



The LBMA Bullion Market Forum
Shanghai, May 2011

The LBMA Good Delivery List

Stewart Murray
Chief Executive
The London Bullion Market Association

May 2011

Key Aspects of the OTC Bullion Market



- Principal to Principal trading (not exchange trading)
- Gold and Silver
(Pt and Pd are dealt with by the LPPM)
- Spot, Forwards and Options Trading
- Vaulting
- Clearing
- The Fixings

London Vaulting



- Nine recognised Custodians (6 clearers, 2 shippers & BoE)
- Five vaults (JPM, HSBC, Brinks, Viamat, BoE) + JM in Royston (silver)
- Security
- Handling (weighing, storing, packing, shipping)
- Quality monitoring



Investment - more than ETFs



- ETFs
 - Gold Holdings have increased by ~1,800 tonnes in past 5 years, almost all held in London vaults
 - Many thousands of tonnes of ETF silver are held in London

Other holdings

- Central banks hold large amounts of allocated gold at the Bank of England
- Various investors hold very substantial amounts unallocated gold and silver in the London vaults



Price Fixes for Gold and Silver

- Originally actual meetings of the London Silver Market (1897) and London Gold Market (1919)
- Now via Conference telephone calls
- Controlled by the fixing companies (not the LBMA) (the successors to the London Gold Market and London Silver Market)



Role of the Bank of England in the physical market

- Originally the market's regulator (until 2000, when the Financial Services and Markets Act was passed)
- The Bank acts as a custodian for other central banks and LBMA members
- Only gold (no silver)
- The UK Treasury holding of ~300 t represents less than 1/10 of the total
- This facilitates lending or selling operations by other central banks
- The Bank has representatives acting as observers on the LBMA Management Committee and Physical Committee



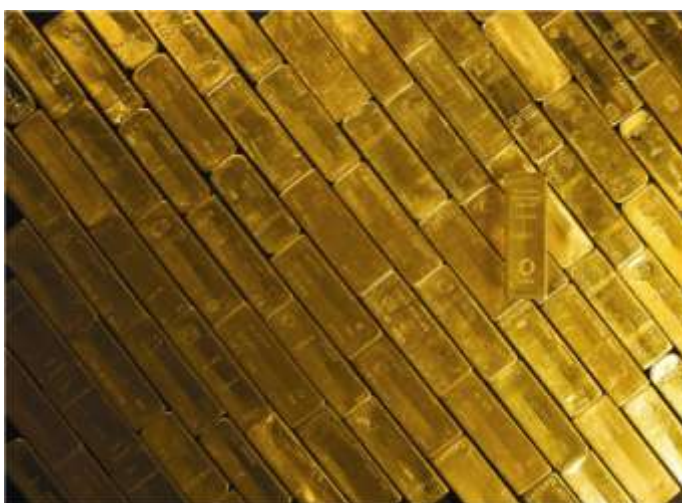
LBMA Good Delivery List



- List of refiners and their bars which are accepted in London
- Covers only large bars (~400 tr oz for gold and ~1,000 tr oz for silver)
- Origin: an agreement between vaults on which refiners were acceptable (and for gold, the Bank of England's list of acceptable refiners, first published in 1750)
- First Gold List published by the London Gold Market in 1934
- Since 1987 the Lists are maintained by the LBMA using objective criteria for accreditation (and continued listing)
- The List is used by many markets for defining deliverable brands
- New publication: GDL History – from 1750 to 2010



