

SEMI C50-1105

SPECIFICATIONS AND GUIDELINES FOR TRIMETHYLPHOSPHITE

This specification was technically approved by the global Liquid Chemicals Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on September 8, 2005. It was available at www.semi.org in October 2005 and on CD-ROM in November 2005. Originally published in 1995; previously published June 1999.

NOTICE: This document was completely rewritten in 2005.

1 Purpose

1.1 The purpose of this document is to standardize requirements for trimethylphosphite used in the semiconductor industry and testing procedures to support those standards. Test methods have been shown to give statistically valid results.

2 Scope

2.1 The scope of this document covers all grades of trimethylphosphite used in the semiconductor industry.

NOTICE: This standard does not purport to address safety issues, if any, associated with its use. It is the responsibility of the users of this standard 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 SEMI Standards

SEMI C1 — Guide for the Analysis of Liquid Chemicals

3.2 ASTM Standards¹

ASTM D5127 — Standard Guide for Ultra Pure Water Used in the Electronics and Semiconductor Industry

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

4 Terminology

None.

5 Physical Property (for information only)

Density at 250°C	1.05 g/mL
Boiling Point	112°C

6 Requirements

6.1 The requirements for trimethylphosphite Tier A are listed in Table 1.

7 Grade 1 Procedures

7.1 This section does not apply to this chemical.

8 Grade 2 Procedures

8.1 This section does not apply to this chemical.

9 Grade 3 Procedures

9.1 This section does not apply to this chemical.

10 Grade 4 Procedures

10.1 This section does not apply to this chemical.

¹ American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428-2959, USA. Telephone: 610.832.9585, Fax: 610.832.9555, www.astm.org.

11 Grade 5 Procedures

11.1 This section does not apply to this chemical.

12 Tier A Procedures

12.1 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 supplier. The Global Liquid Chemicals Committee requires analytical method validation according to SEMI C1, 'Method Validation'.

13 Tier B Procedures

13.1 This section does not apply to this chemical.

14 Tier C Procedures

14.1 This section does not apply to this chemical.

15 Tier D Procedures

15.1 This section does not apply to this chemical.

Table 1 Impurity Limits and Other Requirements for Trimethylphosphite

Previous SEMI Reference #	C7.22-95
	Tier A
	(Guideline)
Assay ($P(CH_3O)_3$)	99.0% min
Color (APHA)	10 max
Aluminum (Al)	5 ppb max
Antimony (Sb)	5 ppb max
Arsenic (As)	5 ppb max
Barium (Ba)	5 ppb max
Boron (B)	5 ppb max
Cadmium (Cd)	5 ppb max
Calcium (Ca)	5 ppb max
Chromium (Cr)	5 ppb max
Copper (Cu)	5 ppb max
Iron (Fe)	5 ppb max
Lead (Pb)	5 ppb max
Lithium (Li)	5 ppb max
Magnesium (Mg)	5 ppb max
Manganese (Mn)	5 ppb max
Nickel (Ni)	5 ppb max
Potassium (K)	5 ppb max
Sodium (Na)	5 ppb max
Tin (Sn)	5 ppb max
Titanium (Ti)	5 ppb max
Vanadium (V)	5 ppb max
Zinc (Zn)	5 ppb max
Particles in bottles (size, #/mL)	#1

^{#1} Due to the limitations of current particle counters, particle size and number are to be agreed upon between supplier and user. See SEMI C1, 'Calibration and Measurement Method for Particles in Liquids'.