

SEMI C38-0699

GUIDELINE FOR PHOSPHORUS OXYCHLORIDE

This Standard was technically approved by the Process Chemicals Global Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on April 23, 1999. Available at www.semi.org in June 1999. This Document replaces SEMI C7.12 in its entirety.

1 Purpose

1.1 The purpose of this Document is to standardize requirements for phosphorus oxychloride used in the semiconductor industry and testing procedures to support those standards. Test methods have been shown to give statistically valid results. This Document also provides guidelines for grades of phosphorus oxychloride for which a need has been identified. In the case of the guidelines, the test methods may not have been statistically validated yet.

2 Scope

2.1 The scope of this Document is all grades of phosphorus oxychloride used in the semiconductor industry.

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 Limitations

3.1 None.

4 Referenced Standards and Documents

4.1 None.

5 Terminology

5.1 None.

6 Physical Property (for information only)

6.1 Not applicable.

7 Requirements

7.1 The requirements for phosphorus oxychloride for Tier A are listed in Table 1.

8 Grade 1 Procedures

8.1 This section does not apply to this chemical.

9 Grade 2 Procedures

9.1 This section does not apply to this chemical.

10 Grade 3 Procedures

10.1 This section does not apply to this chemical.

11 Grade 4 Procedures

11.1 This section does not apply to this chemical.

12 Grade 5 Procedures

12.1 This section does not apply to this chemical.

13 VLSI Grade Procedures

13.1 This section does not apply to this chemical.

14 Tier A Procedures

14.1 Standardized test methods are being developed for all parameters at the purity levels indicated. Until standardized test methods are published, test methodology shall be determined by user and producer. The Process Chemicals Committee considers a test method to be valid only if there is a documented recovery study showing a recovery of 75% to 125%. Recovery is for a known sample spike at 50% of the specified level.

15 Tier B Procedures

15.1 This section does not apply to this chemical.

16 Tier C Procedures

16.1 This section does not apply to this chemical.

17 Tier D Procedures

17.1 This section does not apply to this chemical.

Table 1 Impurity Limits and Other Requirements for Phosphorus Oxychloride

<i>Previous SEMI Reference #</i>	<i>C7.12-91</i>
	<i>Tier A</i>
	<i>(Guideline)</i>
Assay	99.9% min.
Color (APHA)	5 max.
Hydroxyl	0.1 absorbance units ^{#1}
Aluminum (Al)	10 ppb max.
Arsenic (As)	7 ppb max.
Barium (Ba)	1 ppb max.
Bismuth (Bi)	1 ppb max.
Calcium (Ca)	6 ppb max.
Chromium (Cr)	1 ppb max.
Cobalt (Co)	1 ppb max.
Copper (Cu)	3 ppb max.
Gallium (Ga)	1 ppb max.
Gold (Au)	1 ppb max.
Iron (Fe)	5 ppb max.
Lead (Pb)	3 ppb max.
Lithium (Li)	6 ppb max.
Magnesium (Mg)	5 ppb max.
Manganese (Mn)	1 ppb max.
Mercury (Hg)	8 ppb max.
Nickel (Ni)	1 ppb max.
Niobium (Nb)	1 ppb max.
Potassium (K)	3 ppb max.
Silver (Ag)	1 ppb max.