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Title: ELECTRICAL RESISTANCE

1.0 INTRODUCTION1.1 SCOPE

1.1.1 This document establishes the method for determining electrical resistance of 7 point card stock.

1.2 REFERENCES1.2.1 Specifications

IBM 894502 - Data Processing Card Stock 7 Point

1.2.2 Standards

TAPPI T402 - Conditioning Paper and Paperboard for Testing

1.3 AUTHORIZATION

1.3.1 This document is authorized by the Manager of Quality Assurance Consumables.

1.4 TEST EQUIPMENT/MATERIAL1.4.1 Resistance Meter1.4.2 Contact Plates

The lower contact consists of a ground and polished rigid metal plate at least 7 3/8" x 3 1/4" in area. The upper contact consists of a 7" x 3" x 3/8" metal plate with a ground and polished surface. The upper plate is weighted so that its total weight is 7.5 pounds.

2.0 PROCEDURE2.1 SAMPLE PREPARATION

2.1.1 The test sample shall consist of ten standard data processing cards which shall be handled only by the edges and be unsciled and free from creases and wrinkles.

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2.1.2 Environment for conditioning and testing shall be in accordance with TAPPI T402 ( $73 \pm 3.5^{\circ}\text{F}$  and  $50 \pm 2\%$  RH for a minimum of two hours).

NOTE: Because of the sensitivity of this test to moisture content, it is important that the paper shall be brought into equilibrium with standard conditions from a drier state.

### 3.0 TEST INSTRUCTIONS

NOTE: Refer to applicable specification (Reference 1.2.1) for actual value(s) to be tested.

- 3.1 Place the lower contact plate on a non-conductive rubber blanket.
- 3.2 Holding a card by the edges, place on the lower contact plate.
- 3.3 Place the upper contact plate on the card, with the edge of the card protruding beyond the plate on all four sides.

NOTE: Ensure there is a good contact between the plates and card by firmly performing 3.3 with a sliding motion.

- 3.4 Connect the two plates to opposite terminals of the resistance meter which has a capacity of a minimum of 1000 megohms at 50 volts.

### 4.0 REPORTING

- 4.1 The resistance of each of the ten cards is measured at 50 volts and the resistance reported shall be the average of the ten readings.

### 5.0 NOTES

- 5.1 The specification for electrical resistance is the interest of reducing accumulations of static electrical charges in cards. If cards are used at low humidity, there is a tendency of cards to become charged with static electricity. This causes the cards to adhere to each other if the charges are of opposite polarity or to repel each other if the charges are of the same polarity. If cards adhere to each other, it is difficult

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to joggle cards for feeding in machines. If cards repel each other, proper stacking of cards in sorter and collators may be interfered with. The most effective way of limiting the accumulation of static electrical charges in cards at low relative humidity is to limit the electrical resistance. Since the card must act as an insulator between brushes and contact rolls in machines, there is also a limit to how conductive the card may be. It is therefore necessary to provide both an upper and lower limit to the electrical resistance.