



Liquid Chemicals North America TC Chapter

Meeting Summary and Minutes

North America Spring 2018 Standards Meetings

April 10, 2018 14:00 – 17:00

SEMI HQ, Milpitas, California

TC Chapter Announcements

Next TC Chapter Meeting

July 10, 2018 14:00 – 17:00

Marriott Marquis, San Francisco, CA

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Don Hadder (Intel); Frank Flowers (Peroxy Chemicals)

SEMI Staff: Inna Skvortsova

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Intel	Hadder	Don	<i>KMG Electronic Chemicals</i>	<i>Rogers</i>	<i>Steven</i>
Peroxy Chemicals	Flowers	Frank	<i>PALL</i>	<i>Ruth</i>	<i>Jochen</i>
FDT Solutions	Libman	Slava	<i>KMG Electronic Chemicals</i>	<i>Rogers</i>	<i>Steven</i>
Mega Fluid Systems	Kandiyeli	David	<i>Solvey</i>	<i>Terracina</i>	<i>Vincent</i>
SACHEM	Montville	Dan	SEMI	Skvortsova	Inna
SACHEM	Schleisman	Tony			
Mega Fluid Systems	Murai	Koh			
GF Piping Systems	McIntosh	Bob			
Mega Fluid Systems	Murai	Koh			

Table 2 Leadership Changes

<i>WG/TF/SC/TC Name</i>	<i>Previous Leader</i>	<i>New Leader</i>
NONE		

Table 3 Committee Structure Changes

<i>Previous WG/TF/SC Name</i>	<i>New WG/TF/SC Name or Status Change</i>
NONE	

Table 4 Ballot Results

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5991	New Standard, <i>Test Method for Determining Density of Chemical Mechanical Polish (CMP) Slurries</i>	Passed

Table 4 Ballot Results

Document #	Document Title	Committee Action
6314	Line-item Revision of SEMI C27, <i>Specification and Guide for Hydrochloric Acid</i>	Passed
6315	Line-item Revision of SEMI C30, <i>Specification and Guide for Hydrogen Peroxide</i>	Failed
6317	Reapproval to F40, <i>Practice for Preparing Liquid Chemical Distribution Components for Chemical Testing</i>	Passed
6318	Revision of SEMI F63, <i>Guide for Ultrapure Water Used in Semiconductor Processing</i>	Passed with editorial change

#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 Activities Approved by the GCS between meetings of the TC Chapter

#	Type	SC/TF/WG	Details
6318	SNARF	UPW TF	Revision to SEMI F63-1016, <i>Guide for Ultrapure Water Used in Semiconductor Processing</i> Approved and authorized for Cycle 2-18 ballot submission by GCS 01/04/2018
6316	SNARF	UPW TF	Revision to SEMI C79-0113, <i>Guide to Evaluate the Efficacy of Sub-15 nm Filters Used in Ultrapure Water (UPW) Distribution Systems</i> Approved and authorized for Cycle 5 or 6 2018 ballot submission by GCS 01/04/2018

Table 6 Authorized Activities

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

#	Type	SC/TF/WG	Details
6384	SNARF	CAM TF	Reapproval for SEMI C34-0113, <i>Specification and Guide for Mixed Acid Etchants</i> New SNARF approved by TC and authorized for Cycle 5-2018
6383	SNARF	CAM TF	Reapproval to SEMI C20-0213, <i>Specification and Guide for Ammonium Fluoride 40%</i> New SNARF approved by TC and authorized for Cycle 5-2018
6385	SNARF	HPPM&C TF	Reapproval to SEMI C78-0113, <i>Test Method for Determining Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems by Atomic Force Microscopy</i> New SNARF approved by TC and authorized for Cycle 5-2018
6388	SNARF	CAM	Revision to SEMI C44-0514, <i>Specification and Guide for Sulfuric Acid</i> New SNARF for 2-week member review, GCS approval and ballot authorization for Cycle 6 or 7-2018
6399	SNARF	HPPLA&S TF	Revision to SEMI E49-0617, <i>Guide for High Purity and Ultrahigh Purity Piping Performance, Subassemblies, and Final Assemblies</i> New SNARF for 2-week member review, GCS approval and ballot authorization for Cycle 5-2018

#1 SNARFs and TFOFs are available for review on the SEMI Web site at:

