Liquid Chemicals North America TC Chapter

Meeting Summary and Minutes

SEMI Standards NA Summer July Meeting 2025
Tuesday, July 29–Wednesday, July 30, 09:00 – 12:00 Noon Pacific
Official Virtual TC Chapter Meeting (OVTCCM)

TC Chapter Announcements

SEMICON West 2025
Day 1: Tuesday, October 7, 13:00 – 16:00 Mountain
Day 2: Tuesday, October 8, 13:00 – 16:00 Mountain
Phoenix Convention Center, Phoenix, Arizona/USA

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Don E. Hadder (Intel), David Kandiyeli (KESG), Laura Ledenbach (Evonik), Per Nelson (Daikin America)
SEMI Staff: Laura Nguyen

Company	*Last*	*First*	*Company*	*Last*	*First*
Air Liquide	*Chen*	*Allen*	*Georg Fischer Piping Systems*	*McIntosh*	*Bob*
Air Liquide	*Mey-Ami*	*Lisa*	*Intel*	*Hadder*	*Don E.*
Air Liquide	*Sparks*	*Chris*	*Kanomax FMT*	*Oberreit*	*Derek*
ATPC	*Tregub*	*Alex*	*Kinetics Equipment Solutions Group*	*Kandiyeli*	*David*
Camenzind Solutions	*Camenzind*	*Mark*	*Mettler Toledo Thornton*	*Cannon*	*Jim*
CT Associates, Inc	*Schooneveld*	*Gary van*	*NAURA*	*Cao*	*Clark*
Daikin America, Inc.	*Nelson*	*Per*	*NIST*	*Radney*	*Jimmy*
Elemental Scientific, Inc.	*Ketkar*	*Suhas*	*Pall Corporation*	*Ruth*	*Jochen*
Evantic	*Conner*	*Darren*	*Parker Hannifin*	*Hansen*	*Glade*
Exergy Systems, Inc.	*Yazdani*	*Azita*	*Safety Guru*	*Sklar*	*Eric*
FTD Solutions LLC	*Tharp*	*Amanda*	*ULVAC*	*Coppa*	*Brian*
Georg Fischer Piping Systems	*Allebes*	*Soren*	*SEMI*	*Nguyen*	*Laura*

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
7285A	Line-Item Revision to SEMI F98-0923, Guide for Treatment of Reuse Water in Semiconductor Processing	
L1	Updating KPIs to add Environmental Footprint Calculation.	**Passed**, with editorial changes.
L2	Water Conservation Accounting	**Passed**, as balloted.

#1 **Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

#2 **Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting or abandoning.

Table 5 Ratification Ballot Results

None

Table 6 Activities Approved by the GCS between meetings of the TC Chapter

#	*Type*	*SC/TF/WG*	*Details*
7293	forwarded to the ISC A&R SC for procedural review	Chemical Mechanical Planarization Consumables (CMP-C) TF	New Auxiliary Document: Report on Closing Metrologies Gaps for Wafer Measurements at Different Stages of CMP Process – ***Approved by GCS on 06/23/2025***

Table 7 Authorized Activities

Listing of all revised or new SNARF(s) approved by the Originating TC Chapter.

#	*Type*	*SC/TF/WG*	*Details*
7386	SNARF	Liquid Chemicals TC	Reapproval of SEMI C1-0310 (Reapproved 0618), Guide for the Analysis of Liquid Chemicals
7387	SNARF	Liquid Chemicals TC	Reapproval of SEMI C10-1109 (Reapproved 1114), Guide for Determination of Method Detection Limits
7388	SNARF	Liquid Chemicals TC	Reapproval of SEMI C64-0308 (Reapproved 1214), SEMI Statistical Guidelines for Ship to Control
7389	SNARF	Liquid Chemicals TC	Reapproval of SEMI C100-1120, Guide for Reporting Chemical Mechanical Planarization (CMP) Polishing Pads Hardness Used in Semiconductor Manufacturing
7390	SNARF	High Purity Polymer Materials and Components	Revision to SEMI C78-0113 (Reapproved 1218) Test Method for Determining Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems by Atomic Force Microscopy, with change of Title to: Test Method for Determining, By Atomic Force Microscopy, Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems

Table 8 Authorized Ballots

#	*When*	*TF*	*Details*
7386	Cycle 7-2025	Liquid Chemicals TC	Reapproval of SEMI C1-0310 (Reapproved 0618), Guide for the Analysis of Liquid Chemicals
7387	Cycle 7-2025	Liquid Chemicals TC	Reapproval of SEMI C10-1109 (Reapproved 1114), Guide for Determination of Method Detection Limits
7388	Cycle 7-2025	Liquid Chemicals TC	Reapproval of SEMI C64-0308 (Reapproved 1214), SEMI Statistical Guidelines for Ship to Control

