



UPDATE FROM THE GOLDSMITHS' COMPANY ASSAY OFFICE

Amendments to the Hallmarking Act

The Government used a Legislative Reform Order (LRO) to make a number of amendments to the Hallmarking Act which came into force earlier this year. There are three key amendments:

1. The UK Assay Offices now have the ability to strike hallmarks outside of the UK with a new assay office mark, different from that struck in the UK.
2. The requirement that a sponsor's mark must include the initials of the sponsor's name has been removed, giving more flexibility to register logos and trademarks as a sponsor's mark (subject to assay office approval).
3. The wording has been re-drafted relating to platinum coatings. This now allows articles of silver, gold or platinum, bearing a hallmark, to be coated with platinum without having to first obtain the written consent of an assay office.

CADMIUM AND LEAD TESTING IN JEWELLERY

Cadmium and lead in jewellery items is an increasing concern due to the harmful effects that these toxic elements can have. In the EU, Cadmium is already restricted by the REACH regulations and lead will be included from October 2013.

Cadmium and cadmium oxide are very toxic and known carcinogens. The fact that cadmium is used in the jewellery industry as an alloying constituent and in solders means it poses a significant health risk. Therefore, from December 2011, EU REACH Directive 494/2011 came in to effect to restrict cadmium content in jewellery to 0.01% by weight of metal. This applies to all component parts of precious metal jewellery, fashion jewellery and non-metallic materials. In addition, cadmium in paints is restricted to 0.1% by weight. The exceptions are jewellery items that are proven to be >50 years old or placed on the market before January 2012.

Lead and its compounds are also toxic at low levels of exposure, so lead will therefore be subject to EU REACH Directive 836/2012 from October 2013. Lead and its compounds must not be present in jewellery articles in quantities >0.05% by weight. Non-metallic component parts are also included but crystal glass, precious and semi-precious stones are not unless they are treated with Lead compounds.

As the requirements of the REACH Directive only permit very low levels of Lead and Cadmium, The Goldsmiths' Company Assay Office can carry out the test for both elements simultaneously using the ICP-OES technique (Inductively Coupled Plasma Optical Emission Spectroscopy) to provide an accurate content result.

SANTA FE SYMPOSIUM

Dr Robert Organ, the Deputy Warden, gave a presentation entitled "The Advance of New Technologies in Hallmarking" at the Santa Fe Symposium May 19-22 in Albuquerque, New Mexico, USA. The Symposium is a leading conference on jewellery technology and brings experts from all around the world together. Some of the key themes discussed included the implications of the updated nickel release standard, EN 1811: 2011, light-weighting, selective laser sintering and protocols for marking of metals in the USA.



**INDUSTRY UPDATES****LABORATORY REFURBISHMENT**

The assaying laboratory at Goldsmiths' Hall has undergone a major refurbishment. This included replacement of three fume cupboards, a new floor and renovation of benches and cupboards. In addition, new equipment has been purchased, including a new high purity water supply and a microwave digester. The latter is used to help speed up the dissolution process of precious metal alloys in acids, particularly platinum and palladium alloys. These solutions are then tested using the ICP. Times can be shortened from overnight to just a few hours. The digester also helps to ensure that all the contents of the alloys are dissolved completely, giving more confidence that determinations are accurate. The way in which the microwave digester works is probably more like a pressure cooker than a microwave oven! The metal and acid are placed in a pressure vessel comprising a PTFE inner section encased in a ceramic sheath. The contents of the pressure vessel are heated in the microwave, allowing the dissolution to take place at much higher temperatures and pressures than can be achieved using just a beaker on a laboratory hot plate. The digester will facilitate the testing of lead and cadmium.

CHANGES TO THE INTERNATIONAL STANDARD NICKEL RELEASE CAUSES PROBLEMS

The revisions have come into place of international standard EN 1811:2008, "Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin."

While the test method outlined in the revised standard, designated EN 1811:2011, exhibits only minor changes to its predecessor, there are significant changes in the way the results are interpreted. The main difference is that the correction factor of 0.1 has been replaced by an uncertainty of measurement approach which results in three decisions: "compliant", "no decision" and "non-compliant". The approach has also lowered the compliance limit, with a result that products which may have passed the 2008 standard may not pass the 2011 version. Clearly, this and the introduction of the "no decision" category have caused confusion in the trade and discussions are under-way with the British and International Standards Committees to find a workable solution to the problem.

Dr Robert Organ