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General Specification for 1/8 Inch Diameter Shank Carbide Drills for Printed Boards

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1.0 SCOPE
This document establishes definitions for terms and requirements for solid carbide twist drills with four-faceted drill points used in the fabrication of printed boards.

1.1 Classification
For the purposes of this specification, drills will be classified as follows:

Type 1  Step down—With drill body diameters up to 0.125 inch in diameter.

Type 2  Step up—With drill body diameters 0.126 inch and above in diameter.

Type 3  Small drills—Drill body diameters of 0.0135–0.020 inches.

Type 4  Microdrills—Drill body diameters less than 0.0135 inches.

1.2 For metric conversion see attached table.

2.1 IPC
IPC-T-50 Terms and Definitions

3.0 REQUIREMENTS

3.1 Terms and Definitions
The definition of terms used herein shall be in accordance with IPC-T-50 and the following.

Back Taper
Back taper is the constant decrease of the drill diameter along with drill body length. (See feature E of Figure 1.)

Body Land Clearance
Body land clearance is that portion of the land diameter which was decreased to provide clearance behind the margin. Size of the clearance depends on drill manufacturer. (See feature K of Figure 1 and 2.)

Carry-Out
Carry-out is the back portion of the flute produced by the sweep of the grinding wheel. (See feature F of Figure 1 and 2.)

Chamfer Angle
Chamfer angle is the angle at the end of 0.125 inch diameter shank that assists in loading and minimizing wear of drill holders and collets. (See feature L of Figure 1 and 2)

Chipped Point
Chipped point is a condition whereby the maximum chips on the point leading edge exceed a specified maximum allowable value (see paragraph 3.2.15.4).

Chisel-Edge Angle
Chisel-Edge Angle is the angle between the leading cutting edge and the intersection of the primary and secondary relief facets of the drill point, measured in a plane perpendicular to the drill axis. (See feature N of Figure 1 and 2.)

Drill Body Length
Drill Body Length is total length of actual drill diameter as measured from the drill point to intersection of the drill diameter and shoulder angle on Type 1. On Type 2, the drill body length is the entire drill diameter including the drill point (See feature B of Figure 1 and 2.)

Drill Diameter
Drill diameter is the actual size of the drill body. (See feature A of Figure 1 and 2.)

Drill Point Concentricity
Total indicated reading measured on the chisel point when rotating the drill shank in the V-block (see 3.2.25).

Flare Primary
Flare primary is a condition whereby the primary relief is wider at the drill periphery than it is in the drill center.

Gap
Gap is the condition of misalignment of the intersection lines between the primary relief facet and the secondary relief facet, when the primary relief facets do not meet.