



Cu-9 SCHULTZ

LOW COST METALLIC LIQUID COPPER NANOPARTICLES

A SCHULTZ COMPANY

www.industrialnano.cl

NEW COPPER REVOLUTION

Protecting people from infections of bacterias and fungus through low cost industrial metallic nanocopper.

We produce metallic copper nanoparticles 7 nm average size suspended in aqueous solution. This low cost industrial additive allows to transfer antimicrobial copper properties to many different bases.

Its characteristic and the high surface contact given by nanoparticles create the same effects as we where working with metallic liquid copper at room temperature.





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COMPETITIVE ADVANTAGES

THE MAIN DIFFERENCES BETWEEN OUR TECHNOLOGY AND SIMILAR PRODUCTS IN THE MARKETS ARE:

PRICE

60-80% lower.

LONG TERM METALLIC

Metallic copper (zero valent) nanoparticles stabilized in liquid colloidal system. Its allow simple mixed with many matrices (paints, plastics, and others) granted long term protection unlike copper salts.

HIGH CONCENTRATION, SMALL SIZE

Concentrations of 7.500 ppm and 7 nanometer metallic copper nanoparticles size stabilized, provides high surface contact areas and homogeneity in final products.

SAFETY AND EASY HANDLING

As "Cu-9 Schultz" is a liquid solution, its avoid dust suspension which can be inhaled by workers and agglomerations in final products using only industrial mixer.

Non-toxic under OCDE Test Guidelines



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LONG TERM PROTECTION METALLIC PAINTS

Using our technology in combination with water base paint we can grant long term surfaces protection at low cost, similar as we install layer of metallic copper in those surfaces.

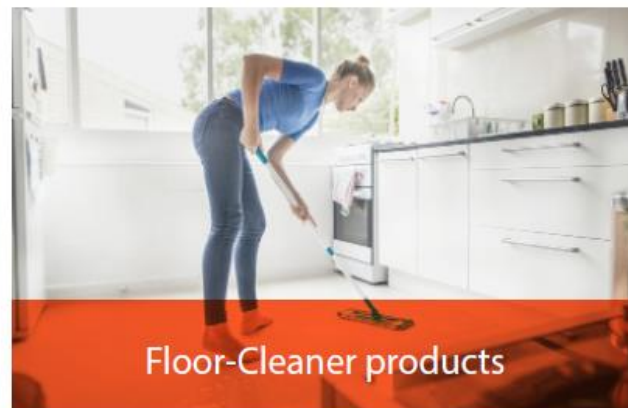
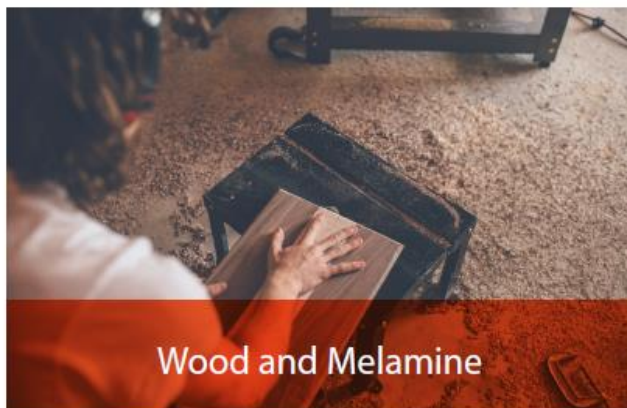
WE DEVELOPED:

Epoxic water base paint

Water base paint for clinic and homes

Vitrifying Varnish for surfaces (desk, floor, chairs among other)-> Development process







ABOUT US:

HOLDING SCHULTZ

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"Schultz" companies has been giving industrial engineering solutions since 1986 (33 years). Nowadays, our group is formed by three main companies specialized in:

- 1) Fire protection and emergency exit engineering analysis.
- 2) Industrial constructions and solutions.
- 3) Automation processes (robotic and pneumatics applied engineering).
- 4) NEW CHEMICAL COMPANY





NEW CHEMICAL COMPANY

TEAM AND RESOURCES

Our goal es to innovate and create chemical and nanotechnological industrial additives.