The History of the London Good Delivery Gold List 1750-2010



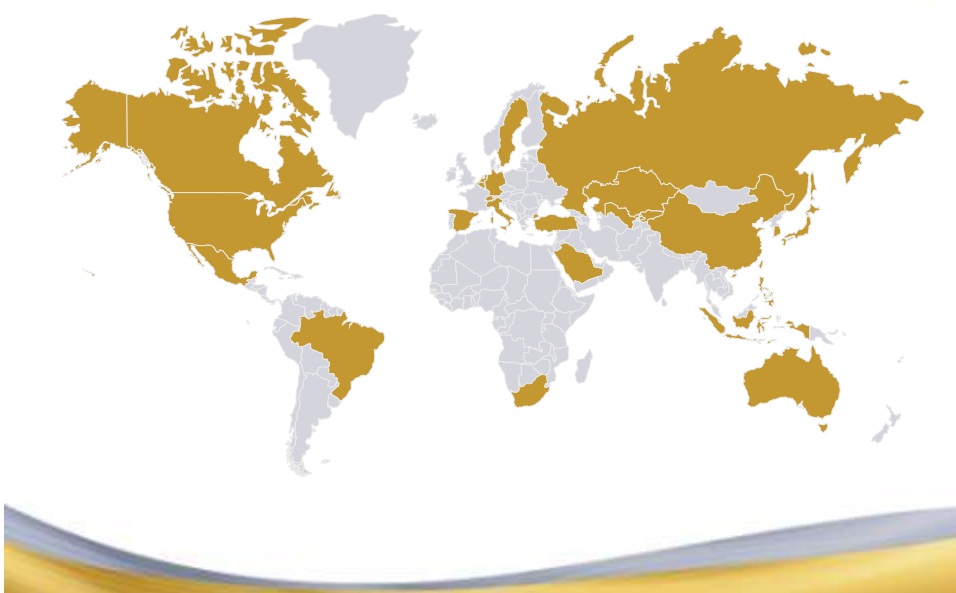
LBMA Good Delivery List



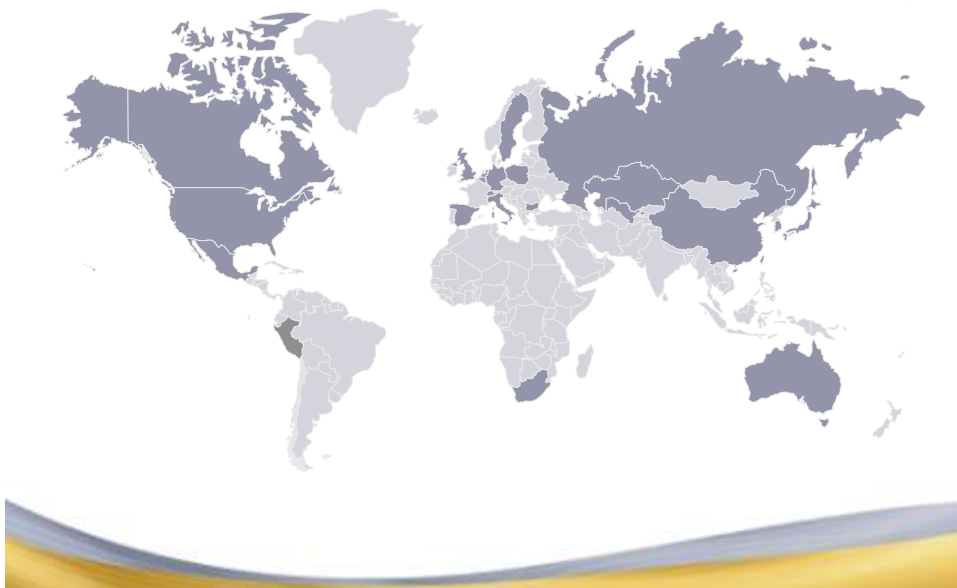
- 83 Refiners in 20 Countries
 - 60 refine Gold
 - 71 refine Silver
- Includes one central bank (Philippines) and three official Mints (Japan Mint, Royal Canadian Mint and Perth Mint)



Gold Good Delivery Refiners



Silver Good Delivery Refiners

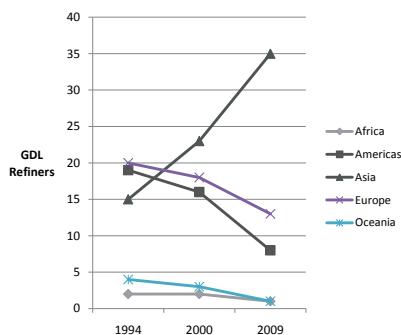


Location of the refiners – then and now



- Steady move eastwards
- Until recently Japan was No. 1 in terms of numbers
- Decline in Europe, Australia & the Americas
- New Russian refiners post Soviet Union (from 1999)
- Rapid growth in China since 2000. Now there are 7 gold and 13 silver refiners from China on the active List

Gold Good Delivery Refiners By Region





Recent Additions – 2010-11

- Royal Canadian Mint (silver) 14-Apr-2011
- Heraeus Ltd Hong Kong (silver) 15-Sep-2010
- Kazakhmys PLC – Balkhash, Kazakhstan (silver) 21-Jul-2010
- Yunnan Chihong Zinc & Germanium Co, China (silver) 28-Jun-2010
- L'azurde Company For Jewelry, Saudi Arabia (gold) 1-Jun-2010
- Atasay Kuyumculuk, Turkey (gold) 7-May-2010
- Shandong Gold Mining Co., China (gold and silver) 14-Jan-2010