<http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF>

Table 7 Authorized Ballots

#	When	TF	Details
6384	Cycle 5-2018	CAM TF	Reapproval for SEMI C34-0113, <i>Specification and Guide for Mixed Acid Etchants</i>
6383	Cycle 5-2018	CAM TF	Reapproval to SEMI C20-0213, <i>Specification and Guide for Ammonium Fluoride 40%</i>
6385	Cycle 5-2018	HPPM&C TF	Reapproval to SEMI C78-0113, <i>Test Method for Determining Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems by Atomic Force Microscopy</i>

Table 8 SNARF(s) Granted a One-Year Extension

#	TF	Title	Expiration Date
NONE			

Table 9 SNARF(s) Abolished

#	TF	Title
NONE		

Table 10 Standard(s) to receive Inactive Status

Standard Designation	Title
SEMI F8-0998 (Reapproved 0613)	<i>Test Method for Evaluating the Sealing Capabilities of Tube Fitting Connections Made of Fluorocarbon Materials, When Subjected to Tensile Forces</i>

Table 11 New Action Items

Item #	Assigned to	Details
2018 Spring #01	Slava L, Inna S.	SEMI Standards NA Fall 2018 meeting dates overlap with IRDS meetings Nov5-8 at Washington DC. If possible move Fall meetings later or earlier one week. Avoid scheduling conflict for 2019 in advance.
2018 Spring #02	Mizue Chie (SEMI Staff)	Ultrapure Liquid Evaluation Study Group under Japan Chapter of LCh TC to share report with NA co-Chairs as presented results of the experiment and analysis at INE by Mr. Yoshida from KANTO KAGAKU on LC Japan TC Chapter on April 23, 2018
2018 Spring #03	Koh M. / Bob M.	Bob should forward to Koh technical content for F07&F12
2018 Spring #04	Koh, Shean L.	To review with Shean L. (EHS TC) F07 and F12 content after Bob will summarize, for transferring F07 and F12 to EHS TC under new TFOF Inna to provide Koh with Shean L. contact information
2018 Spring #05	Inna S.	Distribute SNARFs for revision to SEMI C44 and Revision to SEMI E49 for 2-week member review and GCS approval and ballot authorization
2018 Spring #06	Inna S.	Arrange SEMIViews access for Bob McIntosh for SEMI C78

Table 12 Previous Meeting Action Items

Item #	Assigned to	Details
2017 Spring #01	Bob McIntosh, Inna S. & Naoko T.(SEMI)	Verify with Ultrapure Liquid Evaluation Study Group what kind of help is needed. N.A. Liquid Chemicals Chapter may have resources and expertise to support this Study Group. Offer to help is communicated and will be discussed at Japan TC meeting Dec. 13, 2017.



Table 12 Previous Meeting Action Items

		Response 1/23/2018: Hiroyuki Araki (SCREEN Semiconductor Solutions) will confirm with this issues with INE. Feedback will be reported at the committee on April 23, 2018.
07July2017	Inna S.	Arrange SEMIViews access for Process Chemicals Volume for Lisa Mey-Ami OPEN. <Need project description for Volume based access justification>

1) Welcome, Reminders, and Introductions

Frank Flowers (Peroxy Chemicals) called the meeting to order at 14:02PM. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment 01: SEMI Standards Required Meeting Elements.ppt

2) Review of Previous Meeting Minutes

2.1 The TC Chapter reviewed and approved the minutes of the previous SEMICON West 2017 Standards meeting.

Motion: To approve minutes as written
By / 2nd: Koh Murai (Mega Fluids) / Slava Libman (FTD Solutions)
Discussion: None
Vote: 5Y/0. Motion passed.

