ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES

IPC-4110

Specification and Characterization Methods for Nonwoven Cellulose Based Paper for Printed Boards

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1 SCOPE

This specification covers paper made from cellulosic fibers intended as a reinforcing material in laminated plastics for electrical and electronic use.

1.1 Purpose This specification determines the nomenclature, definitions, and general, chemical, and physical requirements for paper made from cellulosic fibers.

1.2 Classification This specification provides physical and chemical characteristics of the paper required to meet the design and performance requirements of PWBs.

2 APPLICABLE DOCUMENTS

2.1 IPC[1]

IPC-T-50 Terms and Definitions for Interconnecting and Packaging Electronic Circuits

2.2 TAPPI[2]

T 400 sp-95 Sampling and Inspecting a Single Lot of Paper, Paperboard, Containerboard, or Related Product

T 402 om-93 Standard Conditioning and Testing Atmosphere for Paper, Board, Pulp Handsheets, and Related Products

T 404 om-92 Tensile Breaking Strength and Elongation of Paper and Paperboard (Using Pendulum-Type Tester)

T 410 om-93 Grammage of Paper and Paperboard (Weight per Unit Area)

T 411 om-89 Thickness (Caliper) of Paper, Paperboard, and Combined Board

T 412 om-94 Moisture in Paper and Paperboard

T 413 om-93 Ash in Paper and Paperboard

T 456 om-87 Wet Tensile Strength

T 460 om-96 Air Resistance of Paper (Gurley Method)

T 509 om-96 Hydrogen Ion Concentration (pH) of Paper Extracts (Cold Extraction Method)

3 REQUIREMENTS

3.1 Terms and Definitions Other than the terms listed in 3.1.1 through 3.1.17, the definition of terms **shall** be in accordance with IPC-T-50 and TAPPI documents.

3.1.1 Absorptivity The rate of resin saturant pick-up into the paper.

3.1.2 Air Holes Small circular areas containing less fibers, which are caused by air bubbles.

3.1.3 Bagginess Material that is distorted, stretched, or deformed in the middle or along the edges of the sheet.

3.1.4 Caliper Variation (MD and CD) A sheet that is of uneven thickness in the width and length.

3.1.5 Cellulose Fibers Fibers derived from trees by pulping processes, cotton linter fibers, and mixtures of the two fiber types. These fibers may be bleached to a high brightness.

3.1.6 Conducting Particles Small foreign particles capable of conducting current.

3.1.7 Dents Indentations in the surface of the paper or in the edge of the roll.

3.1.8 Dirt Small dark particles of foreign origin (i.e., bark pieces, floor dirt, seed particles, or any other visible contaminants).

3.1.9 Edge Tear Tears in the edge of the paper.

3.1.10 Folds A permanent fold or crease in the paper, generally in the machine direction, occurring during processing or rewinding.

3.1.11 Holes An area in the paper where few or no fibers are present.

3.1.12 Poor Formation Very uneven distribution of fibers in the sheet, resulting in a mottled appearance.

3.1.13 Rough Surface Extreme uneven caliper, generally caused by poor formation.

1. IPC, 2215 Sanders Road, Northbrook, IL 60062, 847-509-9700, http://www.ipc.org
2. TAPPI, 1-800-322-8686 (U.S.), 1-800-446-9431 (Canada), +1-770-209-7303 (International), or visit http://www.tappi.org for a list of local TAPPI divisions