

LONDON GOOD DELIVERY BARS

London Good Delivery (LGD) bars contain approximately **400 troy ounces** (12.5 kg) of fine gold.

BACKGROUND

These large bars underpin gold dealing in the loco-London bullion market – the world’s most important physical gold market – where daily clearing turnover can exceed 800 tonnes (US\$ 30 billion), and can involve more than 1,000 transfers of LGD bars to allocated and unallocated accounts by the six clearers which are members of the **London Bullion Market Association** (LBMA).

The bars are traded by international dealers, mining companies, central banks, financial institutions, major investors and other entities. They are also used by jewellery and other fabricators that prefer large bars. Many are also converted by dealers and refiners into smaller bars, notably kilobars, for fabricators and investors.

Most new LGD bars are produced by LBMA-accredited refiners from newly-mined gold. They are also produced by LBMA-accredited refiners from old gold scrap and non-accredited bars where there is a need for their customers to trade large quantities of gold on the international market.

The international market also relies on LGD bars that have been manufactured in the past. Approximately 30,000 tonnes of gold is held by central banks, many of whom loan or sell old LGD bars to international bullion banks.

LGD bars have been formally traded in London since 1919, when the **London Gold Market** (LGM) held its first Gold Fixing meeting in the offices of **N.M. Rothschild & Sons Limited**. The earliest known list of approved LGM “Melters and Assayers” is dated 1934.

BAR SPECIFICATIONS

Since 1987, the LBMA has been responsible for the accreditation of LGD bars for the settlement of transactions on the loco-London bullion market.

The LBMA publishes on its website a detailed document, “*The Good Delivery Rules for Gold and Silver Bars*”, which is updated periodically.

In broad summary, its specifications for LGD bars, manufactured by its list of “Acceptable Refiners”, are as follows:

Weight

Minimum gold content: 350 fine ounces
Maximum gold content: 430 fine ounces

Fineness

Minimum acceptable fineness is 995.0 parts per 1,000 parts fine gold.



The Bank of England stores hundreds of thousands of LGD bars on behalf of central banks around the world.



SEMPSA
Spain

LGD “400 oz” bars contain between 350 oz and 430 oz of fine gold.

The weight is not normally recorded on the bar.



Valcambi
Switzerland

The millesimal gold purity of LGD bars can range from 995.0 to 999.9.



Marks

- Serial number
- Assay stamp of the refiner
- Millesimal fineness to 4 significant figures, e.g. "998.4"
- Year of manufacture, e.g. "2006"

Recommended approximate dimensions

- Length (top): 250 mm +/- 40 mm Undercut*: 7% to 15%
- Width (top): 70 mm +/- 15 mm Undercut*: 15% to 30%
- Height: 35 mm +/- 10 mm

* The undercut refers to the degree of slope on the side and ends of the bar.

DISTINCTIVE FEATURES

LGD bars are renowned for not having the same exact weights and purities (or dimensions). There are two main reasons for this variability:

- The broad parameters as regards weight and purity are an historical convention. They date back to at least 1934. As thousands of LGD bars, manufactured in the past, are still held and traded by central banks and other entities, the parameters are retained.
- A LGD bar is so large that even a minor decimal point variation in its gross weight and purity from an exact standard would affect the weight of its fine gold content, and its value, for trading purposes. Consequently, the weight of the fine gold content of **each** LGD bar is precisely calculated and recorded.

In this context, the following features can be highlighted:

Weight

LGD bars have **variable weights** as the fine gold content can range from 350 oz to 430 oz.

The weight of a LGD bar is normally not stamped on the bar.

Marks recording its weight are discouraged as any adjustment to its weight caused by future handling or assaying can result in a change in weight.

The bars are weighed in multiples of 0.025 oz rounded down to the nearest multiple.

The weight of fine gold content is then calculated, in accordance with the LBMA's specified weight and purity "rounding" procedures, to three decimal points, e.g. "401.623 oz fine".

Fineness

LGD bars have **variable gold purities** as the fineness can range from 995.0 to 999.9 parts gold in 1,000 parts.

Dimensions

LGD bars can have **variable dimensions** (top surface and thickness) as the weight of the bar's fine gold content and its purity are permitted to vary within defined parameters.

In addition, although recently-accredited refiners have been encouraged since 2004 to produce bars that approximate to the LBMA's recommended dimensions, many LGD bars manufactured by historical refiners and long-established refiners have other dimensions.



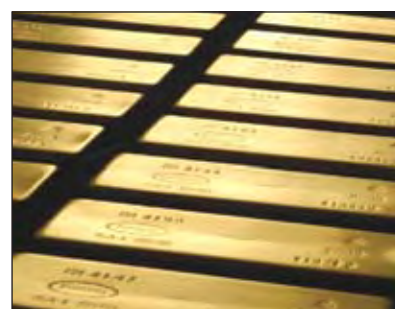
Johnson Matthey
USA

All refiners now stamp LGD bars with the year of manufacture.



The Perth Mint
Australia

LGD bars have been formally traded in London since 1919.



Prioksky
Russia

The earliest known list of LGD bar "Melters & Assayers" was published in 1934.



Year of manufacture

Many historical LGD bars are not marked with their year of manufacture. In July 2008, the LBMA ruled that newly-manufactured LGD bars must include the year of manufacture as a separate 4-digit number unless incorporated as the first 4 digits in the bar's serial number.

EXAMPLES OF LONDON GOOD DELIVERY BARS

More than 100 refiners over the past 90 years have produced LGD bars.

The table below records the approximate dimensions of a representative range of LGD bars manufactured by active LBMA-accredited refiners.

