Data sheet   Gold

Properties of gold

Gold is a very dense material, nearly twenty times as dense as water. 1 cm³ of gold has a mass of 19.3g.

Gold can be beaten into very thin sheets without tearing or fracturing. 1g can be beaten into a thin sheet of area 1 square metre. This property is useful because gold is used in such things as electrical circuits – the thinner the layer that can be used, the less it will cost.

Use in jewellery

Pure gold is generally too soft to use in jewellery because it wears away too easily. Instead it is combined with other metals (often silver or copper), which make it harder wearing (and change the colour slightly).

Pure gold is 24 karat (24k). '22 karat gold' has 22 parts out of 24 gold and 2 parts another metal, by weight.

Distribution

In the crust of the Earth there is, on average, about 1g of gold in every 30 million grams of earth. There is gold in sea water at the rate of about 1g in every thousand million grams (or 1g every billion grams).

Gold ore, extracted from mines, contains gold usually in the range 1g to 5g per million grams. For gold to be visible to the naked eye, there needs to be at least 30g in each million grams, so in most gold mines you cannot see any gold.

Gold ingots

Large amounts of gold are stored as bars called ingots.

When gold is being traded, the weight is measured in troy ounces (a troy ounce is slightly heavier than an ordinary ounce).

One ingot is 400 troy ounces (approximately 12.5kg).
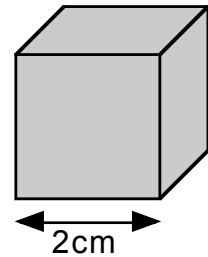
Questions   Gold

1

(a)   A ring is described as '10 karat' gold.

What fraction of it is gold?

- - - - - - - - - - - - - - -

(b)   How many karats is a metal mixture that is three-quarters gold?

- - - - - - - - - - - - - - -

2

What will be the mass in grams of a 2cm cube of gold?

2cm

- - - - - - - - - - - - - - g

3

2g of gold is beaten flat into a 1metre square.

This square is cut into smaller squares 25cm by 25cm.

How much does one of these smaller squares weigh?

- - - - - - - - - - –g

4

A gold mine processes ore that contains 5 grams of gold per million grams of gold ore.

How many kilograms of ore do they need to process to produce 1kg of gold?

- - - - - - - - - - - kg

5

In January 2007, the price of gold reached £355.72 per troy ounce.

1 troy ounce = 31.10g (to 2 decimal places).

At this price, how much is 1 gram of gold worth (to the nearest penny)?

£ _ _ _ _ _ _ _ _ _ _ _ _

6

At the same price of gold (£355.72 per troy ounce), approximately how many ingots would be needed to make £1 million worth of gold?

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