

PRODUCT DATA SHEET

Non-Functionalized Standard Gold Nanoparticles, >95% Reactant Free

Catalog Numbers: G-5-XX, G-10-XX, G-15-XX, G-20-XX, G-30-XX, G-40-XX, G-50-XX, G-60-XX, G-70-XX, G-80-XX, G-90-XX, G-100-XX, G-150-XX, G-200-XX, G-250-XX, G-300-XX, G-400-XX

Description

Cytodiagnosics Non-Functionalized Standard Gold Nanoparticles are classical citrate coated gold nanoparticles. These particles can be used for adsorption of proteins or modification and functionalization with thiolated ligands such as PEGs and oligonucleotides.

Our gold nanoparticles are available in 17 different sizes ranging from 5-400nm, are more than 95% spherical and have uniform size distribution (CV <12%).

For custom sizes, formulations or bulk quantities please contact our customer service department.

Features

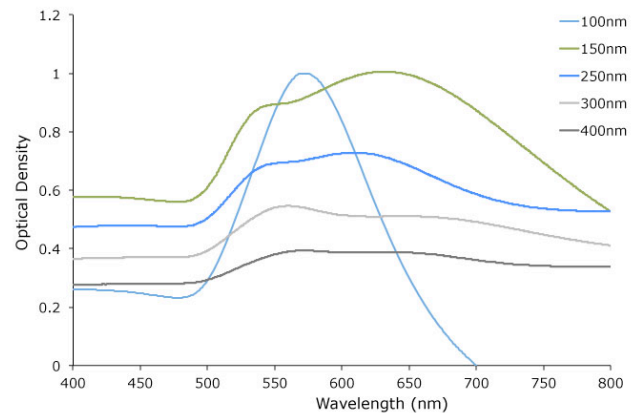
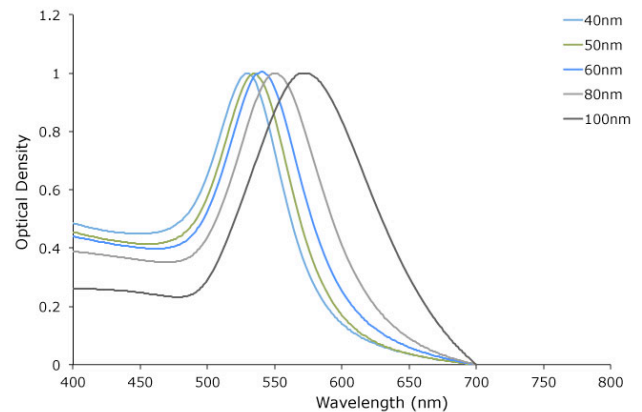
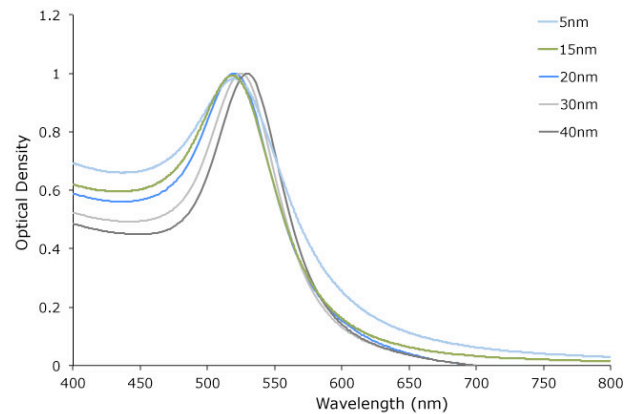
- Superior size distribution compared to the leading competitor; available from 5nm to 400nm.
- Exceptional protein binding characteristics
- Also available with multiple surface functionalities to suit all your needs. (Please see Cytodiagnosics PEGylated and Functionalized Gold Nanoparticles)

Applications

- Ideal for development of peptide and protein gold conjugates for use in applications such as blotting, lateral flow assays, LSPR assays, light microscopy, and transmission electron microscopy (TEM).

Characteristics

Core diameter: 5-400nm (Coefficient of Variance < 12%)
 Polydispersity Index (PDI): < 0.20
 Concentration: OD=1 (~ 0.05 mg/ml)
 Absorbance (λ_{max}): 510-570nm
 Supplied in 0.1mM Phosphate-Buffered Saline (0.01X PBS)



Protein Conjugation

A recommended starting protocol for conjugation of proteins to Cytodiagnosics standard gold nanoparticles can be found online at www.cytodiagnosics.com in the Technical Reference Section.



