

*How long is a gold colloid stable for?*

The gold colloid will remain stable until at least the expiry date stated on the label if the colloid is kept unopened at the recommended storage temperature (2-8°C). BBI's EM Grade gold colloids are assigned a 12-month expiry date from the date of manufacture (excepting 15nm and 20nm gold colloids which are given an 18-month and a 15-month expiry date).

*Why do BBI recommend with bottle of colloid be used with 1 month of opening?*

Using within one month of opening is what is recommended by BBI (and is the practice BBI follows in-house) and is due to the lack of preservative agents (such as sodium azide) in the gold colloid. When the bottle is opened the gold colloid is exposed to contaminants, both from the air and from any pipette tips etc. inserted in the liquid. This contamination can lead to microbial growth within the colloid.

*How should the colloid be handled to maintain its stability?*

For best results (to help avoid particle aggregation) the end-user should avoid pipetting directly from the bottle. Instead they should pour out a small aliquot into a suitable container (borosilicate glass is recommended) and pipette from this. This protects the bulk solution from cross-contamination and potential introduction of particulate matter (such as dust) which can cause particle aggregation.

It is recommended that the bulk volume of gold colloid be kept in its original container.

*I see several companies sell gold and silver colloids for oral consumption or for injection into the body. Are BBI's colloids suitable for this?*

No. BBI's colloids and conjugates are not suitable for injection or administration by mouth. BBI do not accept responsibility for misuse of any of their products.

*How are BBI's colloids made?*

The exact method is proprietary; however, it can be shared that the gold nanoparticles are formed by the citrate reduction of a gold chloride solution.

*How are the gold colloids stabilised?*

The gold nanoparticles are formed by the citrate reduction of a gold chloride solution. This leaves the gold particles with a citrate shell which confers a net negative charge upon the particles, allowing them to repel each other and remain in solution. No other stabilising agents or preservatives are added to the gold colloid following the manufacture process.

*What are the largest and smallest gold nanoparticles that BBI can make?*

The smallest gold nanoparticle that BBI offers is 5nm in diameter and the largest is 250nm. The particle sizes available are: 5nm, 10nm, 15nm, 20nm, 30nm, 40nm, 50nm, 60nm 80nm, 100nm, 150nm 200nm and 250nm.

*What buffer is the colloid supplied in?*

The gold nanoparticles are provided suspended in purified water (as made), with only residual chemicals left from manufacture also present in solution.

*Can I freeze the colloid?*

No. Frozen colloids precipitate and become clear in colour with visible aggregates present. This process is irreversible. Ideally colloids should be stored in the door of a fridge or away from the chillers in a cold room to prevent accidental freezing.

*Do BBI supply gold colloid at a higher concentration than the standard product?*

BBI offers more concentrated versions of the 20nm and 40nm gold colloids, referred to as the HD Grade range. In addition to the standard concentration (OD<sub>520</sub> 1) products, OD<sub>520</sub> 5 (20nm only) and OD<sub>520</sub> 10 (20nm and 40nm) products are available in 10ml and 50ml pack sizes.

HD Grade gold colloids do not have an expiry date applied to them as BBI has not carried out a stability study on this product range. The batch size of the product range is limited to 50ml. For these reasons, the HD Grade colloid range is not suitable for use in the making of gold conjugates for lateral flow test manufacture or any other kind of regulated manufacture.

*Why isn't 40nm gold colloid available to purchase as a HD Grade product at OD<sub>520</sub> 5?*

As standard, 40nm gold colloid is manufactured at a concentration of OD<sub>520</sub> ~4.5. This undiluted colloid is available to purchase from BBI under the product code EM.GC40 SPL. As this colloid has not been through a concentration process, it retains its shelf life of 12 months from the date of manufacture and is available in batch sizes greater than the HD range (the batch size can be as large as 80 litres).

As the concentration of the EM.GC40 SPL is close to OD<sub>520</sub> 5, it can be used as an alternative to a HD Grade 40nm gold colloid at OD<sub>520</sub> 5, with the benefit that it is a product with an assigned 12-month expiry date (from the date of manufacture) and a larger maximum batch size. The EM.GC40 SPL product is also suitable for use in lateral flow manufacture and development whereas the HD grade product range is not.

*The larger gold nanoparticle sizes settle to the bottom of the bottle over time. Is this reversible?*

Gold nanoparticles ≥40nm in diameter have too much mass for the negative charge on the particle surface to keep them suspended. These particles will sink out of solution and settle at the bottom of their container. Colloids that have settled in this way can be resuspended by inversion.

### *Where are the gold colloids made?*

BBI's gold colloid is manufactured at our ISO 13485:2015 certified facility in Crumlin, South Wales, UK.

### *What are the key features and benefits of BBI Solutions' gold colloids?*

- High stability. A one-year shelf life ensures a settled manufacturing regime saving the customer time and wastage
- Uniform shape and standard size with a low coefficient of variation. This ensures even antibody loading giving reliable results in your assay.
- Manufacturing scale. Batch sizes of up to 350+ litres to ensure you have a continuous supply.

### *Can I dilute the gold colloid for use?*

If the gold colloid is to be diluted for use, it is recommended to use purified water of a comparable purity (resistivity  $\geq 18\text{M}\Omega$ ) to that used in the manufacture process.

### *What temperatures are the gold colloids shipped at?*

The gold colloid is shipped at ambient temperature.

### *Why is the shipping temperature (ambient) different to the recommended storage temperature (2-8°C)?*

The risk of the colloids freezing far outweighs the risk of the colloids being exposed to elevated temperatures. If the colloids freeze (even if only for a short time) they will completely and irreversibly collapse. In contrast, the colloids tolerate being exposed to elevated temperatures well for a short period of time.

We do recommend that the colloid is kept at 2-8°C for long term storage, however over a short period of time (such as a few days, which will be the case during international shipping) the colloid will be fine at higher temperatures. Adding cold packs to the shipping carton will increase the risk of freezing, which should be avoided at all costs.