Attachment 02: NA Liquid Chemicals TC Meeting Minutes (Fall 2017).pdf

3) SEMI Staff Report

Inna Skvortsova (SEMI) gave the SEMI Staff Report. Of note:

SEMI Global 2018 Calendar of Events

- SEMICON China (March 14-16, 2018, Shanghai, China)
- SEMICON Southeast Asia (May 9-10, 2018, Kuala Lumpur, Malaysia)
- SEMICON West (July 10-12, 2018, San Francisco, California)
- SEMICON Taiwan (September 5-7, 2018, Taipei, Taiwan)
- SEMICON Europa (November 13-16, 2018, Munich, Germany)
- SEMICON Japan (December 12-14, 2017, Tokyo, Japan)

Upcoming North America Meetings 2017

- SEMICON West 2018 Meetings (July 9-12, 2018, San Francisco, California)
- NA Standards Fall 2018 Meetings (November 5-8, 2018 <tentative>, SEMI HQ, Milpitas, California)
- NA Standards Spring 2019 Meetings (April 1-4, 2019 <tentative>, SEMI HQ, Milpitas, California)

Letter Ballot Critical Dates for NA Standards Spring 2017 meetings

- Cycle 3-18: due Mar 9 / Voting Period: Mar 23 – Apr 23
- Cycle 4-18: due Apr 20 / Voting Period: Apr 30 – May 30
- Cycle 5-18: due May 11 / Voting Period: May 25 – June 25
- Cycle 6-18: due July 20 / Voting Period: Aug 1 – Aug 31



- Cycle 7-18: due Aug 22 / Voting Period: Sep 5 – Oct 5
- Cycle 8-18: due Oct 22 / Voting Period: Oct 26 – Nov 26
- Cycle 9-18: due Nov 14/ Voting Period: Nov 28 – Dec 28
-

<http://www.semi.org/en/Standards/Ballots>

• *SEMI Standards Publications*

Cycle	New	Revised	Reapproved	Withdrawn
November 2017	0	4	0	0
December 2017	1	6	1	0
January 2018	0	6	4	0
February 2018	1	7	5	0
March 2018	5	10	22	0

Total SEMI Standards in portfolio: 985. Includes 225 Inactive Standards

Cycle	Designation	Title	Committee	Region
December 2017	SEMI 3D17	Specification for Reference Material for Bonded Wafer Stack Void Metrology	3D-IC	NA
February 2018	SEMI PV80	Specification of Indoor Lighting Simulator Requirements for Emerging Photovoltaic	Photovoltaic	CH
March 2018	SEMI PV81	Guide for Specifying Low Pressure Horizontal Diffusion Furnace	Photovoltaic	CH
March 2018	SEMI PV82	Specification for Terrestrial Dual-Glass Module with Crystalline Silicon Solar Cell	Photovoltaic	CH



March 2018	SEMI PV83	Guide for Sample Preparation Method for Photovoltaic Backsheet Performance Tests	Photovoltaic	CH
March 2018	SEMI D76	Test Method for Viewing Angle Characteristic Using Reference Color on Visual Displays	FPD	KO
March 2018	SEMI MS11	Specification for Microfluidic Port and Pitch Dimensions	MEMS/NEMS	NA

- *SNARF(s) and TFOF Approved by GCS in between TC Chapter Meetings*
 - SNARF Revision to SEMI F63-1016, Guide for Ultrapure Water Used in Semiconductor Processing
 - Approved by GCS 01/04/2018
 - SNARF # 6318 authorized for Cycle 2-2018 submission
 - SNARF for Revision to SEMI C79-0113, Guide to Evaluate the Efficacy of Sub-15 nm Filters Used in Ultrapure Water (UPW) Distribution Systems
 - Approved by GCS 01/04/2018
 - SNARF # 6316 authorized for Cycle 5/6-2018 submission
- *SNARF 3 year status TC Chapter may grant a one-year extension:*
 - NONE
- *Nonconforming Titles*
 - SEMI C23-0714 - *Specifications for Buffered Oxide Etchants*
 - SEMI C33-0213 - *Specifications for n-Methyl 2-Pyrrolidone*
 - SEMI C36-1213 - *Specifications for Phosphoric Acid*
 - SEMI C64-0308 (Reapproved 1214) - *SEMI Statistical Guidelines for Ship To Control*
 - SEMI F104-0312 - *Particle Test Method Guide for Evaluation of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems*

NOTE: Refer to Procedure Manual (PM) Appendix Table A4-1 and A4-2

- *Documents due for 5 Year Review*

Name	Due for Review	Title
**SEMI F104-0312	3/1/2017	Particle Test Method Guide for Evaluation of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems
SEMI F40-0699E	TBD	Practice for Preparing Liquid Chemical Distribution Components for Chemical Testing
SEMI C78-0113	1/25/2018	Test Method for Determining Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems by Atomic Force Microscopy
SEMI C34-0113	1/25/2018	Specification and Guide for Mixed Acid Etchants
SEMI C79-0113	1/31/2018	Guide to Evaluate the Efficacy of Sub-15 nm Filters Used in Ultrapure Water (UPW) Distribution Systems
SEMI C20-0213	2/19/2018	Specification and Guide for Ammonium Fluoride 40%



