from bullion dealers through to manufacturers, generally ensure that their products meet the accepted marked standards; this would be particularly true where there is a high dependence on exporting into "hallmarking" markets. However we all know that there are some who do not work to the accepted standards and will undercarat their products.

The case for a system that effectively addresses the undercarating issue therefore remains as strong as ever, both for local and international

markets. This is a major hurdle that we as representatives of the international jewellery Trade have to address if we are to create a truly free market.

THE UK HALLMARKING SYSTEM

So let's review the current UK Hallmarking system, and examine its strengths and weaknesses. Perhaps from this we then might be able to identify the requirements of an internationally acceptable system. In summary, hallmarking has been operating in the UK since the 1300s when it was first introduced to stop currency undercarating, i.e. gold coins used for trading were being undercarated; we have developed and changed the rules since then although the fundamental principles remains unchanged. The last version, the Hallmarking Act of 1973, with its subsequent amendments, requires that all items to be described and sold as gold, silver or platinum must be submitted to one of the four UK Assay Offices – London, Birmingham, Sheffield and Edinburgh – for sampling, assaying and hallmarking. Sampling is completed on any parcel submitted, according to agreed and documented procedures, by a combination of touch acid testing, X Ray fluorescence analysis, scraping and cutting. Assaying is completed by one of the internationally recognised techniques i.e. cupellation for gold or potentiometric titration for silver. Most Offices are accredited to ISO 9002 and some also to NAMAS in terms of their sampling and assaying operations.

There are exceptions or exemptions to this, Figure 5. There are NO negative or so-called working tolerances, although clearly the limitations of the methods of sampling and assaying are recognised in a practical sense by the Offices. The Act also specifies solder qualities/ quantities, requirements of electroforms, acceptable precious and base metal coatings together with identifying parts that may be made from base metal if no suitable precious equivalent exists.

Any imported goods must be submitted in the same way as local produce although through a UK agent who acts as sponsor and is responsible for the articles.

Any article -

a) which is of gold in all its gold parts not less than 375 parts per thousand, or
b) which is of silver assaying in all its silver parts not less than 800 parts per thousand,

and which in either case was manufactured before the year 1900 and has not since the beginning of the year 1900 been the subject of any alteration which would be an improper alteration if it had previously borne hallmarks.

Any musical instrument where the description is applied to the mouthpiece, and the mouthpiece is of minimum fineness.

Any article which is of the minimum fineness and the weight of which is less than 1.0g of gold, 7.78g of silver or 0.5g of platinum.

Any article which is of the minimum fineness and which is so small or thin that it cannot be hallmarked.

Any coin which is, or was formerly at any time, current coin of the United Kingdom or any other territory.

Any article which has been used, or is intended to be used, for medical, dental, veterinary, scientific or industrial purposes.

Any article which is wholly or mainly platinum, and which was manufactured before 1st January 1975.

Any article which is intended for despatch to a destination outside the United Kingdom.

Any article which is not substantially complete, and which is intended for further manufacture.

Figure 5. Exemptions from the UK Hallmarking Act.

The normal marks applied are those of the sponsors, which will be unique, the symbol/standard of fineness, the symbol for the marking office and the date letter, Figure 6. You have therefore a system that enables full traceability of the article in the event of a subsequent query or dispute. Further the Office, by applying its marks, actually takes over responsibility for the assay of the articles for their lifetime; any mistakes that are subsequently detected therefore become a matter of compensation by the Office concerned as we shall see shortly.

The Offices charge for hallmarking, typically 35-37p, i.e. 56-58 cents US, although there are minimum charges for single articles/small parcels. It is these charges that fund the Office not Government and if any were no longer financially viable they would have to close and the remaining Offices would take over their customers. The last Assay Office to close was Chester in 1962. Others in York, Exeter and Glasgow had already previously disappeared. These charges not only have to fund the operation, building, equipment and staff but also the development of new methods and technologies to help us improve our activities to the benefit of our customers. I will talk about some of these developments later, but I can confirm that the Birmingham Assay Office has spent in excess of £300,000 on state-of-the-art equipment over the last 24 months.