Table 8 Authorized Ballots

#	*When*	*TF*	*Details*
7389	Cycle 7-2025	Liquid Chemicals TC	Reapproval of SEMI C100-1120, Guide for Reporting Chemical Mechanical Planarization (CMP) Polishing Pads Hardness Used in Semiconductor Manufacturing

Table 9 SNARF(s) Granted a One-Year Extension

#	*TF*	*Title*	*Expiration Date*
6904	CMP-C TF	New Standard: Guide for Reporting Performance Parameters of the Retaining Rings for Chemical Mechanical Planarization (CMP) used in Semiconductor Manufacturing	07/29/2026
6970	CMP-C TF	New Standard: Guide for Reporting Performance Parameters of Pressure Sensitive Adhesives (PSA) for Chemical Mechanical Planarization (CMP) Pads Used in Semiconductor Manufacturing	07/29/2026

#1 If the Standards Document Development Project is found to be continuing, but cannot be completed within the current project period, the TC Chapter may grant a one-year extension at a time, as many times as necessary. [*Regulations* § 8.3]

Table 10 SNARF(s) Cancelled

#	*TF*	*Title*
6451	Statistical Methods TF	Revision to SEMI C1-0310 (Reapproved 0618), Guide for the Analysis of Liquid Chemicals
6509	Statistical Methods TF	Revision to SEMI C64-0308 (Reapproved 1214), SEMI Statistical Guidelines for Ship to Control, with title change
6935	Statistical Methods TF	Revision to SEMI C10-1109 (Reapproved 1114), Guide for Determination of Method Detection Limits

Table 11 Standard(s) to receive Inactive Status

None

#1 *Inactive, adj.* — Status of a Standard or Safety Guideline that is not currently supported by the GTC. [*Regulations* ¶ 4.2.19]

Table 12 New Action Items

Item #	*Assigned to*	*Details*
2025July#01	Laura	Send David K. E49 SEMIViews access, and staff report to participants Completed
2025July#02	SEMI Staff	Basic principles of IP training request to SEMI Staff; Does SEMI have an IP attorney?

Table 13 Previous Meeting Action Items

Item #	*Assigned to*	*Details*
2025June#01	SEMI Staff	Request to SEMI for an informal statement for guidance on what documents are valuable to the industry. (Why update it if it's not being used?)
2025June#02	SEMI Staff	When SEMI updates the Regs/PM, it makes it unfair for volunteers to update old documents, when SEMI is the one making the changes.

1 Welcome, Reminders, and Introductions

David Kandiyeli (Kinetics) called the meeting to order at 09:08. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meetings Elements

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion:	To accept the previous meeting minutes as written.
By / 2nd:	By: Per Nelson / Daikin America, Inc. Second: Bob McIntosh / GF Piping Systems
Discussion:	None
Vote:	13-1 in favor. Motion passed.

Attachment: [2025Summer] Liquid Chemicals NA TC Chapter Meeting Minutes

3 Liaison Reports

3.1 *Gases & Liquid Chemicals Europe TC Chapter*

No update since SEMICON Europa 2024.

3.2 *Liquid Chemicals Japan TC Chapter*

No update since Summer (June) Meetings 2025. Refer to Summer 2025 meeting minutes for liaison report.

3.3 *SEMI Staff Report*

Laura Nguyen (SEMI) gave the SEMI Staff Report. Of note:

Upcoming NA Meetings 2025

- SEMICON West: Oct 6-9, 2025, at Phoenix Convention Center, Phoenix, Arizona/USA

Regulations & Procedure Manual

- Regulations (Feb 20, 2024): https://www.semi.org/sites/semi.org/files/2024-02/Standards%20Regulations%20February%2020%202024.pdf
- Procedure Manual (July 2025) **NEW!**: https://www.semi.org/sites/semi.org/files/2025-07/Procedure%20Manual%20July%2007%2C%202025%20v1.pdf

SNARF 3-Year Status

- SNARFs expiring
    - 6451: Revision to SEMI C1-0310 (Reapproved 0618), Guide for the Analysis of Liquid Chemicals (07/10/2025)
    - 6509: Revision to SEMI C64-0308 (Reapproved 1214), SEMI Statistical Guidelines for Ship to Control, with title change (07/10/2025)
    - 6935: Revision to SEMI C10-1109 (Reapproved 1114), Guide for Determination of Method Detection Limits (06/01/2025)

