

# Technical Information Bulletin



## CuLox Silver Powder Photovoltaic

CuLox Fines  
(0.5, 1, 2 micron)  
0005, 0010, 0020

CuLox Fines High Density  
(0.5, 1, 2 micron)  
0005HD, 0010HD, 0020HD

CuLox Fines—Flakes  
(3 micron)  
0030F

### Description

High purity fine silver particulates with critically controlled size, density and morphology. Designed for low temperature fired flexible substrates in solar cells.

### General Application

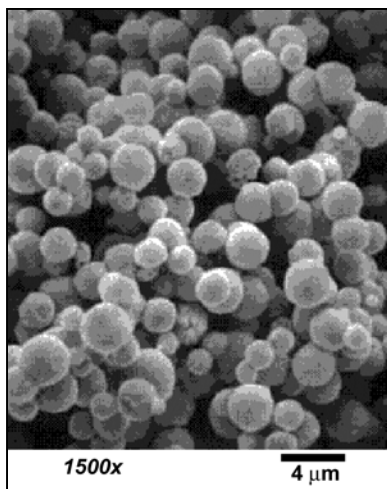
Conductive paste and inks for photovoltaic applications in thin film and polycrystalline silicon solar cells.

Purity  
Nominal Chemistry  
(Levels of  
impurity, wt%)

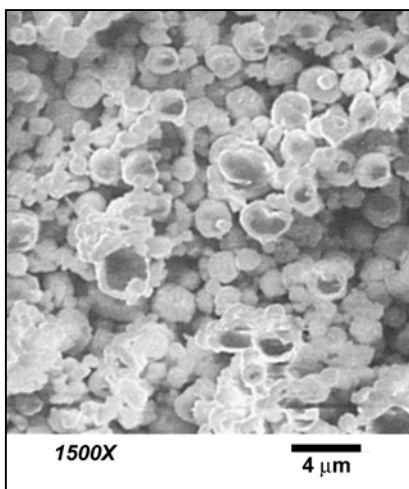
### Nominal Chemistry (Impurity Levels, wt%)

Products	Regular Powders			High Density Powders			Flakes
	0005	0010	0020	0005HD	0010HD	0010HD	0030F
Ag (minimum)	99.8	99.8	99.8	99.8	99.85	99.85	99.9
Total Heavy Metals max (Cu, Ni, Pb, Fe)	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Alkali Metals (combined)	0.01	0.01	0.01	0.01	0.01	0.01	0.005
Weight loss (1000°F)	1.2	2.5	2.5	1.2	1.7	1.7	0.9

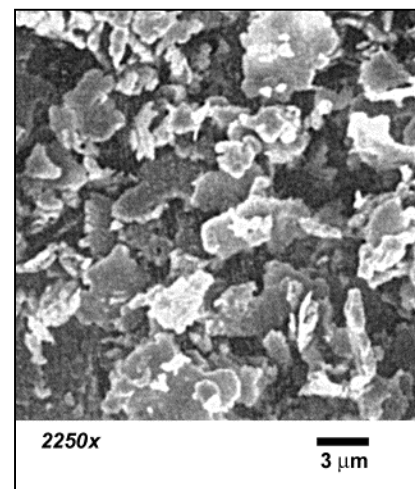
Typical SEM



Typical SEM Photo of Silver Powder (0020) 2 Micron Powder



Typical SEM Photo of Silver Powder (0020HD) 2 Micron High Density



Typical SEM Photo of Silver Flake (0030F) 3 Micron Flake

Physical  
Properties

Products	Regular Powders			High Density Powders			Flakes
	0005	0010	0020	0005HD	0010HD	0020HD	0030F
Size (D <sub>50</sub> ) (Microtrac)	0.25-1.0	1.0-2.0	1.50-3.0	0.4-1.2	0.7-1.8	1.3-3.2	3-5
Specific Surface Area (m <sup>2</sup> /g)	1.0-2.5	1.0-3.0	0.25-1.50	1.0-2.6	0.5-1.2	0.3-0.7	0.6-1.2
Tap Density (gm/cc)	1.25-3.0	2.0-4.5	3.0-5.0	1.6-3.0	3-5	3.5-5.5	2.5-4.0
Apparent Density (g/in <sup>3</sup> )	9-20	20-48	22-51	18-28	30-50	44-64	28-38

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