SEMI F18-95 (Reapproved 0413)	04/26/2018	Guide for Determining the Hydrostatic Strength of, and Design Basis for, Thermoplastic Pipe and Tubing
SEMI F8-0998 (Reapproved 0613)	06/30/2018	Test Method for Evaluating the Sealing Capabilities of Tube Fitting Connections Made of Fluorocarbon Materials, When Subjected to Tensile Forces
SEMI C36-1213	12/30/2018	Specifications for Phosphoric Acid
SEMI C51-0114	1/10/2019	Specification for Xylenes

Intercommittee Ballots (From Liq Chem TC)

- None

Intercommittee Ballots (Issued to Liq Chem TC)

- SEMI F47, and possibly SEMI F49, SEMI F50
 - Revision need driven by Chemical Analytical Methods TF co-leader;
 - Intercommittee to Facilities TC

Attachment 03: SEMI Staff Report Liquid Chemicals TC (Apr 2018).ppt

4) Liaison Reports

4.1 Liquid Chemicals Europe TC Chapter

Inna Skvortsova (SEMI) reported for the Liquid Chemicals Europe (EU) TC Chapter.

- Leadership change:
 - Jean-Marie Collard (Solvay Chemicals) has stepped down as Co-chair and been succeeded by Jochen Ruth (Pall Corporation)
- Meeting Information
 - Last Meeting: November 2017 at SEMICON Europa Munich, Germany
 - Next Meeting November 2018 at SEMICON Europa Munich, Germany
- *The below ballots passed adjudication at SEMICON Europa:*
 - 6256, Reapproval of SEMI C81-0113, Guide for Tris(Dimethylamino) Silane (3DMAS)
 - Passed as balloted
- *Presentation at SEMICON Europa meetings:*
 - IRDS update
 - Jochen Ruth (Pall)
- Staff Contact: James Amano (jamano@semi.org)

Attachment 04: Europe Gases & Liquid Chem Report (July 2017).pdf

4.2 Liquid Chemicals Japan TC Chapter

James Amano (SEMI) reported for the Liquid Chemicals Japan TC Chapter. Of note:

- Committee Co-chairs
 - Hiroshi Tomita (Toshiba)
 - Hiroyuki Araki (SCREEN Semiconductor Solutions)
- Last Meeting: December 13, 2017 during SEMICON Japan Meeting 2017 at Tokyo Big Sight, Tokyo, Japan
- Next Meeting: April 23, 2018 during Japan Spring Meetings at SEMI Japan, Tokyo, Japan
- Ballots Summary at SEMIOCN Japan 2017 TC Meeting:
 - #6197 : Reapproval to SEMI F110-0712, Test Method for Mono-Dispersed Polystyrene Latex (PSL) Challenge of Liquid Filters

- Passed as balloted
- #6196 : Reapproval to SEMI C77-0912, April 23, 2018 during Japan Spring Meetings at SEMI Japan, Tokyo, Japan
 - Passed as balloted
- New SNARFs/TFOFs
 - #6320 : Line Item Revision of SEMI C77-0912
- Task Force / Study Group Reports:
 - Diaphragm Valve Task Force
 - No activities
 - Welding Fitting Task Force
 - No activities
 - Liquid Filter Task Force
 - #6197 - Reapproval to SEMI F110-0712
 - SNARF was approved at Liquid Chemical Japan TC Chapter meeting on April 21, 2017
 - Ballot submitted for Cycle 5-2017, passed at Liquid Chemical Japan TC Chapter on December 13, 2017 during SEMICON Japan 2017.
 - Editorial Change was proposed as report (separately from #6197) and passed at LC Japan TC Chapter meeting on December 13, 2017
 - Passed A&R in January 2018
 - Liquid-Borne Particle Counter (LPC) Task Force
 - 6196 - Reapproval to SEMI C77-0912
 - SNARF was approved at Liquid Chemical Japan TC Chapter meeting on April 21, 2017
 - Ballot will be submitted for Cycle 7-2017 and passed at Liquid Chemical Japan TC Chapter on December 13, 2017 during SEMICON Japan 2017
 - Passed A&R in January 2018
 - Ultrapure Liquid Evaluation Study Group
 - Considering to standardize the particle measurement at POP in future.
 - Asking a cooperation by Interfacial Nano Electrochemistry for seeking the solution to the issues concerned to analyzing metals of organic solvent including IPA.
 - The results of the experiment and analysis at INE will be reported by Mr. Yoshida from KANTO KAGAKU on LC Japan TC Chapter on April 23, 2018