TECHNICAL DESCRIPTION

| Country | Accredited Refiner | Approximate Weight | Type | Fineness | Approximate Dimensions mm | Accreditation Date# |
|--------------|---------------------|--------------------|------|------------------|----------------------------------|---------------------|
| Germany | Heraeus | 400 oz | Cast | 995+, 999.9 | 215 x 85 x 50 189 x 53 (base) | 1958 |
| Switzerland | PAMP | 400 oz | Cast | 995+, 999.9 | 245 x 85 x 38 215 x 55 (base) | 1987 |
| Canada | Royal Canadian Mint | 400 oz | Cast | 999.9 | 245 x 80 x 40 245 x 55 (base) | 1919* |
| USA | Johnson Matthey | 400 oz | Cast | 995+, 999.9 | 248 x 80 x 41 220 x 57 (base) | 1989 |
| Brazil | AngloGold Ashanti | 400 oz | Cast | 995+, 999.9 | 212 x 95 x 38 195 x 76 (base) | 1986 |
| China | Zhongyuan | 400 oz | Cast | 999.9 | 255 x 81 x 37 236 x 57 (base) | 2006 |
| Hong Kong | Heraeus | 400 oz | Cast | 995+ | 255 x 85 x 35 235 x 65 (base) | 2006 |
| Japan | Tanaka | 400 oz | Cast | 995+, 999, 999.9 | 258 x 82 x 47 230 x 56 (base) | 1978 |
| Kazakhstan | Kazzinc | 400 oz | Cast | 999.9 | 254 x 88 x 35 229 x 59 (base) | 1996 |
| Russia | Krastsvetmet | 400 oz | Cast | 999.8, 999.9 | 254 x 88 x 35 229 x 59 (base) | 1999 |
| South Africa | Rand Refinery | 400 oz | Cast | 995+, 999.9 | 260 x 80 x 40 240 x 60 (base) | 1921* |
| Australia | The Perth Mint | 400 oz | Cast | 995+, 999.9 | 230 x 80 x 46 205 x 55 (base) | 2010* |

Source: Relevant refiners. # Refers to the year when the refiner first manufactured LGD bars. Some refiners have changed the dimensions and marks on their bars, and some their company names, since that time. * Royal Canadian Mint and Rand Refinery: estimated dates. Metalor: at original accreditation, LGD bars were branded with the stamp of Swiss Bank Corporation. The Perth Mint: LGD bars have been issued under former names since at least 1928.



Tanaka
Japan

Approximately 2,400,000 LGD bars (30,000 tonnes) are held by central banks as part of their official reserves.



PAMP
Switzerland





Royal Canadian Mint
Canada



Great Wall
China



AngloGold Ashanti
Brazil



Krastsvetmet
Russia

Accredited manufacturers of LGD bars are issued with a certificate by the London Bullion Market Association (LBMA).

EXAMPLES OF SERIAL NUMBERING SYSTEMS

Each accredited refiner applies its own sequential serial numbering system to LGD bars so that each bar can be listed and easily identified, when stored or transported. Systems can comprise letters of the alphabet, numbers and the year of manufacture.

| Country | Refiner | Serial Numbering System | | |
|--------------|-------------------|-------------------------|--|-----------------|
| | | Example | System* | Year Introduced |
| Switzerland | Metalor | 994427 | 6 numbers plus year date | 1978 |
| Canada | Johnson Matthey | 03136 | 5 numbers plus year date | 1961** |
| Brazil | AngloGold Ashanti | AA 9837 | 2 letters plus 4 numbers plus year date | 1986 |
| India | MMTC-PAMP | 123509 | 6 numbers plus year date | 2013 |
| China | Great Wall | 011818 | 6 numbers plus year date | 2001 |
| Hong Kong | Heraeus | GA 0001 | Letters "GA" plus 4 numbers plus year date | 2006 |
| Japan | Tanaka | 00263 | 5 numbers plus year date | 2000 |
| South Africa | Rand Refinery | LT 0382 | 2 letters plus 4 numbers plus year date | 1921# |
| Australia | The Perth Mint | 004621 | 6 numbers plus year date | 2003 |
| Russia | Novosibirsk | HK 0286 | 2 letters in Cyrillic script plus 4 numbers plus year date | 1990# |

Source: Refiners *In some cases, the year date has only been included in recent years. **Johnson Matthey (Canada): estimated; year date included since 2005. # Year dates included on bars: Rand Refinery (since 2008), Novosibirsk (since 1996).



LONDON GOLD FIXINGS

The London Gold Fixings are conducted twice daily to derive a gold price where international gold supply and demand are in balance.

The Fixings provide a valuable service to the international gold market. The process is open and transparent to major buyers and sellers of gold. The published prices act as an international benchmark. The dealing spread is narrow. There is no limit on the quantity of gold that can be bought or sold.

The Fixings are conducted through the four members of **London Gold Fixing Limited**. The members, all of whom are Market Making Members of the LBMA, are listed below:

- Bank of Nova Scotia – ScotiaMocatta
- Deutsche Bank AG
- HSBC Bank USA National Association, London Branch
- Société Générale

They conduct the Fixings over the phone, starting at 10.30 am and 3.00 pm each day.

While on the phone to each other through a conference call, they are each in contact with dealers and other entities around the world who wish to place buy or sell orders through them for their own account or on behalf of their customers.

For further information, refer to the website of **The London Gold Fixing Limited**: www.goldfixing.com



Historical LGD bar.
Johnson Matthey
United Kingdom

The London Gold Fixings have relied on LGD bars for the settlement of transactions since 1919.



Metalor (Switzerland) has manufactured LGD bars since 1934.



Rand Refinery (South Africa) has manufactured LGD bars since 1921.

Refer to disclaimer on website: www.goldbarsworldwide.com

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