



Liquid Chemicals Global Technical Committee

North America (NA) Chapter

Meeting Summary and Minutes

Spring 2017 Meeting
 Tuesday April 4, 2017 14:00 – 17:00
 Milpitas, CA

TC Chapter Announcements

Next TC Chapter Meeting
 July 11, 2017, 14:00 – 17:00
 SEMICON West Meetings, 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	Mega Fluid Systems	Murai	Koh
Peroxy Chemicals	Flowers	Frank	GE	Dale	Chuck
GF Piping Systems	McIntosh	Bob	Lyondell Basell	Jacobsen	Kirsten
Air Liquide	Libman	Slava	SEMI	Skvortsova	Inna

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>
5943	Revision to SEMI E49.2-1104, <i>Guideline for the Qualification of Polymer Assemblies Used in Ultrapure Water and Liquid Chemical Systems in Semiconductor Process Equipment.</i>	Passed
6086	Revision to SEMI F75-1102, <i>Guide For Quality Monitoring of Ultrapure Water Used in Semiconductor Manufacturing</i>	Passed

Table 4 Ballot Results

Document #	Document Title	Committee Action
6129	Revision to SEMI F61-0301 (Reapproved 0309) <i>Guide for Ultrapure Water System Used in Semiconductor Processing, with title change to: Guide to Design and Operation of a Semiconductor Ultrapure Water System</i>	Passed

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

Note 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 prior to the Originating TC Chapter meeting

#	Type	SC/TF/WG	Details
6129	SNARF	UPW TF	Revision to SEMI F61-0301 (Reapproved 0309), <i>Guide for Ultrapure Water System Used in Semiconductor Processing, with title change to: Guide to Design and Operation of a Semiconductor Ultrapure Water System</i> Approved by GCS 12/16/2016
6136	SNARF	UPW TF	Revision to SEMI F98-0305 (Reapproved 1111), <i>Guide for Treatment of Reuse Water in Semiconductor Processing</i> Approved by GCS 12/16/2016

Table 6 Authorized Activities

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

#	SC/TF/WG	Details
TBD	CAM	Revision to SEMI C45-0309E, <i>Specification and Guideline for Tetraethylorthosilicate (TEOS)</i> with title change to: <i>Specification and Guide for Tetraethylorthosilicate (TEOS)</i> New SNARF, for 2 weeks review and GCS approval, target ballot in Cycle 7/8-17.
TBD	CAM	Line Item Revision to SEMI C30-1110, <i>Specifications for Hydrogen Peroxide</i> to correct nonconforming title to: <i>Specification for Hydrogen Peroxide</i> New SNARF
TBD	HPPM&C	Revision to SEMI F104, <i>Particle Test Method for Evaluation of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems</i> New SNARF, for 2 weeks review and GCS approval, target ballot in Cycle 7-17.

Note 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
5831	Cycle 5-17	CAM	Revision to SEMI C27-0708, <i>Specifications and Guideline for Hydrochloric Acid</i> with title change to: <i>Specification and Guide for Hydrochloric Acid</i>
5642	Cycle 5-17	CAM	Revision to SEMI C35-0708, <i>Specifications and Guideline for Nitric Acid</i> with title change to: <i>Specification and Guide for Nitric Acid</i>
TBD	Cycle 5-17	CAM	Line Item Revision to SEMI C30-1110, <i>Specifications for Hydrogen Peroxide</i> ,to correct nonconforming title to: <i>Specification for Hydrogen Peroxide</i>
6136	Cycle 7-17	UPW	Revision to SEMI F98-0305 (Reapproved 1111), <i>Guide for Treatment of Reuse Water in Semiconductor Processing</i>

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

#	TF	Title	Expiration Date
4957	CAM	Revision to SEMI C41-0705, <i>Specifications and Guidelines for 2-Propanol</i> , with title change to: <i>Specifications for 2-Propanol</i>	04/06/2018
5642	CAM	Revision to SEMI C35-0708, <i>Specifications and Guideline for Nitric Acid</i> with title change to: <i>Specification and Guide for Nitric Acid for Nitric Acid</i>	08/07/2018

