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Requirements for Printed Electronics Functional Conductive Materials

Developed by the D-63 Printed Electronics Functional Materials Subcommittee of the D-60 Printed Electronics Committee of IPC

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Users of this publication are encouraged to participate in the development of future revisions.

Acknowledgment

Any document involving a complex technology draws material from a vast number of sources. While the principal members of the D-63 Printed Electronics Functional Materials Subcommittee of IPC are shown below, it is not possible to include all of those who assisted in the evolution of this standard. To each of them, the members of the IPC extend their gratitude.

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1 SCOPE

This standard establishes the classification system and the qualification and quality conformance requirements for functional conductive materials used in printed electronics applications.

1.1 Purpose The purpose of this standard is to provide practitioners of printed electronics with the necessary technical structure to design and manufacture product meeting conformance to industry-determined metrics.

1.2 Classification System The user has the responsibility to specify on the procurement documentation materials capable of meeting the requirements of this specification and end-item use.

Note: When possible, material callout information should be reviewed with the supplier to obtain concurrence that the part will meet customer requirements and, if necessary, to update the procurement documentation accordingly.

The classification system defined in 1.2.1 through 1.2.1.3 identifies functional conductive materials for printed electronics applications.

1.2.1 Functional Conductive Material Designation The functional conductive material designation is intended for use on material purchase orders (see 6.1). Designers **shall** specify on master drawings their material selection only. This is because the specific designation is lengthy and requires fabricator-level knowledge for making the detailed selections.

The functional conductive material designation should be in the form shown of the example below:

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Where:

2 = Postprocessed structure classification (see 1.2.1.1), specifying sintering
A = Postprocessed bulk classification (see 1.2.1.2), specifying metal
1 = Preprocessed conductive classification (see 1.2.1.3), specifying spheres

1.2.1.1 Postprocessed Functional Conductive Material – Structure Classification The postprocessed functional conductive material structure classification **shall** be designated per Table 1-1.

Table 1-1 Postprocessed Functional Conductive Material – Structure Classification

Designation	Type
1	Percolation
2	Sintering
3	Metal organic decomposition
4	Intrinsically conductive polymer
5	Other

1.2.1.2 Postprocessed Functional Conductive Material – Bulk Composition Classification The postprocessed functional conductive material bulk composition **shall** be designated per Table 1-2.

Table 1-2 Postprocessed Functional Conductive Material – Bulk Composition Classification

Designation	Type
A	Metal
B	Metal oxide
C	Organic
D	Allotropes of carbon
E	Other

Table note: For combinations, use multiple letters separated by a slash(es).