Good Delivery Refiners (Japan and China)

	Gold	Gold	Silver	Silver
	2000	2010	2000	2010
China	2	7	3	13
Japan	8	10	12	13
Hong Kong	0	2	0	1
Taiwan	0	1	0	1



Active List and Former List



- Active List means:
 - Refinery is operating and is accredited
 - Bars described are in current production
 - Each refiner can have only one bar on the Active List
- Former List means that
 - The bars and refiners listed are still acceptable (if produced before the date of transfer to the Former List), but
 - The refinery may no longer be operating
 - The refinery may no longer be accredited
 - The bars listed may have been replaced by new ones, with different dimensions or marks, on the active list



Applications for Listing: Non-technical Criteria



- Net worth: £10 million (has remained unchanged since 1990 – may be increased to £15 or £20 million)
- In business for five years
- Information on ownership and directors
- Refining history of three years
- Minimum refined production (per year)
 - 10 tonnes gold
 - 30 tonnes silver





Applications for Listing Technical Assessment

- Assay test across the whole of the Good Delivery range
 - 995-999.9 for gold
 - 999-999.9 for silver
- 24 (Gold) or 10 (Silver) Reference Samples
- Inspection of 10 bars in London
- Comprehensive testing of the bars by two referees



Appointment of the International Referees Panel

- Until 2003 only two referees (JM & Engelhard-CLAL) - both UK
- 2001-2003: Applications for expanded referees panel were evaluated
- Each applicant had to manufacture homogeneous reference samples (16x100 10g gold samples and 10x30 30g silver samples) and demonstrate accuracy and precision in assaying
- New panel appointed in December 2003:
 - Japan Tanaka
 - South Africa Rand Refinery
 - Switzerland Argor Heraeus
Metalor
Pamp





Role of the Referees

- Manufacture of reference samples
- Testing of sample bars provided by GD applicants
- Assaying of dip samples provided during Proactive Monitoring
- Provision of advice to LBMA Executive on technical matters
- Acting as Advisory Committee for Assaying and Refining Seminar



What are the features of a Gold Good Delivery Bar?

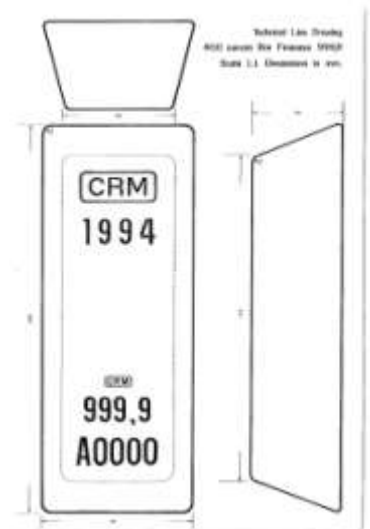
- Cast in open moulds
- Dimensions
- Marks
- Good Physical Appearance



Gold Good Delivery Bar Specifications



- Size:
 - 400 ± troy oz
 - Range of LxWxH & undercut
- Marks
 - Logo, number, year, assay
(No weight stamp!)
- Assay
 - 995-999.9 fine
- Physical Appearance
 - Flat surfaces, no holes or cracks



Assay Specification - LBMA



- Gold is assayed by direct method (fire assay) though at high levels of fineness (9995+), spectrographic determination of impurities and calculation of the gold content by difference is valid.
- Silver content is preferably calculated by difference using spectrographic analysis of impurities.
- Referees will normally look for a core list of more than 20 impurities when analysing gold and silver and may look for a number of others. Annex M of the Good Delivery Rules gives the full lists of these elements.
- There are no maximum levels specified but when examining applicants' bars, referees are asked to comment on whether any impurities are present in amounts which may be deleterious. This topic is currently being discussed.



Assay Specification - China

Chinese Gold Standard

- For Gold, there are 4 specifications contained in the new Chinese standard introduced in 2003 (GB/T 4134-2003)
 - 995 (new grade, added in 2003)
 - 999.5
 - 999.9 and
 - 999.95 (new grade, added in 2003)
- For 995, there are no limits on individual impurities. The gold content measured directly must be 995 or above.
- For the other three there are maximum limits for 14 impurities
- Maximum Allowed Impurities in 999.9 Gold (in ppm) are
Ag 50; Cu 20; Fe 20; Pb 10; Bi 20; Sb 10; Si 50;
Pd 50; Mg 30; As 30; Sn 10; Cr 3; Ni 3; Mn 3;

Main Discussion Point

- The 50 ppm limit for silver is not considered to be necessary by the LBMA.