Table 9 SNARF(s) Abolished

#	TF	Title
NONE		

Table 10 Standard(s) to receive Inactive Status

Standard Designation	Title
SEMI C22-0212	Guide for Boron Tribromide
SEMI C38-0212	Guide for Phosphorus Oxychloride
SEMI C25-0312	Specification for Dichloromethane (Methylene Chloride)
SEMI C46-0812	Guide for 25% Tetramethylammonium Hydroxide
SEMI C47-0812	Guide for Trans 1,2 Dichloroethylene
SEMI C48-0812	Specification and Guide for 1,1,1-Trichloroethane, Furnace Grade

Table 11 New 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.
2017 Spring #02	Steve R., Inna S.	Steve to make recommendation on SEMI C41. Inna (SEMI) support the SNARF.
2017 Spring #03	Inna S.	Arrange access to SEMI C1 for: Bob McIntosh – doc version for editing; Kirsten – SEMIViews Read-only for review.

Table 12 Previous Meeting Open Action Items

Item #	Assigned to	Details
2016 Fall #2	James Amano	Review new data provided by PAL (test results diagram) and provide procedural direction to Liquid Chemical TC if defined that SEMI E79 and SEMI C82 provide conflicted results.
2016 Fall #7	Inna S (SEMI), Lisa Mey-Ami	Inna to help Lisa with SEMI process, including preparation of SNARFs for revision to SEMI C61 and SEMI C63. Arrange access to C1 as referred documents. Access to C1 arranged. Lisa will have SNARFs for revision to C61 and C63 at SEMICON West for TC approval.
2016Apr#3	James Amano Inna	Follow up on listings of all the documents and origination committees for Facilities & Gases. Ongoing. Inna will create the spreadsheet and circulate within TCs by SW.
2016Apr#4	James Amano	Follow up – if a committee is identified as a recipient of an inter-committee at the SNARF level, staff to provide a report at the next committee meeting.



1 Welcome, Reminders, and Introductions

Don Hadder (Intel) called the meeting to order at 14:01PM. 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 Elements.ppt

2 Review of Previous Meeting Minutes

2.1 The TC Chapter reviewed and approved the minutes of the previous NA Fall 2016 Standards meeting.

Motion: To approve minutes as written

By / 2nd: Koh Murai (MegaFluids) / Bob McIntosh (GF Piping)

Discussion: None

Vote: 6Y / 1Abstain. Motion passed.

Attachment 02: NA Liquid Chemicals TC Meeting Minutes (Nov 2016).pdf

3 SEMI Standards Staff Report

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

SEMI Global 2017 Calendar of Events

- LED Taiwan (April 12-15, 2017, Taipei)
- SEMICON SEA (April 25-27, 2017, Penang, Malaysia)
- Inter SOLAR (May 31-June 2, 2017, Munich, Germany)
- SEMICON West (July 11-13, 2017, San Francisco, California)
- SEMICON Taiwan (September 13-15, 2017, Taipei, Taiwan)
- PV Taiwan (October 12-14, 2017, Taipei, Taiwan)
- SEMICON Europa (November 14-17, 2017, Munich, Germany)
- SEMICON Japan (December 13-15, 2017, Big Sight Tokyo, Japan)

Upcoming North America Meetings 2017

- SEMICON West 2017 Meetings (July 10-13, San Francisco, California)
- NA Standards Fall 2017 Meetings (November 6-9, 2017 (tentative), SEMI HQ, California)

Letter Ballot Critical Dates for NA Standards Spring 2017 meetings

- Cycle 4-17: due Apr 14 / Voting Period: Apr 25 – May 25
- Cycle 5-17: due May 12 / Voting Period: May 26 – June 26
- Cycle 6-17: due Jul 21 / Voting Period: Aug 1 – Aug 31
- Cycle 7-17: due Aug 18 / Voting Period: Sep 1 – Oct 2
- Cycle 8-17: due Oct 13 / Voting Period: Oct 27 – Nov 27
- Cycle 9-17: due Nov 16 / Voting Period: Nov 29 – Dec 29