Diameter (nm)	Peak SPR Wavelength (nm)	NPS/ml	Wt. Conc. (mg/ml)	Molar Ext ($M^{-1}cm^{-1}$)	Size Dispersity (+/-nm)	Particle Volume (nm^3)	Surface Area (nm^2)	Surface/Volume Ratio	Particle Mass (g)	Molar Mass (g/mol)	Molar Conc.
5	515-520	5.47E+13	6.94E-02	1.10E+07	<15%	6.54E+01	7.85E+01	1.2	1.27E-18	7.64E+05	9.08E-08
10	515-520	5.98E+12	6.07E-02	1.01E+08	<15%	5.24E+02	3.14E+02	0.6	1.02E-17	6.11E+06	9.93E-09
15	520	1.64E+12	5.61E-02	3.67E+08	<12%	1.77E+03	7.07E+02	0.4	3.43E-17	2.06E+07	2.72E-09
20	524	6.54E+11	5.31E-02	9.21E+08	<12%	4.19E+03	1.26E+03	0.3	8.12E-17	4.89E+07	1.09E-09
30	526	1.79E+11	4.91E-02	3.36E+09	<12%	1.41E+04	2.83E+03	0.2	2.74E-16	1.65E+08	2.98E-10
40	530	7.15E+10	4.65E-02	8.42E+09	<12%	3.35E+04	5.03E+03	0.15	6.50E-16	3.91E+08	1.19E-10
50	535	3.51E+10	4.45E-02	1.72E+10	<10%	6.54E+04	7.85E+03	0.12	1.27E-15	7.64E+08	5.83E-11
60	540	1.96E+10	4.30E-02	3.07E+10	<10%	1.13E+05	1.13E+04	0.1	2.19E-15	1.32E+09	3.25E-11
70	548	1.20E+10	4.17E-02	5.03E+10	<10%	1.80E+05	1.54E+04	0.086	3.48E-15	2.10E+09	1.99E-11
80	553	7.82E+09	4.06E-02	7.70E+10	<10%	2.68E+05	2.01E+04	0.075	5.20E-15	3.13E+09	1.30E-11
90	564	5.37E+09	3.97E-02	1.12E+11	<8%	3.82E+05	2.54E+04	0.067	7.40E-15	4.46E+09	8.92E-12
100	572	3.84E+09	3.89E-02	1.57E+11	<8%	5.24E+05	3.14E+04	0.06	1.02E-14	6.11E+09	6.37E-12
150		3.60E+09	1.20E-01		<8%	1.77E+06	7.07E+04	0.04	3.43E-14	2.06E+10	5.98E-12
200		1.91E+09	1.55E-01		<8%	4.19E+06	1.26E+05	0.03	8.12E-14	4.89E+10	3.17E-12
250		7.08E+08	1.13E-01		<8%	8.18E+06	1.96E+05	0.024	1.59E-13	9.55E+10	1.18E-12
300		4.50E+08	1.24E-01		<8%	1.41E+07	2.83E+05	0.02	2.74E-13	1.65E+11	7.48E-13
400		1.88E+08	1.22E-01		<8%	3.35E+07	5.03E+05	0.015	6.50E-13	3.91E+11	3.12E-13

Storage

This product should be stored at 4°C. DO NOT FREEZE. If stored unopened and as specified, Cytodiagnosics gold nanoparticles are stable for at least 6 months.

Handling

When stored for a long period of time gold nanoparticles may sediment at the bottom of the flask, which is especially true for larger particle sizes. Prior to use, re-suspend the sedimented particles by swirling until a homogenous solution is obtained.

To maintain optimal performance, and stability of the colloidal gold, care should be taken to use clean storage containers if using other than supplied with the product.

Washing Gold Nanoparticles

Although it is not generally necessary to wash the gold nanoparticles prior to use, some applications may require additional washing procedures. The easiest way to remove possible contaminants in the nanoparticles solution is by

centrifugation. Centrifugation force is dependent on size of the gold nanoparticles and should be adjusted according to Table I for optimal performance.

Note I: Since non-functionalized gold nanoparticles are sensitive to salt containing buffers, re-suspension should always be performed in ultra-pure water to prevent irreversible aggregation. Irreversible aggregation is characterized by a clear to bluish solution upon the addition of salt.

Note II: Please note that centrifugation can induce aggregation. To prevent aggregation it may be necessary to add Tween 20 at a concentration of 0.025% w/v.

Procedure

1. Place 1ml aliquot of colloidal gold in a 1.5ml micro centrifuge tube.
2. Centrifuge the gold nanoparticles for 30 minutes using the appropriate G force determined by referencing Table I.
3. Remove the supernatant and re-suspend in an appropriate volume of ultra-pure water.
4. Vortex to re-disperse the particles.



Table I. Appropriate G forces for centrifugation of gold nanoparticles. Note that recommended conditions are for a volume of 1ml and centrifugation using a microcentrifuge, except for 5nm gold nanoparticles that requires an ultracentrifuge.

Size (nm)	Speed (g)	Time (min)
5	100,000	30
10	17,000	60 (~50% recovery)
15	17,000	30
20	6,500	30
30	4,500	30
40	2,500	30
50	2,000	30
60	1,125	30
80	600	30
100	400	30
150	180	30
200	100	30

Product Safety and Handling

This product is for R&D use only, not for drug, household, or other uses. Please review the material safety datasheet (MSDS) available online for proper safety and handling procedures.

Ordering Information

For ordering call 866-344-3954 or visit us online at www.cytodiagnosics.com



Catalog Number	Description	Sizes
G-5-XX*	5nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-10-XX	10nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-15-XX	15nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-20-XX	20nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-30-XX	30nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-40-XX	40nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-50-XX	50nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-60-XX	60nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-70-XX	70nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-80-XX	80nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-90-XX	90nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-100-XX	100nm Standard Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
G-150-XX	150nm Standard Gold Nanoparticles	20ml, 100ml, or 500ml
G-200-XX	200nm Standard Gold Nanoparticles	20ml, 100ml, or 500ml
G-250-XX	250nm Standard Gold Nanoparticles	20ml, 100ml, or 500ml
G-300-XX	300nm Standard Gold Nanoparticles	20ml, 100ml, or 500ml
G-400-XX	400nm Standard Gold Nanoparticles	20ml, 100ml, or 500ml

*Indicates quantity, e.g. G-5-20 for 20ml of 5nm Standard Gold Nanoparticles

For custom sizes (up to 400nm available), bulk quantities, and custom gold nanoparticle surface chemistry, please contact our customer service department.