

SEMI G18-0318

I SPECIFICATION FOR INTEGRATED CIRCUIT LEADFRAME MATERIAL USED IN THE PRODUCTION OF ETCHED LEADFRAMES

This Standard was technically approved by the Assembly & Packaging Global Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on August 18, 2017. Available at www.semiviews.org and www.semi.org in March 2018; originally published in 1984; previously published in August 2011.

NOTICE: This Standard or Safety Guideline has an Inactive Status because the conditions to maintain Current Status have not been met. Inactive Standards or Safety Guidelines are available from SEMI and continue to be valid for use.

NOTICE: Paragraphs entitled ‘NOTE:’ are not an official part of this Standard or Safety Guideline and are not intended to modify or supersede the official Standard or Safety Guideline. These have been supplied by the global technical committee to enhance the usage of the Standard or Safety Guideline.

NOTICE: The section symbol (§) is used to reference a numbered section, paragraph, or header and all subordinate paragraphs, headers, and embedded material (i.e., EXCEPTIONs, lists) therein. The paragraph symbol (¶) is used to reference a particular numbered paragraph and embedded material therein. When duplicated (i.e., §§ and ¶¶) the symbols are used to reference more than one section or paragraph, respectively.

1 Purpose

1.1 This Specification is for the leadframe material that will be shipped to an etch house. It is a leadframe specification, but deals with material aspects only.

2 Scope

2.1 This Specification covers the special requirements for metal strip to be used to fabricate integrated circuit leadframes by etching.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Referenced Standards and Documents

3.1 *ASTM Standards*¹

ASTM B193 — Standard Test Method for Resistivity of Electrical Conductor Materials

ASTM B601 — Standard Classification for Temper Designations for Copper and Copper Alloys—Wrought and Cast

ASTM B754 — Standard Test Method for Measuring and Recording the Deviations from Flatness in Copper and Copper Alloy Strip

ASTM E8 — Standard Test Methods of Tension Testing of Metallic Materials

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

4 Terminology

4.1 None.

5 Ordering Information

5.1 Orders for material under this Specification shall include the following information:

1. Quantity of each size

¹ ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA; Telephone: +1.610.832.9585, Fax: +1.610.832.9555, <http://www.astm.org>

2. Alloy name and number
3. Temper or mechanical properties
4. Dimensions: Thickness and width (refer to ¶ 7.3)
5. How furnished: Coils and coil size or sheet size (refer to § 10)
6. Certification or test report requirements (refer to § 11)
7. Packaging and marking requirements (refer to § 12)

6 Requirements

6.1 The materials covered by this Specification shall conform to the requirements detailed in this Specification, unless otherwise agreed upon by supplier and purchaser.

7 Test Methods

7.1 The following tests shall be used to determine conformance or nonconformance to this Specification.

7.2 *Etched Raw Materials Purchased in Coils* — Samples can be taken from the ID or OD of each coil. If the material does not conform to this Specification, remove two wraps from the ID and OD of each coil and test for conformance again. Samples may also be taken from cut sheets.

7.3 *Thickness, Width, and Length* — The tolerances for thickness and width shall be as shown in Table 1. More restrictive tolerances than those shown in Table 1 or tolerances for other thicknesses and widths shall be agreed upon between user and supplier.

Table 1 Thickness and Width Tolerances

<i>Thickness</i>	<i>Tolerance</i>
0.005–0.010 in. (0.127–0.254 mm)	±0.0003 in. (0.008 mm)
0.015 in. (0.381 mm)	±0.0004 in. (0.010 mm)
0.020 in. (0.508 mm)	±0.0005 in. (0.013 mm)
<i>Width</i>	<i>Tolerance</i>
2.000–8.000 in. (25.4–203.2 mm)	±0.005 in. (0.127 mm)
>8.000 in. (>203.2 mm)	to ±0.010 in. (0.254 mm)

7.4 *Camber (Edgewise Curvature)* — Camber is not critical for material used in the etching process provided the end product (leadframe strip) meets its requirements; 1.6 mm (±0.0625 in.) in 91 cm (36 in.) is considered acceptable.

7.5 *Coil Set* — A three foot long sample shall be obtained from each coil supplied. The measured coil set shall not exceed 38.1 mm (1.500 in.).

7.6 *Edge Burrs* — Undesirable and, if present, their height shall not exceed 10% of the metal thickness.

7.7 *Crossbow (Dish)* — Crossbow is a function of slitting. Because material for the photo chemical process is generally about 16 to 20 inches wide, crossbow is not a critical problem. However, the final product (leadframe strips) must meet maximums, as suggested in Table 2, and crossbow in the sheet form, shall not be present to the extent that this Specification cannot be met.

Table 2 Maximum Crossbow

<i>Specified Strip Width</i>	<i>Maximum Crossbow</i>
Up to 25.4 mm (1.000 in.), incl.	0.076 mm (0.003 in.)
Over 25.4 mm (1.000 in.)	0.127 mm (0.005 in.)