A representative Committee called the Hallmarking Council controls, monitors and influences the operations of the four Offices. The Council comprises not only representatives from the Offices but also from Government, trade bodies, consumer organisations and laypeople, in total 18 to 20 members. Hallmarking charges are controlled in that the Council set the maxima for each type of article. The Birmingham Assay Office, in hallmarking over 11 million articles in 1997, has probably the lowest overall charges, significantly below the maxima set by the Council.

Figure 6. The Hallmarks of the United Kingdom.

The major criticisms of this system with which I have some sympathy are,

i) local manufacturers have to interrupt their production processes usually at the part-finished stage to deliver the goods to an Assay Office . After two to three days in the Office the goods are returned for finishing having been hallmarked.

ii) the sampling and marking particularly of fully finished items, generally imported, can result in their requiring some re-finishing before sale.

The use of new technologies, that Birmingham Assay Office have pioneered, are alleviating some of these discomforts both for importers and local, that is UK, manufacturers. We can return to these new technologies later.

The advantages of this hallmarking system are that it:-

i) assures and polices through an independent externally accredited third party, defining the assay for the life of the product.

ii) has evolved into an internationally recognised method of quality assurance.

iii) is envied by many countries who face difficulties in attempting to "clean up" their precious metal trade.

iv) allows UK marked jewellery to be traded internationally into most markets without the need for further testing.

The acceptance of UK hallmarked jewellery internationally is important to many of our customers. At present we have the Vienna Convention with 10 members, Figure 7, who have agreed to accept each others marks without further testing, provided that one of those marks is that of the

Convention, Figure 8. There are usually many observers from non-hallmarking countries at Convention meetings which occur every five months or so.

A second body, the Association of European Assay Offices, with **15** members also accepts our marks without further testing, Figure 9. I should stress that not all of these latter agreements are mutual. Our recognition and acceptance of other marks remains based on equivalence to our own standards only; some of these have negative tolerances which are the main obstacle to mutual recognition. Further there are countries who accept our marks who are not members of either of the above.

Some changes to the Act are imminent due to a European Court decision that resulted from a challenge to the Dutch Hallmarking Laws two or three years ago – the Houtwipper case. In summary, the decision supported local hallmarking regulations but insisted on recognition of marks on the basis of equivalence, both of the system and the information provided by the marks. We are now modifying our Law to comply with this decision, which specifically affects the type, number and form of the marks applied. Some of the traditional marks such as the fineness symbol and the date letter will become optional, to be applied at the customer's request. In addition we are taking the opportunity to extend the range of allowable finenesses.

There are attempts of course to beat the system – such as transposing marks by cutting them out of one article and soldering them into a lesser quality or antique article, or by casting marks into an article. This last offence generally arises through one manufacturer copying the design of another by purchasing the item, with its hallmarks, for use as a master pattern for casting duplicates. The hallmarks are often not removed so that they re-appear on the resultant copy castings. Such items still include the appropriate amount of precious metal, although the producer has avoided hallmarking charges. Such cast-in marks are usually easily detected. We have also detected counterfeit marks, produced by a manufacturer stamping unauthorised marks onto plated base metal or rolled gold. I should stress that we have our own security/recognition marks within all the hallmarks that we apply, to ensure that we can identify

Figure 7. Member States of the Vienna Convention.

Figure 8. The Convention, CCM, Marks

ours from the counterfeiter. All such marks are applied illegally and the operator is prosecuted when identified.