For more information, please contact: Mizue Iwamura, SEMI Japan, miwamura@semi.org

Attachment 05: Japan Liquid Chem Report (July 2017).pdf

5) 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 number for each balloted document is provided under each ballot review section below.

Ballot #5991

The TC Chapter reviewed the Document #5991, New Standard, *Test Method for Determining Density of Chemical Mechanical Polish (CMP) Slurries*

The ballot **passed** TC review and will be submitted to the ISC A&R for procedural review. Details can be found in the attached Procedural Review file.

Motion: Document # 5991 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.

By / 2nd: Don Hadder (Intel) / Koh Murai (Mega Fluid Systems)



Discussion: None.

Vote: 5-0. Motion passed.

Motion: Forward Document # 5991 to the ISC A&R for procedural review as written.

By / 2nd: Don Hadder (Intel) / Bob McIntosh (GF Piping)

Discussion: None.

Vote: 5-0. Motion passed.

Attachment 06: 5991_Procedural Review

Ballot #6314

The TC Chapter reviewed the Document #6314, Line-item Revision of SEMI C27, *Specification and Guide for Hydrochloric Acid*

The ballot **passed** TC review and will be submitted to the ISC A&R for procedural review. Details can be found in the attached Procedural Review file.

Motion: Document # 6314 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.

By / 2nd: Don Hadder (Intel) / Koh Murai (Mega Fluid Systems)

Discussion: None.

Vote: 5-0. Motion passed.

Motion: Forward Document # 6314 to the ISC A&R for procedural review as written.

By / 2nd: Don Hadder (Intel) / Slava Libman (FTD Solutions)

Discussion: None.

Vote: 5-0. Motion passed.

Attachment 07: 6314_Procedural Review

Ballot #6315

The TC Chapter reviewed the Document #6315, Line-item Revision of SEMI C30, *Specification and Guide for Hydrogen Peroxide*

Liq Chem TC accepted the CAM Task Force recommendation to find Reject #2 submitted by Vincent Terracina (Solvey) to be related and technically persuasive.

The ballot **failed** and will returned to the Task Force for rework and ballot resubmission.

Motion: To find Reject # 2 from Vincent Terracina (Solvey), for SEMI Draft Document 6315 to be related and technically persuasive.

By / 2nd: Don Hadder (Intel) / Tony Schleisman (SACHEM)

Discussion: None

Vote: Y4-N1. Motion passed.

Attachment: NONE

Ballot #6317



The TC Chapter reviewed the Document #6317 Reapproval to F40, *Practice for Preparing Liquid Chemical Distribution Components for Chemical Testing*

The ballot **passed** TC review and will be submitted to the ISC A&R for procedural review. Details can be found in the attached Procedural Review file.

Motion: Document # 6317 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.
By / 2nd: Don Hadder (Intel) / Bob McIntosh (GF Piping)
Discussion: None.
Vote: 5-0. Motion passed.

Motion: Forward Document # 6317 to the ISC A&R for procedural review as written.
By / 2nd: Don Hadder (Intel) / Tony Schleisman (SACHEM)
Discussion: None.
Vote: 5-0. Motion passed.

Attachment 08: 6317_Procedural Review

Ballot #6318

The TC Chapter reviewed the Document #6318, Revision of SEMI F63, *Guide for Ultrapure Water Used in Semiconductor Processing*

The ballot **passed** TC review **with editorial changes** and will be submitted to the ISC A&R for procedural review. Details can be found in the attached Procedural Review file.

Motion: Document # 6318 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.
By / 2nd: Bob McIntosh (GF Piping) / Slava Libman (FTD Solutions)
Discussion: None.
Vote: 5-0. Motion passed.