Physical Defects

- Good physical appearance increasingly perceived as important by certain investors, especially ETFs
- Good Delivery Rules describe the requirements for absence of serious defects in more detail than before
... But essentially no change in the fundamental requirements:
- Bars should
 - Be uniquely and clearly marked
 - Be safe to handle
 - Be securely stackable
 - Not be subject to weight changes (+ or -)
 - Not be able to trap water in cavities
 - Have no hidden cavities





Changes in the GD Rules

- **January 2008 Edition (announced in July, 2007)**
- Recommendation that if possible silver bars should weigh between 950 and 1050 tr oz
- Ban on closed mould casting
- Recommended undercuts introduced: 7-15% on length and 15-30% on width
- Pneumatic punching of marks allowed
- Bottom stamping disallowed
- Bar Numbers to have a maximum of 10 digits
- **July 2009 Version**
- NGD bars to be marked as such
- **May 2009 Version**
- Changed bars must comply with recommendations on size and weight
- Eventual phasing out of pre-2008 bars with weights below 750 and above 1,100 troy ounces



Defects (fortunately not typical!)





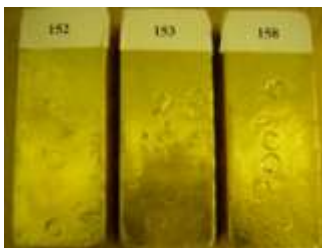
Physical Defects

- Button-like defects
- Cracks and fissures
- Exuding voids
- Flaky edges
- Flattened nodules and ridges
- Former marks
- Surface pits or holes
- Layering
- Sharp ledges
- Poor marks
- Missing marks
- Mould Marks
- Nodules and Ridges
- Rough Surfaces
- Sharp edges
- Excessive Shrinkage
- Shrinkage Cavity
- Stacking problems
- Voids
- Wedge shape



Detecting Internal Defects using Ultrasound

- High frequency sound waves reflect off internal voids and foreign bodies
- Used for investigating suspect bars, eg with button-like defects





Proactive Monitoring

- Introduced in 2004 following a complaint from a Mint that some 999.9 gold bars were under title
- Re-testing of Good Delivery Refineries introduced in 2004
 - once every three years
- Provision of dip samples for assaying
 - Special arrangements for four-nines gold refiners
- Monitoring of tangible net worth
- Role of the Referees
- Maintenance cost: £1,000 per metal per year



Reference Materials

- Programme initiated following discussion at the 2007 Assaying and Refining Seminar
- Gold and Silver: used for validating calibration of instruments
- 1 set consists of two materials with differing levels of ~ 20 trace elements
- Manufactured by Tanaka (gold) and Krastsvetmet of Russia (silver)
- Collaborative analysis involving 10 GD laboratories to determine reference values (including Great Wall)
- Project completed in 2009/2010
- Manufacture of new reference materials is now being discussed



4th Assaying and Refining Seminar



- London, 7-8th March, 2011 – No charge for GDL Refiners attending
- Topics included
 - Good Delivery List Developments
 - Summary of Proactive Monitoring results
 - Standards for 999.9 gold
 - Challenges in analysing silver
 - Reference materials – the next phase
 - Proficiency Testing of gold fire assay laboratories
 - Electronic weighing of gold
 - Physical defects



Proficiency Testing for Fire Assaying of Gold



- To be discussed in detail at the next A&R Seminar
- Based on assay testing of a 2.5 g sample in the fineness range 995-999
- Open only to GDL refiners, but not obligatory
- Minimum participation of 40 labs will be required
- Anonymity guaranteed but participants will be listed in an appendix
- Once a year
- Cost £440 per year (including the cost of the gold sample)



Good Delivery Accreditation the International Dimension



- The LBMA List is used by a number of exchanges to define their locally accepted brands, including:
 - Tocom
 - Istanbul Gold Exchange
 - Dubai Gold and Commodities Exchange
 - Shanghai Futures Exchange
 - NYSE-Liffe
- Most Exchange-traded funds hold their metal in the form of LBMA GD bars



Supporting the GD List



- Maintenance of the list is the LBMA's single largest expense
- The LBMA will ask exchanges and funds who use the List to support the work financially
- The LBMA will provide enhanced information about the List to the Exchanges (but not including confidential information supplied by refiners to the LBMA).





Further Information

Website – www.lbma.org.uk

Email – mail@LBMA.org.uk

