



Coated Silver®

# CERTIFICATE OF ANALISES

## COLLOIDAL COATED SILVER CONCENTRATE

<b>Expiration Date:</b>	7/23/2025
<b>Supplier:</b>	Noble Elements LLC, 1621 Central Ave., Cheyenne, WY, 82001
<b>Sample Description:</b>	Stable aqueous dispersion silver nanoparticles coated with natural resin. Nominal particle size: $10 \pm 2$ nm Nominal silver concentration is $2.0 \pm 0.05$ wt.%
<b>Sample Appearance:</b>	Odorless, dark brown liquid
<b>CAS#:</b>	7440-22-4
<b>Lot/Batch Number:</b>	072315
<b>Manufacture Date:</b>	07/23/18
<b>Country of Origin:</b>	United States of America

### Product Specification

Initial Silver content	(ICAP)	$2.0 \pm 0.2$ wt%
Average particles size	FESEM histogram	$10 \pm 2$ nm
UV-Vis Range	$\lambda_{\max}$ (UV-Vis)	400-404 nm
UV-Vis Plasmon Actual	Absorbance max	401 nm

### Sample analysis

*Silver content	ICAP	2.00 wt%
Average particles size	FESEM histogram	10. 0 nm
UV-Vis	$\lambda_{\max}$	401 nm
UV-Vis	Absorbance at 550nm/Absorbance max	0.06

\* Analysis performed by an external laboratory

<b>Silver Is True Colloidal</b>	Silver Metallic Silver Ionic Silver	100% trace
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<b>Silver Nanoparticles Do Not Clump</b>	Particles stay dispersed as testified by lack of background Uv-Viz absorption above 530-550 nm.
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<b>Size of particles</b>	Average particles size by FESEM histogram	10 ± 2 nm
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<b>Contaminants:</b>	Absent (zero)
Heavy Metals:	Absent (zero)
Impurities:	Absent (zero)
Microbiology:	Not Tested

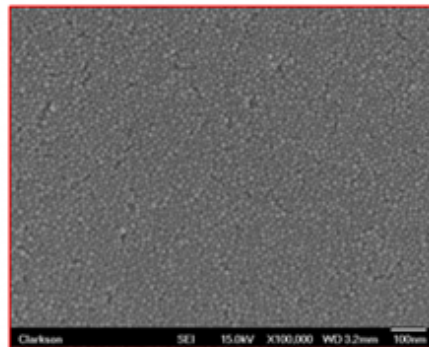
**Contaminant analysis by ICAP** (Inductively Coupled Atomic Plasma) – resolution 50 ppb.

Results: All inorganic elements absent. Undetectable.

### **Field Emission Scanning Electron Microscopy (FESEM) Results:**

Direct Realistic Image of Product

Coated Silver Emission Electronic Microscopy  
The ONLY realistic visualization of nanoparticles  
Uniform 10 nm particles are seen