Five-year Review

Designation #	Standard Title	Action By	Assigned to
SEMI F48-0600 (Reapproved 1214)	Test Method for Determining Trace Metals in Polymer Materials (Work on SNARF for West/possible two-week review)	Past Due	High Purity Polymer Materials and Components TF
SEMI F34-0618	Guide for Liquid Chemical Pipe Labeling (Send SEMIViews access)	Past Due	CAM TF
SEMI E49-0419	Guide for High Purity and Ultrahigh Purity Piping Performance, Subassemblies, and Final Assemblies	Past Due	High Purity Liquid Assemblies & Systems TF
SEMI C79-0819	Guide to Evaluate the Efficacy of Sub-15 nm Filters Used in Ultrapure Water (UPW) Distribution Systems (Working on SNARF for West meeting/two-week review)	August 2024/2025	UPW TF
SEMI C98-1219	Guide for Chemical Mechanical Planarization (CMP) Particle Size Distribution (PSD) Measurement and Reporting Used in Semiconductor Manufacturing (Working on SNARF for West/possible two-week review)	December 2024/2025	CAM TF
SEMI C100-1120	Guide for Reporting Chemical Mechanical Planarization (CMP) Polishing Pads Hardness Used in Semiconductor Manufacturing (RA SNARF for West review – approved at July meeting)	November 2025/2026	CMP-C TF

Staff Contact: Laura Nguyen, Lnguyen@semi.org

Attachment: Staff Report July2025 v1_LChem

4 Ballot Review

NOTE 1: TC Chapter adjudication on ballots reviewed is detailed in the Audits & Review (A&R) Subcommittee Forms for procedural review. The A&R forms are available as attachments to these minutes. The attachment file name for each balloted document is provided under each ballot review section below.

4.1 Document # 7285A: Line-Item Revision to SEMI F98-0923, Guide for Treatment of Reuse Water in Semiconductor Processing

4.1.1 Line Item 1: Updating KPIs to add Environmental Footprint Calculation.

- The ballot passed TC Chapter review with editorial changes.
- Refer to attachment for ballot adjudication.

4.1.2 Line Item 2: Water Conservation Accounting

- The ballot passed TC Chapter review as balloted.
- Refer to attachment for ballot adjudication.

Attachment: 7285A_ProceduralReview

5 Subcommittee and Task Force Reports

5.1 *The following Task Forces do not have an update since Summer (June) Meetings 2025. Refer to Summer 2025 meeting minutes for recent reports.*

- High Purity Polymer Materials & Components Task Force
- High Purity Liquid Assemblies & Systems Task Force
- Ultrapure Water Task Force

5.2 *Chemical Mechanical Planarization Consumables (CMP-C) Task Force*

Alex Tregub (ATPC) presented for the CMP-C Task Force. Of note:

Task Force Roster *{See attachment for full list}*

Ongoing and Completed Activities

- **7292: New Auxiliary Document** : **Report on** Closing Metrologies Gaps for CMP: published, https://www.semi.org/en/products-services/download-standards (scroll to the bottom)
- **7293: New Auxiliary Document**, Report on Closing Metrologies Gaps for Wafer Measurements at Different Stages of CMP Process: passed A&R on July 15: https://www.semi.org/sites/semi.org/files/2025-07/ISCA%26RSC%20July%2015%202025WebSummaryv1.pdf
- **New Auxiliary Document**: Report on closing metrologies gaps for CMP slurries: Approved by CMP-C TF, submitted
- **7366: New Auxiliary Document**: Report on Closing Metrologies Gaps for post-CMP Cleaning Chemistries
- **7367: New Auxiliary Document**: Using Machine learning image processing algorithms to characterize multimodal Particle Size Distributions of Chemical Mechanical Planarization Slurries. SNARF approved, work on the document ongoing

One-year SNARF Extension Required: past 3-years development cycle

- 6904, New Standard: Guide for Reporting Performance Parameters of the Retaining Rings for Chemical Mechanical Planarization (CMP) used in Semiconductor Manufacturing
- 6970, New Standard: Guide for Reporting Performance Parameters of Pressure Sensitive Adhesives (PSA) for Chemical Mechanical Planarization (CMP) Pads Used in Semiconductor Manufacturing

