Silver Nanoparticles and Supercritical CO2: Price, Daily Output, and Revenue Potential

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https://www.infinityturbine.com/using-sco2-to-make-silver-nanoparticles-price-output-and-revenue-by-infinity-turbine.html

What is the market price per gram for silver nanoparticles, how much can a 10 liter supercritical CO2 system reasonably produce per day, and what daily revenue does that translate into. This article provides realistic price ranges, production assumptions, and a simple revenue model.

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1. Current value per gram for silver nanoparticles

There is no single official price for silver nanoparticles. The value depends on:

Particle size and distribution
Surface treatment (bare, coated, functionalized)
Purity and quality control
Order size (grams vs kilograms)

Looking at current commercial listings:

Specialty suppliers and research vendors quote prices that often exceed 50 to 80 EUR per gram for very small quantities (for example 1 gram of 18 nm silver nanoparticles at 85 EUR per gram).
Industrial and wholesale sources (Made in China, Alibaba) advertise nano silver powders in the range of about 1.5 USD per gram to several thousand USD per kilogram, depending on grade and volume.
One technical analysis aimed at hydrodynamic-cavitation production assumed a realistic wholesale entry price of around 3 USD per gram to 6 USD per gram for 10–40 nm silver nanoparticles in the mid-2010s to early 2020s.

From these data points, a practical working range for bulk, non-functionalized silver nanoparticles is:

Low industrial range: about 1.5 USD per gram
Mid wholesale range: about 3 USD per gram
High specialty range: 5 USD per gram and above

For the rest of this article, we will use:

A base price of 3 USD per gram (typical wholesale for good quality nano silver).
A low case of 1.5 USD per gram and a high case of 5 USD per gram to show sensitivity.

2. How many grams per day from a 10 L sCO2 machine?

A 10 liter supercritical CO2 system is small-to-medium pilot scale. Actual nanoparticle throughput depends on:

1. The process (supercritical antisolvent, impregnation, RESS).
2. Solute concentration in the feed solution.
3. Target particle size and quality (tighter specs usually mean slower runs).
4. Cycle time (pressurize, run, depressurize, clean, reload).

Because there is no universal standard, we must make explicit assumptions for a reasonable engineering estimate.