Motion: Forward Document # 6317 to the ISC A&R for procedural review as written.
By / 2nd: Bob McIntosh (GF Piping) / David Kandiyeli (Mega Fluids Systems)
Discussion: None.
Vote: 5-0. Motion passed.

Attachment 09: 6318_Procedural Review

6) Subcommittee and Task Force Reports

6.1 High Purity Liquid Assemblies and Systems (HPLA&S) Task Force

Koh Murai reported for the HPLA&S Task Forces. Of note:

- SEMI F8-0998 (Reapproved 0613), *Test Method for Evaluating the Sealing Capabilities of Tube Fitting Connections Made of Fluorocarbon Materials, When Subjected to Tensile Forces*
 - F8-0998 to be withdrawn as of Spring 2018
 - A different standard, or a complete re-write should be started that addresses the following:
 - Temperature performance



- Integrity after mechanical cycling
 - Integrity after thermal cycling
 - Mean time to tightening and re-tightening at a range or limit conditions
 - Standardization of test method and reporting for the above 4 items.
 - Standardization of maximum test sample length
 - Limit direction of mechanical cycling to exclude rotational components
 - Create diameter-based schedules for those fittings with expected differences in performance with respect to size
- SEMI E49-0617, *Guide for High Purity & Ultrahigh Purity Piping performance, Subassemblies, and Final Assemblies*
 - Pass ownership of subsidiary SEMI E49.6 & E49.8 to Gases TF for content & 5 year review
 - Revise primary SEMI E49-00-0617, to reflect changes noted as 5 year review
 -

Motion: To set SEMI F8-0998 *Test Method for Evaluating the Sealing Capabilities of Tube Fitting Connections Made of Fluorocarbon Materials, When Subjected to Tensile Forces* inactive status .

By / 2nd: Bob McIntosh (GF Piping) / David Kandiyeli (Mega Fluids Systems)

Discussion: None.

Vote: 5-0. Motion passed.

Motion: To authorize SNARF for Revision to SEMI E49-00-0617 *Guide for High Purity & Ultrahigh Purity Piping performance, Subassemblies, and Final Assemblies*.

By / 2nd: Bob McIntosh (GF Piping) / Koh Murai (Mega Fluids Systems)

Discussion: None.

Vote: 5-0. Motion passed.

Attachment 10: HPLAS Task Force Report (April 2018).pdf

6.2 High Purity Polymer Materials & Components (HPPM&C) Task Force Report

Bob McIntosh reported for HPPM&C Task Force. Of note:

- SEMI F104-0312, *Particle Test Method Guide for Evaluation of Components Used in Ultrapure Water and Liquid Chemical Distribution systems*
 - Out of date, the information not in sync with the industry.
 - A new test plan was developed to do testing on a wide range of components and materials (PFA valves and tubing and PVDF valves in both 32 and 63mm).
 - The test plan includes multiple optical particle counters and new non optical particle measurement devices to get a correlation between “old and new” technologies. All the counters will be measure con-currently.



- The goal is to get a database on particles using these analyzers to understand both the values of particles but also to get information on smaller particles which are required to meet even current 14nm and smaller technologies.
- Revise the rinse up numbers in the guideline.
- Move particles out of SEMI F57 and add them to SEMI F104.
 - This will change F104 from a method to a method and specification (or at least guideline). This is not included in original SNARF#6195. Revision of the SNARF will be needed.
- Testing of components is 50% complete. Target completion date by Fall 2018 Standards meetings.

- SEMI F57-0314, *Specification For Polymer Materials And Components Used in Ultrapure Water and Liquid Chemical Distribution Systems*
 - Experimental Work completed
 - This yielded critical results needed to make extraction curves required for predicting results.
 - Started to make changes to values in the tables for contaminants based on results TOC and ions are complete. Metals in progress.
 - TOC, F, Cl, Phosphate were adjusted based on testing results or in response to the model.
 - Developed a model to relate extraction rates to SEMI F63. Fluoride and TOC do NOT meet SEMI F63.
 - Based on the stated goal to include SEMI C90 into SEMI F57 will add a table for PFA tubing in UPW (@ 85oC) and a table for PFA using nitric for metals leaching using C90 method. Will use already existing data from manufacturers and laboratories for the table.

- SNARF #6085 (F57) update is planned to align with current scope of work.
- Target to submit ballot for revised SEMI F57 after SEMICON West 2018.