Occasionally of course one slips through the net – but this only serves to illustrate the strength of the Act - one operator recently produced about 30 heavy Asian type closed bangles comprising a 0.4mm 22ct tube containing a silver core, Figures 10 and 11. These were submitted to three Assay Offices, about ten to each, all of who marked them at 22ct after scrape sampling and assaying. They were then pawned and a cash value based on their weight and hallmark paid by the broker. When they were not reclaimed, the broker offered them to a refiner for scrap confident that he would recover his money and make a profit also. Naturally the refiner evaluated them and confirmed that they were of far less value than that either lent by the broker or anticipated by him from the weight and hallmark. The Assay Offices involved, once identified from their symbol included in the hallmark, confirmed that the articles were guaranteed with respect to the precious metal content; therefore we, and the other Offices, compensated the broker accordingly. Just before you take up this idea I should warn you that we have amended our procedures so that we will detect this type of fraud in future.

I mention these attempts to circumvent UK Law, some of which are quite clever, simply to illustrate that even with our very disciplined system there is always someone willing to attempt fraud. Without our very effective controls, more would be tempted, our market would be debased and the ability to prevent or detect would be severely reduced.

One additional point with regard to enforcement in the UK., we have Trading Standards Officers located in most County Councils. These Officers are responsible for policing all aspects of trading, Trades Descriptions, counterfeit goods and enforcing the Hallmarking Act at the retail end of the business. We work very closely with them to ensure that all precious metal articles on sale have been submitted to an Assay Office where appropriate and comply with the legislation. However their task would be impossible without the initial control of hallmarking policing the majority of the market.