Upcoming Activities

- Submit SNARF and Prepare Report on New Auxiliary Document, Report on closing metrologies gaps for CMP brushes
- Submit SNARF and Prepare Report on New Auxiliary Document, Report on CMP cleans

Next TF Meeting Schedule

- **Date**: recurring biweekly meetings of the TF members
- **Time**: Every Thursday of the even week, 10 to 11 am PST
- **Contact**: a.tregub@yahoo.com

Attachment: CMP-C TF Leaders TF Report July 2025_

5.3 *Chemical Analytical Methods (CAM) Task Force*

David Kandiyeli (KESG) reported for the CAM Task Force. Of note:

Task Force Roster *{refer to attachment for full list}*

TF Meeting Summary

- 6/10/2025 CAM TF Meeting: Ballot 7146 (SEMI C41-IPA)
    - 3 attendees (David Kandiyeli, Chris Sparks, Alma Malibekova)
    - Continued work addressing rejections from Cycle 2 2024 ballot review
- 6/24/2025 CAM TF Meeting: Ballot 7146 (SEMI C41-IPA)
    - 3 attendees (David Kandiyeli, Chris Sparks, Alma Malibekova)
    - Continued work addressing rejections from Cycle 2 2024 ballot review
    - Reviewed ACS references for reagents
- 7/22/2025 CAM TF Meeting: Ballot 7149 (SEMI C63-Organosilicate Precursors) & Ballot 7146 (SEMI C41-IPA)
    - 3 attendees (Suhas Ketkar, David Kandiyeli, Alma Malibekova)

- Prepared both documents for Laura's team to incorporate changes into ballot
  - Sent documents to Laura for incorporation

New SNARF Proposals

- Generate SNARF for 5 year review of SEMI C98 – Guide for Chemical Mechanical Planarization (CMP) Particle Size Distribution (PSD) Measurement and Reporting Used in Semiconductor Manufacturing (Will not be presented in current Technical Committee meeting)

Ballot Activity Summary & Upcoming Activities

- Ballot Adjudication: None
- New Ballots and ballot plans :
  - Review Ballot 7148 received from Laura's team, send to Eric for review, make any necessary changes, and submit in 2025
  - Send Ballot 7146 changes to Laura's team, send to Eric for review, make any necessary changes, and submit in 2025
  - Send Ballot 7149 changes to Laura's team, send to Eric for review, make any necessary changes, and submit in 2025

Next TF Meeting Schedule

- Next Meeting by Teams Web Conference; 8/5/2025 (8:00AM to 9:00AM PST) and Biweekly Thereafter
- Currently scheduled meetings are established via Teams invitation. Notify David Kandiyeli at D.Kandiyeli@kinetics.net if you would like to join the meetings.

Attachment: CAM Second Summer NALCC Meeting Report DDK 7-29-2025 REVP02

5.4 *Water Management Task Force*

Ballot Review for Document 7285A, Line-Item Revision to SEMI F98-0923, *Guide for Treatment of Reuse Water in Semiconductor Processing,* was done in § 4.

5.5 *Statistical Methods Task Force (did not meet)*

Tom Bzik is no longer with EMD Electronics and Meg Cromley is no longer with Intel, therefore both TF leaders have stepped back on SEMI Standards activities until further notice.

6 Old Business

6.1 *Standards Upcoming for Five-Year*

The Committee reviewed the current Five-year list during the Staff Report in ¶ 3.3.

6.2 *SNARFs Approaching 3-Year Project Period*

Motion:	Approve a 1-year extension of the project period for the SNARFs below: --6904, New Standard: Guide for Reporting Performance Parameters of the Retaining Rings for Chemical Mechanical Planarization (CMP) used in Semiconductor Manufacturing --6970, New Standard: Guide for Reporting Performance Parameters of Pressure Sensitive Adhesives (PSA) for Chemical Mechanical Planarization (CMP) Pads Used in Semiconductor Manufacturing
By / 2nd:	By: Gary Van Schooneveld / CT Associates, Inc Second: Per Nelson / Daikin America, Inc.
Discussion:	None
Vote:	10-0 in favor. Motion passed.

7 New Business

7.1 *Activity Approvals*

Motion: Cancel SNARF Documents below:
-- 6451: Revision to SEMI C1-0310 (Reapproved 0618), Guide for the Analysis of Liquid Chemicals
-- 6509: Revision to SEMI C64-0308 (Reapproved 1214), SEMI Statistical Guidelines for Ship to Control, with title change
-- 6935: Revision to SEMI C10-1109 (Reapproved 1114), Guide for Determination of Method Detection Limits
and, Approve Reapproval SNARFs for C1, C64, C10
and, Send Reapprovals for C1, C64, C10 for Cycle 7, 2025

By / 2nd: By: Don Hadder / Intel
Second: Jim Cannon / Mettler Toledo Thornton

Discussion: None

Vote: 12-0 in favor. Motion passed.