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

- *SEMI Standards Publications*



Cycle	New	Revised	Reapproved	Withdrawn
December 2016	0	2	0	0
January 2017	1	4	4	0
February 2017	1	9	2	0
March 2017	0	16	11	0

Total SEMI Standards in portfolio: 972

Includes 170 Inactive Standards

- *New Standards*

Cycle	Designation	Title	Committee	Region
January 2017	SEMI PV76	Test Method for Durability of Low Light Intensity Organic Photovoltaic (OPV) and Dye-Sensitized Solar Cell (DSSC)	Photovoltaic	TA
February 2017	SEMI HB8	Test Method for Determining Orientation of a Sapphire Single Crystal	HB-LED	CH

- *Inactive Standards*

Committee	Number of Inactive Standards	Committee	Number of Inactive Standards
Assembly & Packaging	30	Gases	3
Automated Test Equipment	2	Information & Control	36
Compound Semiconductor Materials	6	Liquid Chemicals	6
Environmental Health & Safety	2	MEMS	2
Facilities	8	Metrics	6
FPD – Equipment	5	Micropatterning	30
FPD – Factory Automation	1	Physical Interfaces & Carriers	7

FPD – Materials & Components	5	Silicon Wafer	4
FPD – Substrate	1	Traceability	10

- *SNARF(s) Approved by GCS in between TC Chapter Meetings*
 - Revision to SEMI F61-0301 (Reapproved 0309): *Guide for Ultrapure Water System Used in Semiconductor Processing*, with title change to: *Guide to Design and Operation of a Semiconductor Ultrapure Water System*
 - Approved by GCS 12/16/2016
 - SNARF #6129
 - Revision to SEMI F98-0305 (Reapproved 1111): *Guide for Treatment of Reuse Water in Semiconductor Processing*
 - Approved by GCS 12/16/2016
 - SNARF #6136
- *SNARF 3 year status TC Chapter may grant a one-year extension*
 - SNARF #4957 (04/06/2010) - Revision to SEMI C41-0705, Specifications and Guidelines for 2-Propanol, with title change to: Specifications for 2-Propanol High Purity Polymer Materials and Components Task Force;
 - Failed ballot review in 2010
 - Need to extend till 04/06/2018
 - SNARF #5642 (08/07/2013) - Revision to SEMI C35-0708, Specifications and Guideline for Nitric Acid with title change to: Specification and Guide for Nitric Acid
 - Ballot failed 2013; Frank Flowers is revising the ballot.
 - Extended till 7/2017. May need to extend.
- *Nonconforming Titles*
 - **SEMI C21-0708** - *Specifications and Guideline for Ammonium Hydroxide*
 - **SEMI C23-0714** - *Specifications for Buffered Oxide Etchants*
 - **SEMI C28-0611** - *Specifications for Hydrofluoric Acid*
 - **SEMI C29-1110** - *Specifications and Guide for 4.9% Hydrofluoric Acid (10:1 v/v)*
 - **SEMI C30-1110** - *Specifications for Hydrogen Peroxide*
 - **SEMI C33-0213** - *Specifications for n-Methyl 2-Pyrrolidone*
 - **SEMI C35-0708** - *Specifications and Guideline for Nitric Acid*
 - **SEMI C36-1213** - *Specifications for Phosphoric Acid*
 - **SEMI C45-0309E** - *Specification and Guideline for Tetraethylorthosilicate (TEOS)*
 - **SEMI C64-0308 (Reapproved 1214)** - *SEMI Statistical Guidelines for Ship To Control*
 - **SEMI E49.2-1104** - *Guideline for the Qualification of Polymer Assemblies Used in Ultrapure Water and Liquid Chemical Systems in Semiconductor Process Equipment*
 - **SEMI E49.7-0304** - *Purity Guide for the Design and Manufacture of Ultrapure Water and Liquid Chemical Systems in Semiconductor Process*
 - **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 for details on nonconforming titles

Attachment 03: SEMI Standards Staff Report Spring 2017.ppt

4 Liaison Reports

4.1 Liquid Chemicals Europe TC Chapter

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

No update since Nov. 2016 EU Gases and Liquid Chemicals TC meeting. Of note from last report:

- Leadership
 - Committee Co-Chairs: Jean-Marie Collard (Solvay Chemicals) ; Gordon Ferrier (Gordon F Consulting)
- Meeting Information
 - Last Meeting: October 26, 2016 at SEMICON Europa, Grenoble, France
 - Next Meeting (tentative): November 2017 at SEMICON Europa Munich, Germany

Gasses and Liquid Chemicals Activities

- *The below ballots passed adjudication at SEMICON Europa:*
 - 5656B, Revision to SEMI C65-0308 : Guide for Trimethylsilane (3MS)
 - 5657B, Revision to SEMI C66-0308: Guide for Trimethylaluminium (TMAI)
 - 6077, Reapproval for SEMI C67-0811 : Guide for Hafnium Amides
 - 6078, Reapproval for SEMI C68-0811 : Guide for Zirconium Amides
 - 6079, Reapproval for SEMI C73-0811 : Guide for Hafnium Chloride
 - 6080, Reapproval for SEMI C74-0811: Guide for Hafnium Tert-Butoxide
 - 6081, Reapproval for SEMI C75-0811: Guide for Tetrakis (Dimethylamino) Titanium
 - 6082, Reapproval for SEMI C76-0811 : Guide for Zirconium Tert-Butoxide
 - 6083, Reapproval for SEMI C72-0811: Guide for Propylene-Glycol-Mono-Methyl-Ether (PGME), Propylene-Glycol-Mono-Methyl-Ether-Acetate (PGMEA) and the Mixture 70wt% PGME / 30wt%
- *Documents due for five-year review*
 - SEMI C52-0301 (Reapproved 0312), Specification for the Shelf Life of a Specialty Gas
 - SEMI C3.56-0312, Specification for Diborane Mixtures
 - SEMI C3.57-0312, Specification for Carbon Dioxide, CO₂, Electronic Grade in Cylinders
- *Presentation at SEMICON Europa meetings:*
 - IRDS versus ITRS and the Latest about Surface Contamination Issues.
 - Jochen Ruth (Pall) and Andreas Neuber (AMAT)
- Staff Contact: Inna Skvortsova, iskvortsova@semi.org

Attachment 04: Europe Gases & Liquid Chem Report (Nov 2016).pdf

4.2 Liquid Chemicals Japan TC Chapter

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

- Committee Co-chairs
 - Hiroshi Tomita (Toshiba)
 - Hiroyuki Araki (SCREEN Semiconductor Solutions)
- Last Meeting: December 14, 2016 during SEMICON Japan Meeting 2016 at Tokyo Bigsight, Tokyo, Japan
- Next Meeting: April 21, 2017 during Japan Spring Meetings 2017 at SEMI Japan, Tokyo, Japan



- Ballots results/ upcoming ballots – NONE/NONE
- New SNARFs/TFOFs – NONE
- Task Force / Study Group Reports:
 - Diaphragm Valve Task Force
 - No activities
 - Welding Fitting Task Force
 - No activities
 - Liquid Filter Task Force
 - SEMI F110-0712, Test Method for Mono-Dispersed Polystyrene Latex (PSL) Challenge of Liquid Filters will start for 5year-review procedure.
 - Liquid-Borne Particle Counter (LPC) Task Force
 - SEMI C77-0912, Test Method for Determining the Counting Efficiency of Liquid-Borne Particle Counters for Which the Minimum Detectable Particle Size is Between 30 nm and 100 nm will start for 5year-review procedure.
 - 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.

For more information, please contact: Naoko Tejima, SEMI Japan at ntejima@semi.org

Action Item:

(Inna S., Bob McIntosh, Naoko T.) 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.

Attachment 05: Japan Liquid Chem Report (Apr 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.

5.1 Ballot #5943

The TC Chapter reviewed the Document #5943, Revision to SEMI E49.2-1104, *Guideline for the Qualification of Polymer Assemblies Used in Ultrapure Water and Liquid Chemical Systems in Semiconductor Process Equipment*.

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: Documents # 5943 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.

By / 2nd: Koh Murai (Mega Fluids Systems) / Chuck Dale (GE)

Discussion: None.