Figure 9. Members of the Association of European Assay Offices

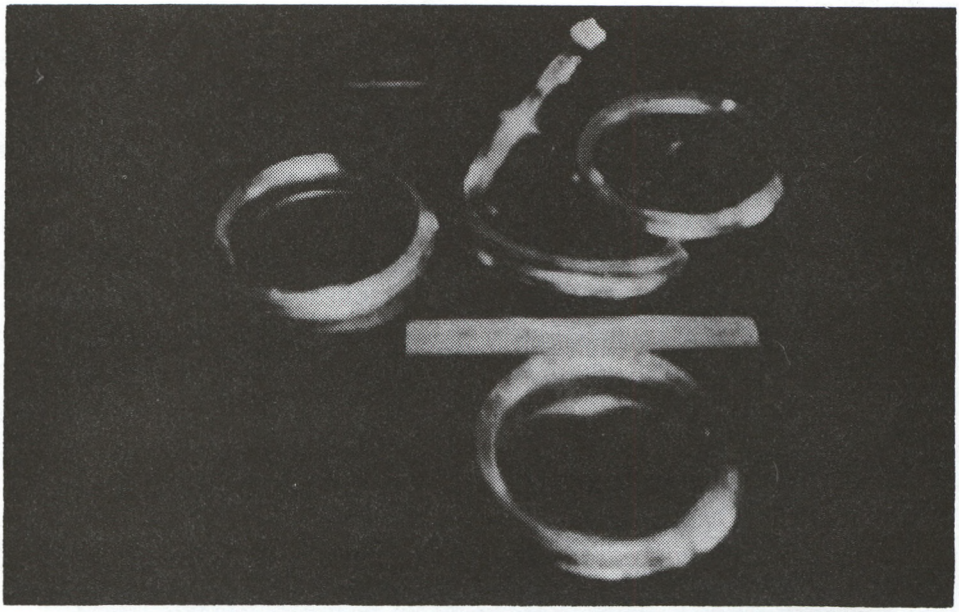

Figure 10. Some of the Asian Type Bangles – Gold Tube with Silver Core

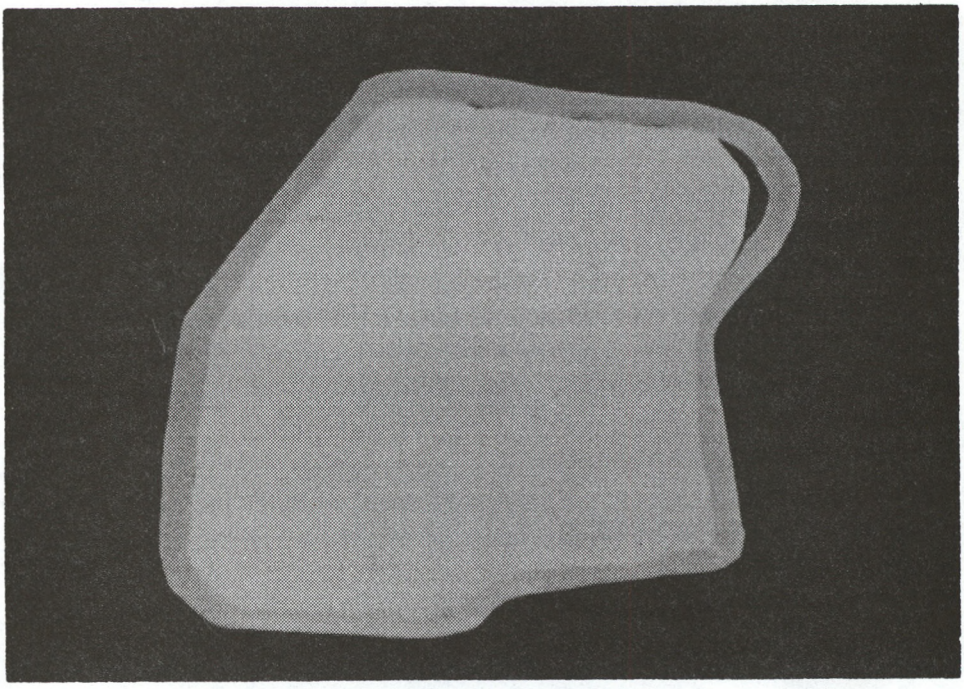

Figure 11. Magnified Cross Section of Bangle Showing the Gold Case and Silver Core.

To put the UK operation into perspective, the four Assay Offices hallmarked a total of over 26 million gold, silver and platinum articles last year, with Birmingham being responsible for 42% of these. Finally I can complete this picture of hallmarking in the UK for you by illustrating that what appears to be a very simple operation of applying a few marks to articles can involve considerable expenditure. As I stated earlier, we have spent over £300,000 investing in state of the art technologies in the last two years or so. We have new analytical techniques such as Inductively Coupled Plasma Spectrometry and X-Ray Fluorescence, and high technology CAD/milling equipment for punch manufacture.

Being fully aware of the problems that the Act presents to our customers we continue to strive to develop improved techniques for sampling, assaying and marking articles. As you appreciate these actions inevitably cause the articles to require finishing by the customer and even on part manufactured items this can cause extra expense. We have developed, with a local manufacturer, a laser marking machine that applies hallmarks to delicate, hollow and fragile articles that otherwise could only be marked with unacceptable damage. It has the other advantage of being able to apply marks to finished jewellery without the need for subsequent re-polishing to remove underside bruising etc. We now have two of these machines and while they are not suited to application to all articles, their depth of marking being somewhat less than that of a conventional punched mark, they are ideally suited to a wide variety of product. We can now mark without damage or the requirement for further finishing fragile or hollow articles, and complete watches, works included. This expenditure is part of our ongoing commitment to ensure that we are doing the best for our customers within the requirements of the Hallmarking Act. Laser marking is a major advance, being the first significant change to the method of applying of hallmarks since their inception.

We are also clear on our target for the future – which is the assaying and marking of all articles by non-destructive means. The benefits would be:-

i) minimising of scraping/cutting damage

ii) elimination of bruising/damage and therefore re-finishing costs caused by punch marking, particularly of imported i.e. finished goods;

iii) finishing of product by local manufacturers before hallmarking eliminating production interruptions;

iv) elimination of the disassembly of watches for marking.

INTERNATIONAL HALLMARKING – IS IT POSSIBLE?

