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HENKEL CORPORATION

IPC-TM-650

DIELECTRIC CONSTANT AND DISSIPATION FACTOR

Material Designation: Thermoplastic

Report Number: 32930

(1 of 7)

First In Test Technology & Expertise

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SUBMISSION IDENTIFICATION

The following lot(s) were submitted and received in a suitable condition for testing as requested:

DATE RECEIVED: 9/4/2008

REPORT DATE: 9/11/2008

PURCHASE ORDER NUMBER: 4550059371

MATERIAL DESIGNATION: Thermoplastic

LOT NUMBER(s): PA 6208S
PA 633
PA 638
PA 641
PA 646
PA 657
PA 673

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IN ACCOUNT WITH:

HENKEL CORPORATION

15350 BARRANCA PARKWAY

IRVINE, CA 92618

(949)789-2506

Attention: Jeff Bowin



DIELECTRIC CONSTANT AND DISSIPATION FACTOR

TEST SPECIMEN

The size and quantity of test specimen(s) shall be three 2" x 2" specimens to accommodate the test fixture.

REFERENCE

ASTM-D150; IPC-TM-650, Method 2.5.5.9

REQUIREMENT

When tested in accordance with ASTM-D150; IPC-TM-650 and Method 2.5.5.9, the Dielectric Constant and Dissipation Factor shall be as specified.

METHOD

Sample Preparation. From the sample to be tested, route three 2.0" x 2.0" square specimens.

Test. Insert the Dielectric Constant/Dissipation Factor Diskette into the Hewlett Packard Impedance Material Analyzer. Follow the user friendly instructions which appear on the monitor, utilizing the OS standard, the 0 ohm standard, the 50 ohm standard, the HP 16453A fixture and the Teflon standard in sequence as prompted on the monitor.

Using a micrometer, measure the specimen thickness in millimeters and record as "T_s", the average thickness as nearly as possible to within +/- 0.0025mm. Place the specimen between 16453A electrodes in close contact with electrodes and with the specimen not touching the back wall of the fixture. As prompted on the monitor, type in the thickness of the specimen. Allow the analyzer to measure and then record the mean value for Dielectric Constant and the mean value for Dissipation Factor as indicated on the monitor. Remove the specimen from between the 16453A electrodes and repeat the steps for each specimen tested.

Per the customer request, the specimens were tested at 1 MHz, 1 GHz, and 1.8 GHz.

RESULTS

The samples, when tested as specified above, are submitted to the customer for its evaluation and disposition. Please see the attached pages for actual results.



IPC-TM-650
TESTING

DIELECTRIC CONSTANT AND DISSIPATION FACTOR @ 1 MHZ

CUSTOMER NAME: Henkel Corporation
MATERIAL TYPE: Thermoplastics
TEST TECHNICIAN: Simon Tran
PRODUCTION PERIOD: N/A

REPORT NUMBER: 32930
PURCHASE ORDER NUMBER: 4550059371
TEST DATE: 9/10/2008

		DIELECTRIC CONSTANT			
LOT NUMBER(s)	TEST RESULTS	Sample #1	Sample #2	Sample #3	AVERAGE
PA 6208S	Customer Evaluation	3.74	3.74	3.77	3.75
PA 633		3.87	3.85	3.79	3.84
PA 638		3.62	3.57	3.55	3.58
PA 641		3.35	3.41	3.39	3.38
PA 646		3.37	3.39	3.38	3.38
PA 657		4.08	4.10	4.12	4.10
PA 673		3.75	3.69	3.76	3.73

		DISSIPATION FACTOR			
LOT NUMBER(s)	TEST RESULTS	Sample #1	Sample #2	Sample #3	AVERAGE
PA 6208S	Customer Evaluation	0.084	0.084	0.085	0.084
PA 633		0.086	0.087	0.086	0.086
PA 638		0.076	0.076	0.076	0.076
PA 641		0.060	0.061	0.061	0.061
PA 646		0.058	0.058	0.058	0.058
PA 657		0.104	0.105	0.105	0.105
PA 673		0.084	0.084	0.085	0.084



IPC-TM-650
TESTING
DIELECTRIC CONSTANT AND DISSIPATION FACTOR @ 1 GHz

CUSTOMER NAME: Henkel Corporation
MATERIAL TYPE: Thermoplastics
TEST TECHNICIAN: Simon Tran
PRODUCTION PERIOD: N/A
REPORT NUMBER: 32930
PURCHASE ORDER NUMBER: 4550059371
TEST DATE: 9/10/2008

Table with 6 columns: LOT NUMBER(s), TEST RESULTS, Sample #1, Sample #2, Sample #3, AVERAGE. Rows include lot numbers PA 6208S, PA 633, PA 638, PA 641, PA 646, PA 657, PA 673 and their corresponding dielectric constant values.

Table with 6 columns: LOT NUMBER(s), TEST RESULTS, Sample #1, Sample #2, Sample #3, AVERAGE. Rows include lot numbers PA 6208S, PA 633, PA 638, PA 641, PA 646, PA 657, PA 673 and their corresponding dissipation factor values.



IPC-TM-650 TESTING DIELECTRIC CONSTANT AND DISSIPATION FACTOR @ 1.8 GHz

CUSTOMER NAME: Henkel Corporation REPORT NUMBER: 32930
MATERIAL TYPE: Thermoplastics PURCHASE ORDER NUMBER: 4550059371
TEST TECHNICIAN: Simon Tran TEST DATE: 9/11/2008
PRODUCTION PERIOD: N/A

Table with columns: LOT NUMBER(s), TEST RESULTS, Sample #1, Sample #2, Sample #3, AVERAGE. Rows include lot numbers PA 6208S, PA 633, PA 638, PA 641, PA 646, PA 657, PA 673.

Table with columns: LOT NUMBER(s), TEST RESULTS, Sample #1, Sample #2, Sample #3, AVERAGE. Rows include lot numbers PA 6208S, PA 633, PA 638, PA 641, PA 646, PA 657, PA 673.



CERTIFICATE OF CONFORMANCE

Microtek Laboratories certifies that the test equipment used complies with the calibration requirements of ANSI/NCSL Z540-1, IPC-QL-653, and ISO/IEC-17025 and that the data contained in this report is accurate within the tolerance limitation of this equipment.

The materials and/or devices furnished on this order have been tested/analyzed/and inspected in accordance with all designated instructions and specifications. Physical reports and other data pertinent to applicable specifications are on file and available for inspection at this plant.

All test procedures detailed are complete. If any additional information or clarification of this report is required, please contact us.

Thank you for selecting Microtek Laboratories for your testing requirements.

Report prepared by,

Respectfully submitted,

Simon Tran
Materials' Testing Department Supervisor
MICROTEK LABORATORIES

Russell S. Shepherd
Laboratory Manager
MICROTEK LABORATORIES