Vote: 7-0. Motion passed.

Motion: Forward Document # 5943 to the ISC A&R for procedural review with editorial changes.

By / 2nd: Koh Murai (Mega Fluids Systems) / Chuck Dale (GE)

Discussion: None.

Vote: 7-0. Motion passed.

Attachment 06: 5943_Procedural Review



5.2 Ballot #6086

The TC Chapter reviewed the Document #6086, Revision to SEMI F75-1102, *Guide For Quality Monitoring of Ultrapure Water Used in Semiconductor Manufacturing*

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: Documents # 6086 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.

By / 2nd: Bob McIntosh (Enviro-Energy Solutions) / Koh Murai (Mega Fluids Systems)

Discussion: None.

Vote: 7-0. Motion passed.

Motion: Forward Document # 6086 to the ISC A&R for procedural review with editorial changes.

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

Discussion: None.

Vote: 7-0. Motion passed.

Attachment 07: 6086_Procedural Review

5.3 Ballot #6129

The TC Chapter reviewed the Document #6129, Revision to SEMI F61-0301 (Reapproved 0309) *Guide for Ultrapure Water System Used in Semiconductor Processing, with title change to: Guide to Design and Operation of a Semiconductor Ultrapure Water System*

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: Documents # 6129 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.

By / 2nd: Koh Murai (Mega Fluids Systems) / Darren Conner (Parker)

Discussion: None.

Vote: 7-0. Motion passed.

Motion: Forward Document # 6129 to the ISC A&R for procedural review with editorial changes.

By / 2nd: Koh Murai (Mega Fluids Systems) / Chuck Dale (GE)

Discussion: None.

Vote: 7-0. Motion passed.

Attachment 08: 6129_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 Force. Of note:

- Current Active Standard Being Worked by TF
 - E49.2 – Guide for the Qualification of Polymer Assemblies Used for Liquid Chemical Systems in Semiconductor Equipment
 - Balloted in Cycle 1-17.
 - Approved with minor editorial changes.
 - Needs to be processed through NA LCh committee and then sent on for final approval.
 - E49.7 – Guide for the Design and Manufacture of Polymer Assemblies Used for Liquid Chemical System in Semiconductor Equipment
 - Currently under review and revision.
 - 33% complete
 - Expected ready for ballot 10/17
 - E49.4 – Guide for Ultrahigh Purity Solvent Distribution Systems with Metallic Fluid Paths in Semiconductor Manufacturing Equipment
 - Ready to submit for letter ballot
 - Holding on submittal until most of E49.5 is reviewed so the two standards will be consistent with each other.
 - E49.5 - Guide for Ultrahigh Purity Solvent Distribution Systems with Non-Metallic Fluid Paths in Semiconductor Manufacturing Equipment
 - Currently under review and revision.
 - 60% complete
 - Expected ready for ballot 7/17

Attachment 09: HPLAS TF Report (Apr 2017).ppt

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

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

- Determined that will need to include updating SEMI F104 for particle measurement of components. It is a methods standard.
 - New SNARF for Revision to SEMI F104
 - Convened two tests to support making changes to standards for PVDF pipe and PFA Tubing. This will be completed in late May and ready for review.
 - Made changes to the existing tables already to adjust the scope of components covered
 - Report results to SCIS.
- On track to have document ready for Fall Standards 2017 face meetings.

Attachment 10: HPPM&C TF Report (Apr 2017).ppt

6.3 Chemical Analytics Methods (CAM) Task Force Report

Don Hadder reported for the CAM Task Force. Of note:

- No Leadership Changes
- New Business



- Preparing to work on 4 standards and propose ballots in upcoming cycles;
 - SNARF #5831 for Revision to SEMI C27;
 - SNARF #5642 for Revision to C35
 - New SNARF for Line-item revision to SEMI C30 to correct nonconforming title;
 - New SNARF for SEMI C45 to correct nonconforming title as part of 5 year review;
- New members to join CAM TF and will work on Test Method for determining density of CMP Slurries
 - Expect report the progress on CMP Slurries at SEMICON West.

Attachment: None.

