The Institute for Interconnecting and Packaging Electronic Circuits
2215 Sanders Road • Northbrook, IL 60062

IPC-TM-650
TEST METHODS MANUAL

Number	
2.2.14.3	
Subject **Determination of Maximum Solder Powder Particle Size**	
Date **1/95**	Revision
Originating Task Group **Solder Paste Task Group (5-24b)**	

1.0 Scope This test method is designed to determine the maximum (average) solder particle size in a solder paste using a fineness of grind gauge.

2.0 Applicable Documents

ASTM D-1210-79 Fineness of Dispersion of Pigment-Vehicle Systems

3.0 Test Specimen At least 100 grams of uniformly mixed solder paste.

4.0 Equipment/Apparatus Gauge-Hegman Type CMA 185*, or equivalent, in accordance with ASTM D1210-79. A hardened steel, stainless steel, or chrome-plated steel block approximately 175 mm in length, 65 mm in width, and 13 mm thick.

The top surface of the block shall be ground smooth and flat and shall contain one or two grooves 140 mm in calibrated length and 12.5 mm wide parallel to the longer sides of the block.

Each groove shall be tapered uniformly in depth lengthwise from a suitable depth (for example 50 to 100 micrometers) at 10 mm from one end to zero depth at the other with intermediate calibrations in accordance with the depth at these points.

Scraper—A single- or double-edged hardened steel, stainless steel, or chrome-plated steel blade 90 mm long, 38 mm wide, and 6.4 mm thick. The edge or edges on the long sides shall be straight and rounded to a radius of approximately 0.38 mm.

5.1 Test

5.1.1 Using a fineness of grind gauge (Hegman) Type CMA 185 or equivalent in accordance with ASTM D-1210 determine the maximum and average particle size of the powder.

5.2 Evaluation Acceptance of each type of powder shall be based on the specifications listed in Table 1. Enter the results in Table 2 ''Test Report on Solder Paste.''

*Source: Precision Gage & Tool Co. 28 Volkenand Ave., Dayton, Ohio 45410 513/254-8404

Table 1

	1st	4th	Major
Type 1	160µm	150 µm	140 µm
Type 2	80µm	75 µm	65 µm
Type 3	50µm	45 µm	40 µm
Type 4	40µm	38 µm	35 µm
Type 5	30µm	25 µm	23 µm
Type 6	20µm	15 µm	15 µm

Table 2 Test Report on Solder Paste

Enter appropriate information in top portion of report and complete report by entering the test results or checkmarks in the appropriate spaces.

Inspection Purpose:
__ Qualification
__ Quality Conformance A
__ Quality Conformance B
__ Shelf-Life Extension
__ Performance

QPL I.D. Number: _____
Manufacturer's Identification: _____
Manufacturer's Batch Number: _____
Date of Manufacture: _____
Original Use-By Date: _____
Revised Use-By Date: _____

Date Inspection Completed: _____ Overall Results: __ Pass __ Fail
Inspection Performed by: _____ Witnessed by: _____

Inspections	User's Actual Requirement	Test Result	P/F (*)	Tested by & Date
Material				
Visual				
Metal Content				
Viscosity				
Solder Ball				
Slump				
Alloy				
Flux				
Powder Size				
% In Top Screen				
% In Next Screen				
% In Bottom Screen				
% In Receiver Bottom				
Max. Powder Size				
Powder Shape				
Tack				
Wetting				

* P/F = PASS/FAIL; enter P if test results are within tolerance of actual requirement; otherwise, enter F