Technical Information Bulletin

Solder Powders Used in Electronics

Powders and Products

The trend in the electronic industry towards increased packaging density requires the use of solder pastes that can be deposited at fine pitch with greater dimensional control. This requirement dictates the size of powders to be used for solder paste formulations. Physical attributes of powders such as its shape, morphology and size distribution affect metal loading, paste rheology and its reflow characteristics. Control of chemical impurities and oxygen content is required as these can adversely affect the metallurgical quality of the bond formed after the reflow operation.

CuLox offers lead-free solder powders for paste formulations. Our powders are spherical and practically satellite free. The size cuts for all the grades are sharp and narrow. Overall chemistry, and particularly, the oxygen content are tightly controlled at various stages of manufacturing. Special care is taken in packaging, storage and transportation.

Nominal Compositions (actual composition based upon customer specification)

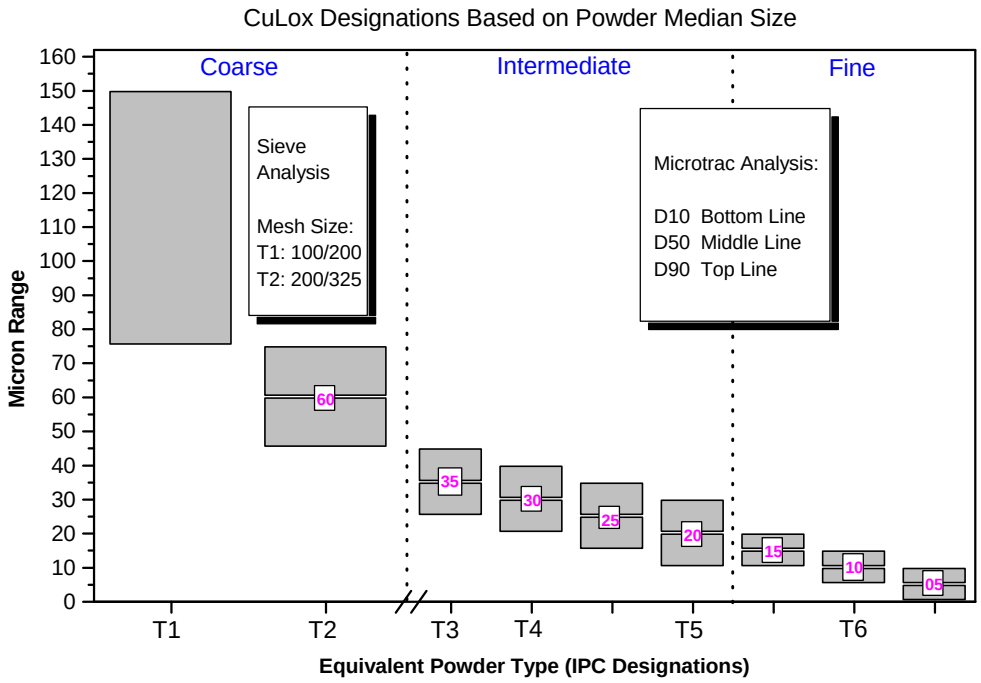
Lead Free

Type 2100: Sn/ 3.5-4.0 Ag/ 0.5-0.7 Cu Type 2800 80 Sn / 20 Bi
Type 2400: 42 Sn / 58 Bi
Type 2600: 60 Sn / 40 Bi

Size Distribution

Sieve analysis method of determining particle size distribution lacks the accuracy and precision that is required to adequately characterize powders for solder paste applications. This is especially true as particle size gets smaller (45 micron and finer). CuLox uses a Laser Diffraction Technique (Microtrac analysis) to determine powder particle size distribution.

The chart below shows CuLox designations based on median size (D50) for solder powders using Microtrac analysis and the equivalent powder type per IPC standard J-STD-006A.



Powder Nomenclature

Powder designations are based on the composition type (XX) and median size in micron (YY) by Microtrac.

XXYY
2 1 3 0 (example)

21 = Sn/4.0 Ag/0.5 Cu
30 = median size in micron

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