6.4 Ultrapure Water (UPW) Task Force Report

- Working on Revision to SEMI F98. Progress to be reviewed at SEMICON West TC meeting in preparation for balloting in Cycle 7-17
- Target new SNARFs submission in 2018;

Attachment: None

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 C41-0705	7/1/2010	<i>Specifications and Guidelines for 2-Propanol</i>	Steve Rogers to review. Need SNARF for line-item revision to change the title and content.
**SEMI C35-0708	7/1/2013	<i>Specifications and Guideline for Nitric Acid</i>	SNARF Document #5642A failed. Frank F. working on revision target for Cycle 5-17
**SEMI C21-0708	7/1/2013	<i>Specifications and Guideline for Ammonium Hydroxide</i>	Let go inactive.
**SEMI C27-0708	7/1/2013	<i>Specifications and Guidelines for Hydrochloric Acid</i>	Frank to review.
SEMI C63-1108	11/1/2013	<i>Specification for Organosilicate Precursors Used in Low K CVD Processes</i>	Lisa reviewing and will have SNARF for revision C63 at SEMICON West for TC approval
**SEMI C45-0309E	3/1/2014	<i>Specification and Guideline for Tetraethylorthosilicate (TEOS)</i>	Review and correct nonconforming title.
SEMI F61-0301 (Reapproved 0309)	3/1/2014	<i>Guide for Ultrapure Water System Used in Semiconductor Processing</i>	Balloted in Cycle 2-17.
SEMI F75-1102 (Reapproved 0309)	3/1/2014	<i>Guide for Quality Monitoring of Ultrapure Water Used in Semiconductor Manufacturing</i>	Balloted in Cycle 2-17.
SEMI C62-0309	3/1/2014	<i>Specification for Progen Precursors Used in Low K CVD Processes</i>	Lisa reviewing and will have SNARF for revision C63 at SEMICON West for TC approval
SEMI C1-0310	3/1/2015	<i>Guide for the Analysis of Liquid Chemicals</i>	Reassigned to Frank and Kirsten. Both need SEMIViews access, Frank Doc, Kirsten Reader only. Need to issue the SNARF by West.



**SEMI C29-1110	11/1/2015	<i>Specifications and Guide for 4.9% Hydrofluoric Acid (10:1 v/v)</i>	Steve Rogers to review.
**SEMI C30-1110	11/1/2015	<i>Specifications for Hydrogen Peroxide</i>	Line-item for title change planned for Cycle 5-17
SEMI C40-1110	11/1/2015	<i>Specification for Potassium Hydroxide, 45% Solution</i>	Steve Rogers to review.
SEMI F98-0305 (Reapproved 1111)	11/1/2016	<i>Guide for Treatment of Reuse Water in Semiconductor Processing</i>	SNARF approved by GCS 12/16/2016. Planned for Cycle 7-17
SEMI C22-0212	2/1/2017	<i>Guide for Boron Tribromide</i>	Let go inactive
SEMI C38-0212	2/1/2017	<i>Guide for Phosphorus Oxychloride</i>	Let go inactive
SEMI C25-0312	3/1/2017	<i>Specification for Dichloromethane (Methylene Chloride)</i>	Let go inactive
**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>	New SNARF for approval by GCS needed. Plan to ballot in Cycle 7-17.
SEMI C46-0812	8/1/2017	<i>Guide for 25% Tetramethylammonium Hydroxide</i>	Let go inactive
SEMI C47-0812	8/1/2017	<i>Guide for Trans 1,2 Dichloroethylene</i>	Let go inactive
SEMI C48-0812	8/1/2017	<i>Specification and Guide for 1,1,1-Trichloroethane, Furnace Grade</i>	Let go inactive
SEMI C26-0912	9/1/2017	<i>Specification and Guide for Hexamethyldisilazane (HMDS)</i>	Let go inactive
SEMI F40-0699E	TBD	<i>Practice for Preparing Liquid Chemical Distribution Components for Chemical Testing</i>	Originally LCh, but in Facility Volume. Will be maintained. Bob and Koh reviewing.
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>	TBD
SEMI C34-0113	1/1/2018	<i>Specification and Guide for Mixed Acid Etchants</i>	TBD
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>	Oct 2017 make a motion to revise or reapprove as is. By UPW TF.
SEMI C20-0213	2/1/2018	<i>Specification and Guide for Ammonium Fluoride 40%</i>	TBD