We produce "Cu-9 Schultz" in this new building where this recently company part of the holding is ubicated.

This new company born in the R+D area of "Schultz Ingenieria y maquinarias Ltda" (our main company) and start working on year 2017 in differents applications with multinational companies based on our quality product and group prestige on industrial solutions offered by Schultz companies since 1986.

TEAM

Team formed by 3 Ph. Doctors in material sciences chemistry and physics, one industrial engineer and one management engineer. Our team give us knowledge, resources and innovation opportunities to create new industrial additives.



ACTUAL PRODUCTION

Today we can produce more than 2.500 liters of "Cu-9 Schultz" per month with highly concentration of 7.500 ppm and nanoparticles average metallic copper size of 7 nanometers.

We can easily increase our production 10 times if required.



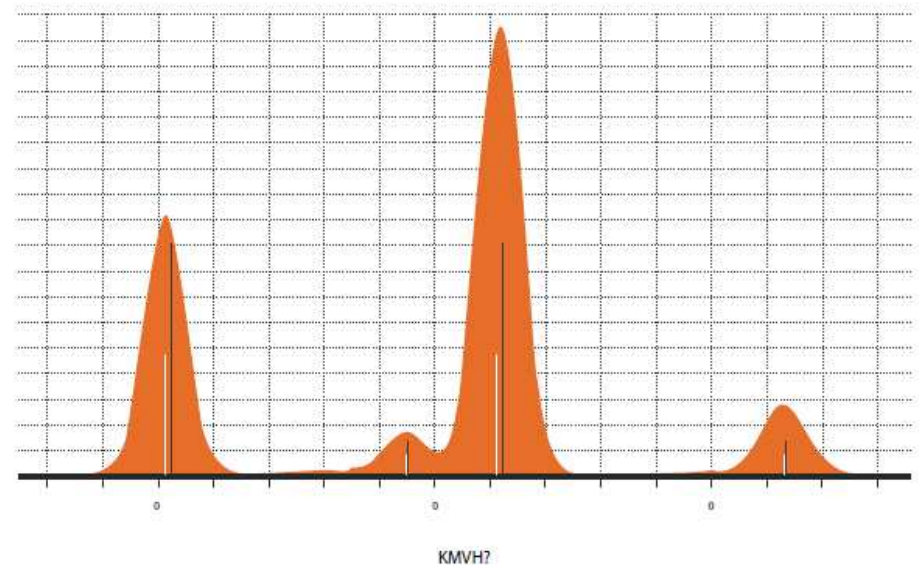
Cu-9 Schultz: CHARACTERIZATION

We continuously perform “Cu-9 Schultz” through different analysis in public and private laboratories which make us sure to know the size, concentration and effectiveness of this great product.

Copper concentration of “Cu-9 Schultz” formula has been continuously checked by Total Reflection X-ray Fluorescence (TXRF). The analysis were performed in a private laboratory called SAX.

The information was corroborated by Atomic Absorption Spectroscopy (AAS) in a private laboratory called OBENS under chilean regulation NCh3392.

