

SFT3000S Measurement of Sn-Bi Coating

1. Overview

Sn-Bi solder coating has recently been used as one type of substitute solder that is Pb-free. This application brief offers instructions for measuring Sn-Bi solder coating with the Thin Film FP Method. Conditions for creating a calibration curve to measure Sn-Bi solder coating differ slightly depending on whether the base is of Cu or not.

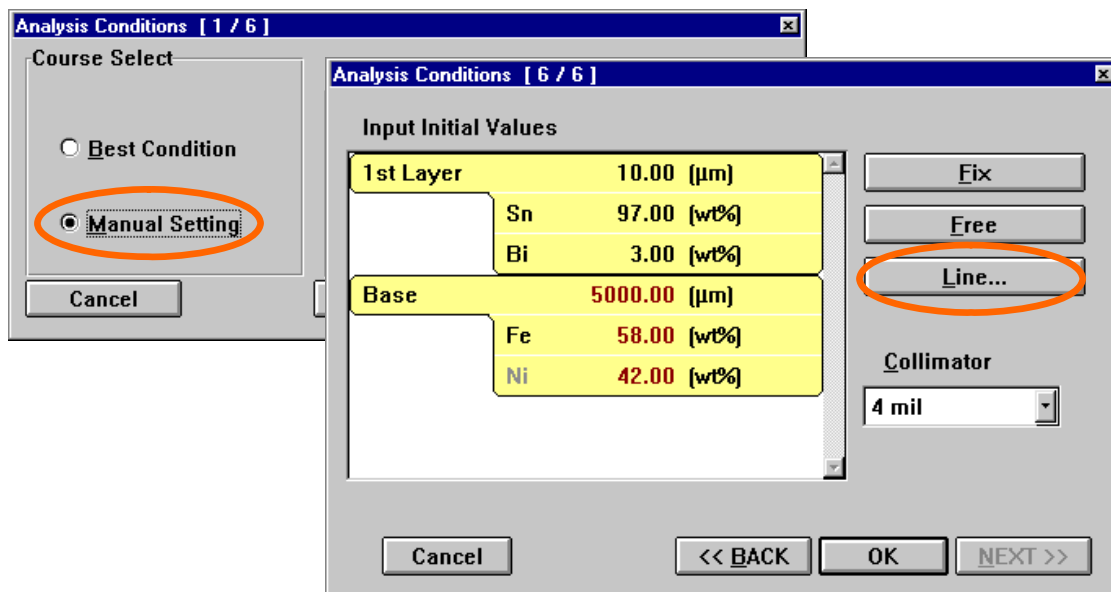
2. Analysis Conditions

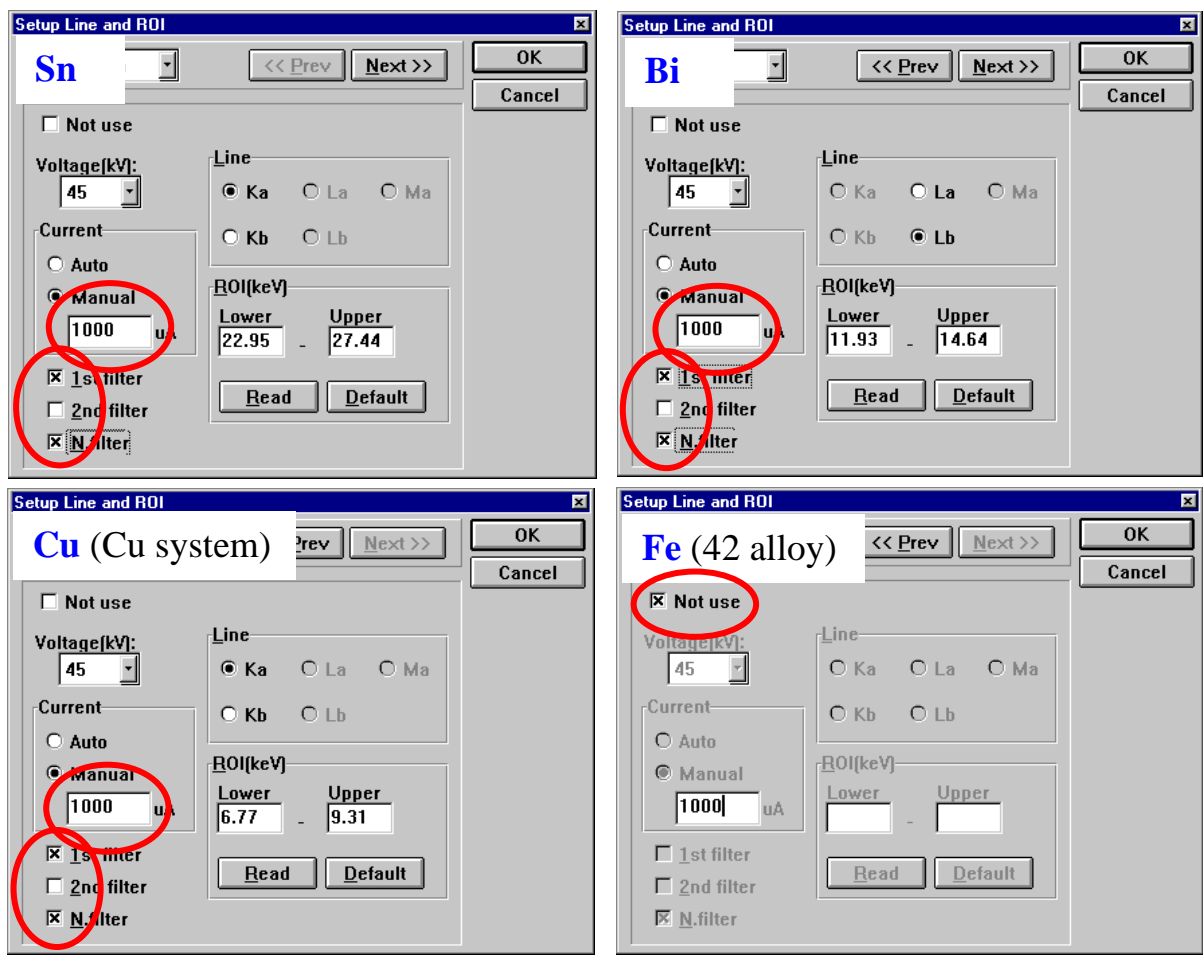
Conditions of analysis are listed in the following table.

	Method of Calc	Changes	Current
Cu system	Base used in calculation	Use N. filter	1000 uA
Systems other than Cu	Base not used in calculation	Use N. filter	1000 uA

To set the conditions, select **Manual Settings** in the **Analysis Conditions 1/6** dialog then click on the **Line...** button in **Analysis Conditions 6/6** dialog. This will open the **Setup Line and ROI** window. Both conditions can be changed in this window. The actual setting locations in the software are displayed below.

Infinite thickness samples are required for Sn, Bi, and the base.





3. Known Sample Correction

The following standard samples are available and should be selected to match the measurement thickness.

	Thickness (um)	Bi (wt%)	Measurable thickness range target
#1	8	3	5 to 15 um
#2	13	3	7 to 20 um

4. Measurement Dispersion

Several standard sample measurements using the conditions above are shown hereafter. Results of 10 repeated measurements are thickness and Bi% measurement ranges, and should be considered as target values

Sample	Collimator	Time	Thickness Range	Bi% Range
#1	0.1 mm	30 seconds	0.07	1.42
#1	0.2 mm	30 seconds	0.13	0.74
#2	0.1 mm	30 seconds	0.38	0.71
#2	0.2 mm	30 seconds	0.16	0.55