Attachment 11: HPPM&C Task Force Report (April 2018).pdf

6.3 Chemical Analytical Methods Task Force Report

Don Hadder reported for CAM Task Force. Of note:

- Ballot Adjudication:
 - Passed:
 - Doc # 5991 – New Standard, *Test Method for Determining Density of Chemical Mechanical Polish (CMP) Slurries*
 - Doc # 6314 – Line-item Revision of SEMI C27, *Specification and Guide for Hydrochloric Acid*
 - Failed:
 - Doc # 6315 – Line-item Revision of SEMI C30, *Specification and Guide for Hydrogen Peroxide*
 - Re-work document to make changes: a “Guide” instead of “Specification” items or to get “recovery data” per the C1 requirements for the new elements to be added;



- Upcoming Activities
 - New Standard, Test Method for CMP Conductivity (Slurry and pCMP Cleaning Chemicals)
 - Draft SNARF planned for distribution to GTC prior SEMICON West 2018
 - Task Force recruits relevant technical experts for document development
 - ICP-MS presentation from Sachem discussing the limitations of very low (single digit PPT) specification limits
 - CAM TF will evaluate the potential impacts to SEMI C1 and C10 based on these findings
 - CAM TF plans to form the ICP-MS Working Group dedicated to work on new/revised ICP-MS standard(s) proposal.

Attachment 12: CAM Task Force Report (April 2018).pdf

6.4 Ultra Pure Water (UPW) Task Force Report

Slava Libman reported for the UPW Task Force. Of note:

- Ballot Adjudication:
 - Passed (with editorial change):
 - Doc #6318, Revision of SEMI F63, *Guide for Ultrapure Water Used in Semiconductor Processing*
- Upcoming Activities
 - Doc. 6316, *Revision of SEMI C79-0113, Guide to Evaluate the Efficacy of Sub-15 nm Filters Used in Ultrapure Water (UPW) Distribution Systems*
 - Need to find a way to use smaller than 10nm silica particles for the challenge test
 - Action: propose method of preparing particle solution
 - Need to resolve the issue of ability to measure filter particle shedding
 - Recommendation to use both CPC and LPC for the analysis
 - Final resolution is pending outcome of the validation testing
- Upcoming Events:
 - (May 30-June 1st 2018) Annual **UPM Conference**, Austin TX
 - (July 11th 2018) Third Annual **IRDS SECC Workshop** at SEMICON West, Marriott Marquis, San Francisco, CA
 - Discuss semiconductor industry needs as part of the IRDS roadmap development and identify current material/facility technology gaps per SEMI Standards discussions

Attachment 13: UPW Task Force Report (April 2018).pdf

7) Old Business

7.1 Standards due for Five-Year Review.

Inna Skvortsova addressed the TC Chapter on this topic. Of note:

Name	*Due	Title	Status / Action required

**SEMI F104-0312	3/1/2017	<i>Particle Test Method Guide for Evaluation of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems</i>	Bob McIntosh is working on ballot for 2018 submission.
SEMI C78-0113	1/1/2018	<i>Test Method for Determining Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems by Atomic Force Microscopy</i>	HPPM&C co-leader to review and prepare the SNARF prior to SW 2018 meetings
SEMI C34-0113	1/1/2018	<i>Specification and Guide for Mixed Acid Etchants</i>	In review by CAM TF
SEMI C79-0113	1/1/2018	<i>Guide to Evaluate the Efficacy of Sub-15 nm Filters Used in Ultrapure Water (UPW) Distribution Systems</i>	In review by UPW TF
SEMI C20-0213	2/1/2018	<i>Specification and Guide for Ammonium Fluoride 40%</i>	In review by CAM TF
SEMI F18-95 (Reapproved 0413)	4/26/2018	<i>Guide for Determining the Hydrostatic Strength of, and Design Basis for, Thermoplastic Pipe and Tubing</i>	In review by TC leader
SEMI F8-0998 (Reapproved 0613)	6/30/2018	<i>Test Method for Evaluating the Sealing Capabilities of Tube Fitting Connections Made of Fluorocarbon Materials, When Subjected to Tensile Forces</i>	In review by HPLA&S TF
SEMI C36-1213	12/30/2018	<i>Specifications for Phosphoric Acid</i>	TBD
SEMI C51-0114	1/10/2019	<i>Specification for Xylenes</i>	TBD

7.2 SNARFs Approaching 3-Year Review

No SNARFs need extension.