Elemento	Conc. (mgL ⁻¹)
Cu	8218



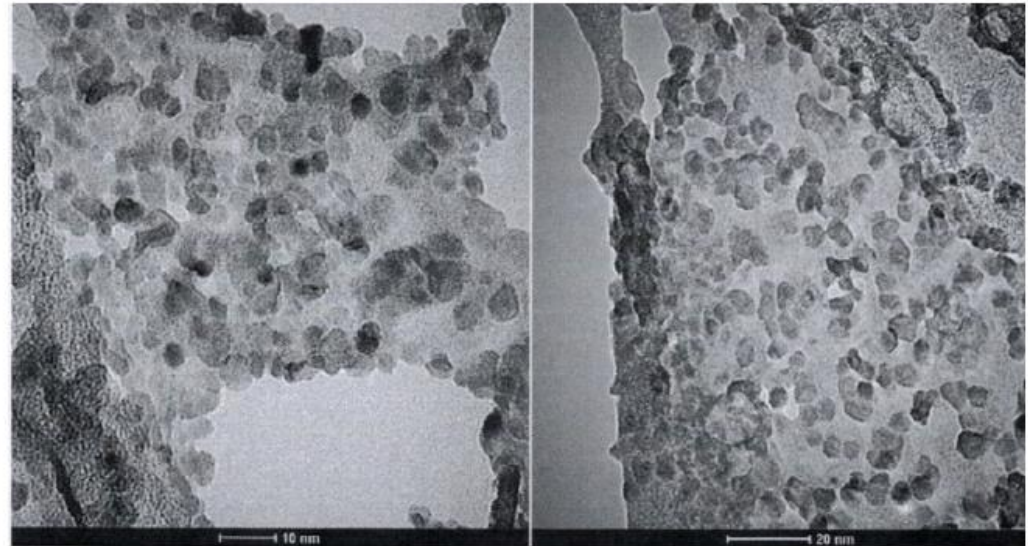


Cu-9 Schultz:

CHARACTERIZATION

We performed transmission electronic microscopy analysis (TEM) in one of the best universities of Chile, "Universidad de Chile", determined nanoparticle sizes. The study concludes as a result metallic copper nanoparticles with average size of 7 nanometers.

We also made the same analysis in "Universidad de Santiago" (CEDENNA), showing similar results .

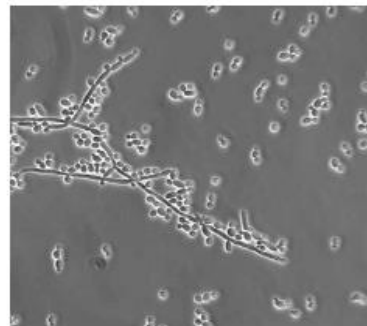




Cu-9 Schultz: BIOCIDAL EFFICACY

By ISO standard 22196:2011 we test "Cu-9 Schultz" + PAINT in its effectiveness against bacteria and fungi such as *E. coli*, *S. aureus*, *L. monocytogenes* and *C. albicans*.

This analysis corroborate EPA registration and "Cu-9 Schultz" effectiveness for different uses as a antimicrobial additive based on low cost metallic nanocopper.



Formula	Cu-9 Schultz/gal (grs)	% I		
		6 horas	8 horas	24 horas
Paint with biocide	-	68.53	98.14	98.74
Paint + Cu-9 Schultz 1	89.7	97.68	99.77	99.99
Paint + Cu-9 Schultz 3	138.0	98.83	99.96	99.99

Table: Differences between paints with commercial biocide v/s paint + "Nanomit"



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CERTIFICATION LABORATORIES & INSTITUTIONS





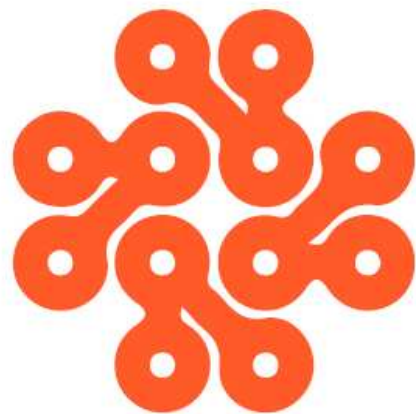
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SUPPORT ENTITIES



A close-up photograph of two hands, one in a grey sweater and one in a brown sweater, gently holding a small, realistic globe of the Earth. The background is a soft, warm, orange-toned light, suggesting a sunset or sunrise. The text is overlaid in the center of the image.

ANTIMICROBIAL PROTECTION
AND SAFETY THROUGH LOW COST
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