However, countries that do not have such a rigorous hallmarking system would find the implementation of the UK Hallmarking Act traumatic. One only has to review attempts to harmonise hallmarking within the EU to realise the difficulties that can occur. Countries such as the UK, Ireland, the Netherlands and Portugal are naturally reluctant to give up systems that have effectively protected the consumer and industry from widespread abuse. Other member states, Germany and Italy particularly who have extensive jewellery industries, clearly recognise the difficulties of setting up similar systems in order to achieve harmonisation. Result – disagreement, prolonged and lengthy negotiations, (several years so far) and the production of a Directive so compromised that it could jeopardise the future of the European jewellery industry, Figure 13. It is the infamous Annex III that is preventing agreement. Those countries with effective policing systems are convinced that this option will enable jewellery from all sources, internally produced and imported, to enter the European Union - Common Market - on the basis of unsubstantiated manufacturers' claims concerning quality standards at the point of production. Further why should reputable manufacturers bother with ISO 9000/NAMAS accreditation, and the associated expense, when others will not.

One other major flaw in this Annex is that it will require intensive policing at the retail end to ensure that product meets claimed/marked standards. The UK Assay Offices will certainly not do this unless they are paid to do so and the UK Government have made it clear that no extra funds will be

ANNEX II
The manufacturer shall operate the approved system for final product control by lodging an application for the assessment of his quality system for the articles concerned with a single notified body of his choice.
(External Accreditation for Manufacturers Marking.)

ANNEX III
The manufacturer his authorised representative, who must comply with the certain obligations, shall ensure and make a declaration to the effect that the articles concerned satisfy the requirements of the Directive which apply to them.
(Unaccredited Manufacturers Marking.)

ANNEX IV
The articles are submitted by the manufacturer or his authorised representative to an independent accredited third party for checking and marking.
(Accredited Third Party Hallmarking.)

Figure 13. Marking Annexes Proposed in the EU Hallmarking Directive.

available for this, nor will others in Europe be willing to do so either. Our Trading Standards Officers are already having a difficult time having to cover all aspects of retail trading and will not be able to complete effective policing of a jewellery trade that is totally open and uncontrolled.

Not all is lost, as there is some co-operation within Europe. The World Gold Council have sponsored EMAGOLD, as Chris Corti mentioned earlier, which comprises approximately 113 members in Europe who are committed to the quality ethic across the full spectrum of 14ct and better gold jewellery including caratage. While their initial starting-up audits for members are not yet sufficiently rigorous, the longer term target is to use ISO 9000 as the quality Standard within the organisation.

Additional hope is provided by European technologists who have successfully co-operated to produce a wide range of International and European Standards that define acceptable finenesses, methods of assaying, marking, solders etc. These have taken several years and considerable negotiation to agree. It is unfortunate that we cannot agree on the system to enforce these technical standards and to effectively police precious metal content to prevent widespread abuse.

INTERNATIONAL HALLMARKING - A SYSTEM?

So what is the answer ? – on the one hand there are many of us around the world who feel very strongly and probably rightly that only by effective policing can the customer be protected – on the other, many such systems in effect now are not ideal or are not particularly effective. Therefore international trade in precious metal articles is constrained and probably is based more on who you trust, completing your own QC checks, complying with irritating local regulations where they exist, or perm any combination of these.

Further, if I detach myself from the Assay Office, then I would have to agree that hallmarking could more easily be completed by the manufacturer during the production of the article(s). The use of recognised quality control systems backed by the appropriate checks

should assure the assay from the melt through to finished product. Many articles could be marked during production processing by incorporating the marks in dies, on tags etc. Some though would still require marking as a separate process after finishing. However, the disadvantages of manufacturers self- marking, which already occurs in many countries have been discussed earlier, and certainly those countries with rigorous hallmarking disciplines are not prepared to allow uncontrolled manufacturers marking.