The TC Chapter reviewed made a motion for the following Standards to go inactive

- **SEMI C22-0212** *Guide for Boron Tribromide*
- **SEMI C38-0212** *Guide for Phosphorus Oxychloride*
- **SEMI C25-0312** *Specification for Dichloromethane (Methylene Chloride)*
- **SEMI C46-0812** *Guide for 25% Tetramethylammonium Hydroxide*
- **SEMI C47-0812** *Guide for Trans 1,2 Dichloroethylene*
- **SEMI C48-0812** *Specification and Guide for 1,1,1-Trichloroethane, Furnace Grade*



- **SEMI C26-0912** *Specification and Guide for Hexamethyldisilazane (HMDS)*
- **SEMI C21-0708** *Specifications and Guideline for Ammonium Hydroxide*

Motion: To let the following Standards go inactive: C22, C38, C25, C46, C47, C48, C26, C21
By / 2nd: Bob McIntosh (GF Piping) / Koh Murai (Mega Fluids System)
Discussion: None
Vote: 7/0. Motion passed.

7.2 SNARFs Approaching 3-Year Review

The TC Chapter reviewed the below SNARFs and recommended to grant a one-year extension:

- SNARF #4957 Revision to SEMI C41-0705, *Specifications and Guidelines for 2-Propanol*, with title change to: *Specifications for 2-Propanol*
- SNARF #5642 Revision to SEMI C35-0708, *Specifications and Guideline for Nitric Acid* with title change to: *Specification and Guide for Nitric Acid*

Motion: To grant one-year extensions to SNARF# 4957. Approved to extend till 4/13/2018
By / 2nd: Koh Murai (Mega Fluids System) / Slava Libman (Air Liquide)
Discussion: None
Vote: 7/0. Motion passed.

Motion: To grant one-year extensions to SNARF# 5642. Approved to extend till 07/09/2018
By / 2nd: Koh Murai (Mega Fluids System) / Frank Flowers (Peroxy Chem)
Discussion: None
Vote: 7/0. Motion passed.

Action Item(s):

(Inna Skvortsova SEMI, Steve R.) Steve to make recommendation on SEMI C41. Inna support the SNARF.

(Inna Skvortsova SEMI) Arrange access to SEMI C1 for Bob McIntosh – doc version for editing; Kirsten – SEMIViews Read-only.

8 New Business

8.1 New TFOFs and SNARFs Authorization:

- No new TFOFs
- New SNARFs:

Technical Committee reviewed the draft SNARF and approved to distribute SNARF for Revision to SEMI C45-0309E, *Specification and Guideline for Tetraethylorthosilicate (TEOS)* with title change to: *Specification and Guide for Tetraethylorthosilicate (TEOS)* for 2-week Global TC membership review followed by GCS approval.

Motion: Move to approve distributing draft SNARF for Revision to SEMI C45-0309E for 2-week member review and GCS approval.
By / 2nd: Don Hadder (Intel) / Bob McIntosh (GF Piping)
Discussion: None
Vote: 7/0. Motion passed.



Technical Committee reviewed the draft SNARF and approved to distribute SNARF for Revision to SEMI F104, *Particle Test Method for Evaluation of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems* for 2-week Global TC membership review followed by GCS approval.

Motion: Move to approve distributing draft SNARF for Revision to SEMI F104 for 2-week member review and GCS approval.
By / 2nd: Frank Flowers (Peroxy Chemicals) / Slava Libman (Air Liquide)
Discussion: None
Vote: 7/0. Motion passed.

Technical Committee reviewed and approved new SNARF for Line Item Revision to SEMI C30-1110, *Specifications for Hydrogen Peroxide* to correct nonconforming title to: *Specification for Hydrogen Peroxide*

Motion: Move to approve new SNARF for Line Item Revision to SEMI C30-1110
By / 2nd: Frank Flowers (Peroxy Chemicals) / Koh Murai (Mega Fluids System)
Discussion: None
Vote: 7/0. Motion passed.