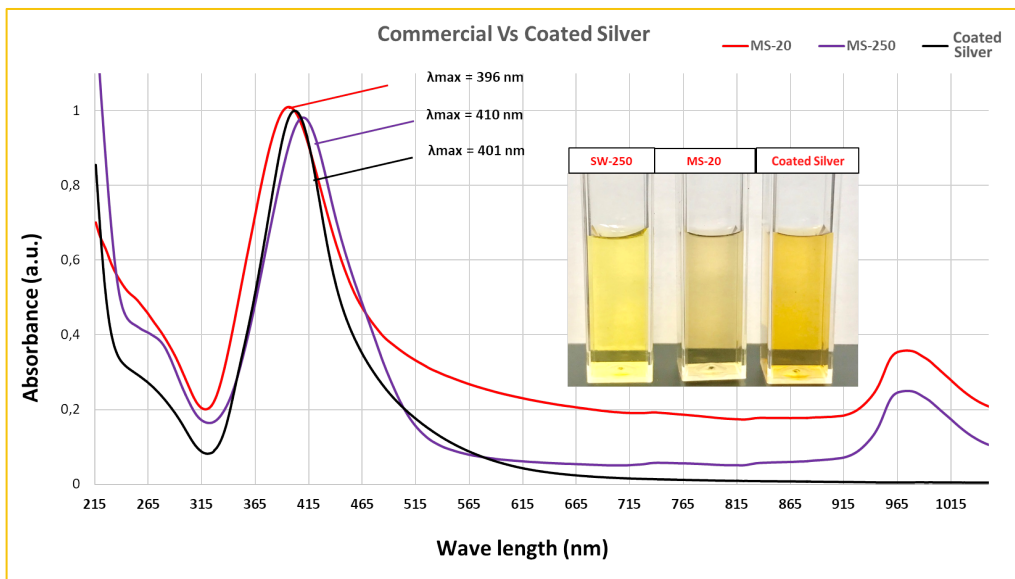
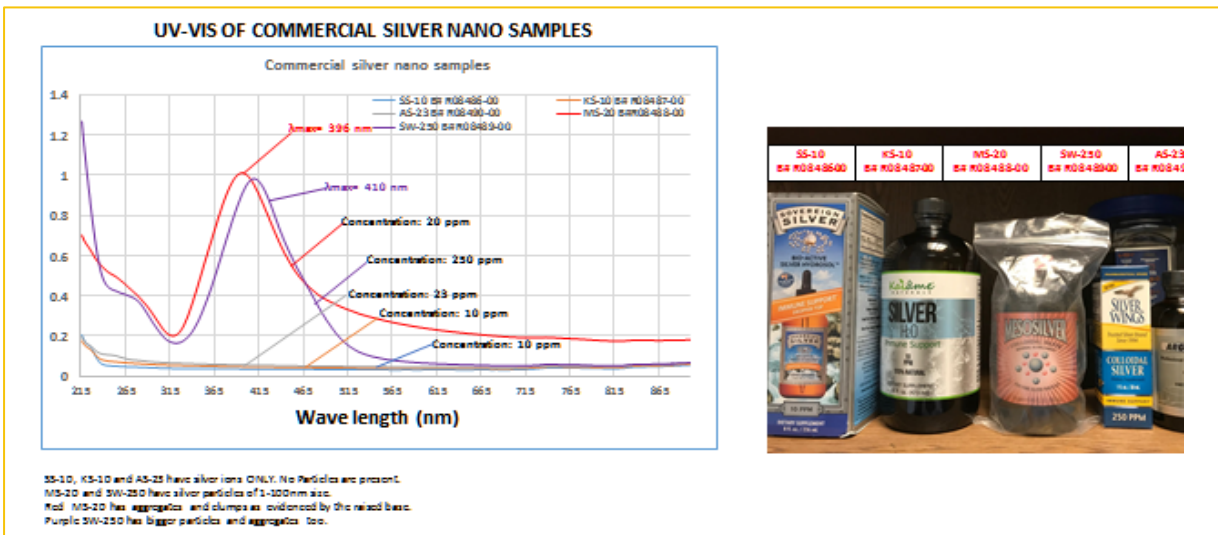


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### Competition Analysis By UV-Viz Spectrometry:

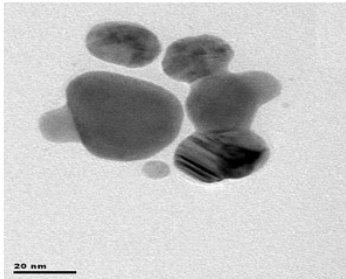
**Results:** 3 competitors samples contain only ionic silver (no silver particles exists of any size) and 2 competitors samples contain coarse, clumpy, uncoated, unsafe colloidal silver.

Coated Silver contains small, highly uniform, coated 10 nm particles. Particles are not clumped and contain no impurities.

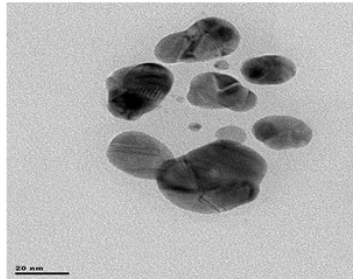




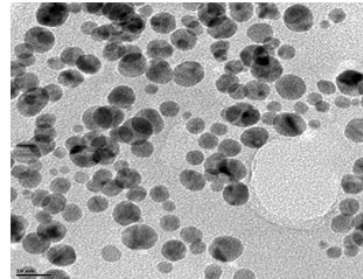
## TEM Analysis



MS-20



SW-250



Coated Silver

**Chief Science Officer Approved:** Dr. Dan V. Goia, PhD

**Chief Medical Officer:** Calin V. Pop, MD

**Nobel Elements CEO:** Nodari Rizun

**Date:** 07/23/2018