8) New Business

8.1 New TFOFs and SNARFs Authorization:

- No new TFOFs
- New SNARFS and ballots authorization

Motion: To approve the SNARF Reapproval for SEMI C34-0113, Specification and Guide for Mixed Acid Etchants and authorize ballot for Cycle 5 2018 submission

By / 2nd: Don Hadder (Intel) / Bob McIntosh (GF Piping)

Discussion: None.

Vote: 5-0. Motion passed

Motion: To approve the SNARF for Reapproval to SEMI C20-0213, Specification and Guide for Ammonium Fluoride 40% and authorize ballot for Cycle 5 2018 submission

By / 2nd: Don Hadder (Intel) / Bob McIntosh (GF Piping)

Discussion: None.

Vote: 5-0. Motion passed



Motion: To approve the SNARF for Reapproval to SEMI C78-0113, Test Method for Determining Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems by Atomic Force Microscopy and authorize ballot for Cycle 5 2018 submission

By / 2nd: Don Hadder (Intel) / Bob McIntosh (GF Piping)

Discussion: none.

Vote: 5-0. Motion passed

- Technical Committee authorized to distribute new SNARFs for the following documents to for 2-week Global TC membership review followed by GCS approval:
 - Revision to SEMI C44-0514, *Specification and Guide for Sulfuric Acid*
 - Revision to SEMI E49-0617, *Guide for High Purity and Ultrahigh Purity Piping Performance, Subassemblies, and Final Assemblies*

Action Items:

(Inna Skvortsova) Distribute SNARFs for revision to SEMI C44 and Revision to SEMI E49 for 2-week member review and GCS approval and ballot authorization

(Inna Skvortsova) Arrange SEMIViews access for Bob McIntosh for SEMI C78

9) IRDS Council Update Report

Slava Libman presented IRDS Update and FI Yield Enhancement Group report.
For details and additional information about IRDS Council, please contact Slava Libman at slibman@ftdsolutions.net

Attachment 14: IRDS Update April 2018.pdf

10) ICP-MS Proposal for standards developmet

Anthony Schleisman and Dan Montville of SACHEM, presented proposal for ICP-MS standards development. For details and additional information, please contact Anthody Schleisman at TSchleisman@sacheminc.com or contact SEMI staff at iskvortsova@semi.org

Attachment 15: ICP-MS Proposal_SACHEM_April 2018.pdf

11) Next Meeting and Adjournment

The next meeting is scheduled for July 10, 2018 at San Francisco, CA in conjunction with SEMICON West 2018 NA Standards Meetings. See <http://www.semi.org/standards-events> for the current list of events.

Having no further business, a motion was made to adjourn. Adjournment was at 5:35 PM.

Respectfully submitted by:

Inna Skvortsova

Sr. Standards Coordinator

SEMI North America

Phone: 408-9436996

Email: iskvortsova@semi.org



Minutes tentatively approved by:

Frank Flowers (Peroxy Chem), Co-chair	6/5/2018
Don Hadder (Intel), Co-chair	6/5/2018

Table 13 Index of Available Attachments#1

<i>Title</i>	<i>Title</i>
Attachment 01: SEMI Standards Required Elements.ppt	Attachment 10: HPLA&S Task Force Report (April 2018)
Attachment 02: NA Liquid Chemicals TC Meeting Minutes (Nov 2017).pdf	Attachment 11: HPPM&C Task Force Report (April 2018)
Attachment 03: SEMI Standards Staff Report (April 2017).ppt	Attachment 12: CAM Task Force Report (April 2018)
Attachment 04: Europe Gases & Liquid Chem Liaison Report (April 2018).pdf	Attachment 13: UPW Task Force Report (April 2018)
Attachment 05: Japan Liquid Chem Liaison Report (April 2018).pdf	Attachment 14: IRDS SECC Group Report (April 2018)
Attachment 06: 5991_Procedural Review	Attachment 15: ICP-MS Proposal by Sachem (April 2018)
Attachment 07: 6314_Procedural Review	
Attachment 08: 6317_Procedural Review	
Attachment 09: 6318_Procedural Review	

#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 [SEMI Staff Name] at the contact information above.