8.2 New Ballots Authorization:

- Ballot # 5831 submitted by CAM TF is approved for Cycle 5-2017 submission.
- Ballot #5642 submitted by CAM TF is approved for Cycle 5-2017 submission.
- Ballot #TBD submitted by CAM TF for Line-item revision to C30-1110 is approved for Cycle 5-2017 submission.
- Ballot #6136 submitted by UPW TF is approved for Cycle 7-2017 submission.

Motion: Ballot # 5831 for Revision to SEMI C27-0708, *Specifications and Guideline for Hydrochloric Acid with title change to: Specification and Guide for Hydrochloric Acid* to be balloted in cycle 5-2017
By / 2nd: Frank Flowers (Peroxy Chemicals) / Chuck Dale (GE)
Discussion: None
Vote: 7-0. Motion passed.

Motion: Ballot # 5642 for Revision to SEMI C35-0708, *Specifications and Guideline for Nitric Acid with title change to: Specification and Guide for Nitric Acid* to be balloted in Cycle 5 2017
By / 2nd: Frank Flowers (Peroxy Chemicals) / Bob McIntosh (GF Piping)
Discussion: None
Vote: 7-0. Motion passed.

Motion: Ballot #6136 for Revision to SEMI F98-0305 (Reapproved 1111), *Guide for Treatment of Reuse Water in Semiconductor Processing* to be balloted in Cycle 7 2017
By / 2nd: Don Hadder (Intel) / Koh Murai (Mega Fluid Systems)
Discussion: None
Vote: 7-0. Motion passed.



Motion: Ballot #TBD for Line Item Revision to SEMI C30-1110, *Specifications for Hydrogen Peroxide*, to correct nonconforming title to: *Specification for Hydrogen Peroxide* to be balloted in Cycle 5 2017

By / 2nd: Frank Flowers (Peroxy Chemicals) / Koh Murai (Mega Fluid Systems)

Discussion: None

Vote: 7-0. Motion passed.

8.3 SECC (former WECC) and IRDS Council Reports

- Slava Libman presented update from April 2, 2017 IRDS Yield Enhancement meeting.

Attachment 11: IRDS – Yield Update (Monterey).pdf

9 Action Items Review

9.1 Previous Meeting(s) Action Items

Inna Skvortsova (SEMI) reviewed open action items. These can be found in the Previous Meeting(s) Action Items table at the beginning of these minutes.

9.2 New Action Items

Inna Skvortsova (SEMI) reviewed the new action items. These can be found in the New Action Items table at the beginning of these minutes.

10 Next Meeting and Adjournment

The next meeting is scheduled for July 11, 2017 at San Francisco, CA. See <http://www.semi.org/en/events> for the current list of meeting schedules.

Having no further business, a motion was made to adjourn. Adjournment was at 4:31 PM.

Respectfully submitted by:

Inna Skvortsova

Sr. Standards Coordinator

SEMI North America

Phone: 408-9436996

Email: iskvortsova@semi.org

Minutes tentatively approved by:

Don Hadder (Intel); Co-chair	<Date approved>
Frank Flowers (PeroxyChem); Co-chair	<Date approved>

Table 13 Index of Available Attachments^{#1}

<i>Title</i>	<i>Title</i>
Attachment 01: SEMI Standards Required Elements.ppt	Attachment 07: 6086_Procedural Review
Attachment 02: NA Liquid Chemicals TC Meeting Minutes (Nov 2016).pdf	Attachment 08: 6129_Procedural Review



Attachment 03: SEMI Standards Staff Report Spring 2017.ppt	Attachment 09: HPLAS TF Report (Apr 2017).ppt
Attachment 04: Europe Gases & Liquid Chem Report (Nov 2016).pdf	Attachment 10: HPPM&C TF Report (Apr 2017).ppt
Attachment 05: Japan Liquid Chem Report (Apr 2017).pdf	Attachment 11: IRDS – Yield Update (Monterey).pdf
Attachment 06: 5943_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 Inna Skvortsova at the contact information above.