Motion: Approve a Reapproval SNARF for SEMI C100, Guide for Reporting Chemical Mechanical Planarization (CMP) Polishing Pads Hardness Used in Semiconductor Manufacturing, and ballot for cycle 7, 2025.

By / 2nd: By: Bob McIntosh / GF Piping Systems
Second: Don Hadder / Intel

Discussion: Staff will generate SNARF internally

Vote: 8-0 in favor. Motion passed.

Motion: Approve the SNARF for:
Revision to SEMI C78-0113 (Reapproved 1218) Test Method For Determining Roughness Of Polymer Surfaces Used In Ultrapure Water And Liquid Chemical Distribution Systems By Atomic Force Microscopy
with change of Title to:
Test Method For Determining, By Atomic Force Microscopy, Roughness Of Polymer Surfaces Used In Ultrapure Water And Liquid Chemical Distribution Systems

By / 2nd: By: Lindsey Sullivan / FTD Solutions
Second: Alexander Tregub / ATPC

Discussion: ES: the current standard is using a technology that is claimed to be patented

TC Discussion:

- The intent is to not include patent
- IFR is a generic term
- there has been no specific patent claim identified to substantiate that patented technology is needed to use the method

Vote: 11-1 in favor. Motion passed.

7.2 *Discussion for proposed Analytical workshop at SEMICON West in AZ*

Suhas Ketkar (Elemental Scientific, Inc.) brought this topic to the committee. Of note:

- The SEMI Liquid Chemicals North America Technical Committee is soliciting papers for presentation at an Analytical Workshop being held in conjunction with the SEMI Standards meetings on Wednesday, October 8th during Semicon West 2025 in Phoenix, Arizona.
- The IRDS Roadmap has identified near-term challenges related to measurements of particles, trace metals and organics in liquid chemicals at levels required to meet the needs of the industry. The identified challenges are measurement of 10 nm and smaller particles, sub ppt measurement of metallic impurities, measurement of particle precursors and trace organics and online speciation of trace organics. The focus of the workshop will be on recent advances in analytical methodology and instrumentation that will enable the industry to meet these challenges. The workshop will have presentations of 25 minutes with 5 minutes devoted for questions.

8 Next Meeting and Adjournment

8.1 The next in-person meeting is tentatively scheduled for the week of October 6-9, in conjunction with SEMICON West 2025 in Phoenix, Arizona. Please check the SEMICON West website for updates: https://www.semiconwest.org/special-features/standards.

Tentative Schedule:

Task Forces will continue to meet on their weekly/bi-weekly cadence. Subject to change.

- Monday, October 6
    - (Open for meetings)
    - 16:00-17:00, NA LChem Leadership Meeting
- Tuesday, October 7
    - TBD, UPW TF
    - 13:00-16:00, Liquid Chemicals NA TC Chapter Meeting (Day 1)
- Wednesday, October 8
    - Workshop~ 9:00-11:30
    - *(tentative)*13:00-16:00 Liquid Chemicals NA TC Chapter Meeting (Day 2)
- Suggestion for NA LChem leadership to meet virtually prior to the meeting set

Adjournment: 11:51 – Day 1, 10:16 – Day 2.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

Phone: +1.408.943.7019

Email: lnguyen@semi.org

Minutes tentatively approved by:

Don Hadder (Intel), Co-chair	<Date approved>
David Kandiyeli (KESG), Co-chair	<Date approved>
Laura Ledenbach (Evonik), Co-chair	<Date approved>
Per Nelson (Daikin), Co-chair	<Date approved>

Minutes approved by: **LChem NA OVTCCM on October 7, 2025.**

Table 14 Index of Available Attachments[#1]

Title	*Title*
SEMI Standards Required Meetings Elements	7285A_ProceduralReview
[2025Summer] LChem NA TC Chapter Meeting Minutes	CMP-C TF Leaders TF Report July 2025_
Staff Report July2025 v1_LChem	CAM Second Summer NALCC Meeting Report DDK 7-29-2025 REVP02

#1 Due to file size and delivery issues, attachments must be downloaded separately. A .zip file containing all attachments for these minutes is available at www.semi.org. For additional information or to obtain individual attachments, please contact Laura Nguyen at the contact information above.