In fact a possible answer lies in compromise where competent manufacturers who achieve the appropriate and confirmed standards of operation can mark their own goods. Those who do not wish to self-mark have the fall back position of using the local independent, probably Government linked, accredited body who can mark for them. This local body could also be responsible for both accrediting and checking on local manufacturers.

So what would be the requirements of a hallmarking system that could be operated in the major jewellery trading countries to facilitate uninhibited and free trade?

May I suggest these:

i) No negative tolerances.

ii) Agreed standards of fineness of alloy and solders, perhaps based on ISO 9202.

iii) Defined and accepted methods of assay to be used in the event of dispute, many of which are already ISO Standards.

iv) Simple clear marking system with traceability.

v) Assaying/Marking permitted by any body that is independently accredited to a recognised operating standard by an approved body.

This will require:

i) Implementation of local legislation in all significant jewellery trading countries enforcing the system, together with a Code of Practice;

ii) Agreement on the Standard of Operation for Markers to which they must operate that assures the precious metal content of the articles produced or imported.

iii) Accreditation to that Standard for those that meet it and then, subject to the registration of their "sponsors" mark, allow them to mark their product and that of others subject to the appropriate checks if they wish.

iv) Mutual recognition to all participating countries on the basis of equivalence.

v) The setting up of a controlling body with representatives from each participating country.

Other requirements would be:

i) The co-ordination of a register of sponsors, marks and accredited markers in each country.

ii) Procedures for discussing relevant technical details as new practices and design arise.

iii) Agreement on the procedures for the resolution of a dispute.

Provided that the Standard of Operation is internationally recognised and independently audited, e.g. ISO 9000, such marks should be internationally recognised and traded as such. In the UK the auditing body could be the Assay Offices.

At first sight this appears to be a considerable undertaking. However:

Many members of the EU have accepted the principle of accredited manufacturers marking for instance, if you remember the alternatives proposed within the Directive, and others also. ISO 9000 is internationally recognised as an acceptable standard of operation and there are many around the world who are approved auditors of the system.

In addition there is, within the frameworks of the ISO/CEN Technical Committees, the Convention and Association of European Assay Offices, the basis of an International Hallmarking Council. Most major jewellery trading countries have local organisations, such the AJA, BJA, NAG, FOI etc, who could co-ordinate these actions on behalf of the Trade that they represent.

CONCLUSIONS

While carat conformance remains a contentious issue, currently international hallmarking is in some disarray with the haves, half-haves and have-nots unable to reach any firm agreement. Yet technical agreement on a wide range of aspects of jewellery caratage and methods of assaying exists at International and European Standards levels.

However, extensive discussions over several years have failed to produce a harmonised hallmarking policy even among the relatively few members, in global terms, of the EU. The benefits of a credible system, accepted world-wide, that encompasses certain fundamental principles, such as zero tolerances, independently accredited markers, common standards of fineness, approved methods of sampling/assaying and traceable marks, are obvious in terms of ease of manufacturing, marking and exporting precious metal jewellery. It is difficult not to be pessimistic however as I have not yet detected any real will to address these issues internationally outside individual countries' attempts to improve their own local trade. We shall see if this slow but steady move to improve local carat conformance eventually leads to an expansion in the number of mutual acceptance agreements throughout the world's major jewellery producing countries. This may eventually force those still resistant to such systems to reconsider.

Meanwhile the UK and other countries with similar systems will continue to defend the rights of the consumer, comforted at least with the knowledge that the hallmarks applied are generally recognised and accepted in most significant jewellery markets. Until real and co-ordinated international efforts commence to establish credible and workable alternatives these independently operated systems will remain the benchmark for others to consider and modify for the needs of their industry. Only when this occurs will pipedream turn into possibility.

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REFERENCES

1) "JVC Discloses Underkarating", Anon. AJM Magazine, August 1997.

2) The Hallmarking Act 1973, HM Stationery Office, London.

3) The Convention on the Control and Marking of Articles of Precious Metal, Geneva, January 1994.