ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES

IPC-4130

Specification and Characterization Methods for Nonwoven “E” Glass Mat

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1 METHODOLOGY

1.1 Scope This specification covers mat made from nonwoven ''E'' glass fibers intended as a reinforcing material in laminated plastics for electrical and electronic use.

1.2 Purpose This specification determines the nomenclature, definitions, general comments, and physical requirements for mat made from nonwoven ''E'' glass.

1.3 Classification This specification provides physical characteristics of the mat required to meet the design and performance requirements of the PWBs.

2 APPLICABLE DOCUMENTS

2.1 IPC[1]

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

IPC-PC-90 General Requirements for Implementation of Statistical Process Control

2.2 TAPPI[2]

T 251 wd[3]-96	Air Permeability of Porous Papers, Fabrics, and Pulp
T 411 om-89	Thickness (Caliper) of Paper, Paperboard, and Combined Board
T 456 om-87	Wet Tensile Breaking Strength of Paper and Paperboard
T 1007 om-92	Sample Location
T 1008 om-92	Test Conditions for Fiberglass Mat Test Methods
T 1009 om-92	Tensile Strength and Elongation at Break
T 1011 om-92	Basis Weight of Fiberglass Mats
T 1013 om-92	Loss of Ignition of Fiberglass Mats

3 REQUIREMENTS

3.1 Terms and Definitions The definitions and terms **shall** be in accordance with IPC-T-50, TAPPI documents, and those stated in 3.1.1 through 3.1.13.

3.1.1 Bagginess Material that is distorted, stretched, or deformed in the middle or along the edges.

3.1.2 Binder A thermoset or thermoplastic resin used to hold the glass fibers together and provide mechanical strength to the nonwoven mat.

3.1.3 Bundles Undispersed fiber bundles.

3.1.4 Caliper Variation Sheet is of uneven thickness in the width and length, exceeding the product's specification.

3.1.5 Conducting Particles Small foreign particles capable of conducting current.

3.1.6 Dents Indentations in the surface of the mat or in the edge of the roll.

3.1.7 Dirt Small dark particles of foreign origin (i.e., floor dirt or other visible contaminates).

3.1.8 Edge Tear/Damaged Roll Edge Tears and/or damage to the edge of the mat.

3.1.9 Holes/Thin Spots An area in the mat where few or no fibers are present.

3.1.10 Poor Formation Very uneven distribution of fibers in the mat resulting in a rough surface or appearance.

3.1.11 Soft Roll/Telescoping Roll that has been loosely wound, resulting in an uneven side-to-side hardness and/or evenness.

3.1.12 Weight Variation Basis weight variation in the width and length exceeding the product's specification.

3.1.13 Wrinkles/Folds A permanent fold, crease, or ridge in the mat, generally in the machine direction, occurring during processing or rewinding.

3.2 Physical Requirements

3.2.1 Product Typical physical requirements of nonwoven ''E'' glass mats are provided at the end of this specification in the form of specification sheets. The specification sheets may not cover all of the commercially available

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.
3. Withdrawn Method – Available upon request from TAPPI.