The Institute for Interconnecting and Packaging Electronic Circuits
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IPC-TM-650
TEST METHODS MANUAL

Number	
2.2.14.1	
Subject **Solder Powder Particle Size Distribution—Measuring Microscope Method**	
Date **1/95**	Revision
Originating Task Group **Solder Paste Task Group (5-24b)**	

1.0 Scope This test specifies a standard procedure for estimating the particle size and the particle shape of solder powder in solder pastes by microscopic methods.

2.0 Applicable Documents None

3.0 Test Specimen

1 gram of solder paste

4.0 Equipment/Apparatus

Thinner

Spatula

Beaker 30 ml

Microscope, magnification 100 times

Measuring ocular, scale division 10 µm

Microscope slides

Microscope glass cover slips

5.0 Procedure

5.1 Preparation

5.1.1 Wait, if necessary, until the solder paste is at room temperature.

5.2 Test

5.2.1 Homogenize the paste by stirring with the spatula.

5.2.2 Weigh approximately 4 g of thinner.

5.2.3 Add approximately 1 g of the solder paste.

5.2.4 Stir with the spatula until a uniform mixture has been obtained.

5.2.5 Apply a small drop on the microscope slide.

5.2.6 Cover the slide with the cover slip and press gently to spread out the small drop between the glasses.

5.2.7 Measure with the microscope the length and width of the estimated smallest and largest solder powder particles in a viewing area of approximately 50 particles. (Photographs may be used for measuring and/or reference purposes).

5.2.8 Estimate the principle shape of the particles as spherical or non-spherical.

5.3 Evaluation Express the masses of the powder above, within, and below the nominal size range as percentages of the mass of the original sample. Enter data in Table 1.

Table 1

Type 1	+150µm _____	+75 µm _____	+20 µm _____	–20 µm _____
Type 2	+ 75 µm _____	+45 µm _____	+20 µm _____	–20 µm _____
Type 3	+ 45 µm _____	+25 µm _____	+20 µm _____	–20 µm _____
Type 4	+ 38 µm _____	+20 µm _____	–20 µm _____	
Type 5	+ 30 µm _____	+15 µm _____	–15 µm _____	
Type 6	+ 15 µm _____	+ 5 µm _____	– 5 µm _____	