

## North America Liquid Chemicals Committee Meeting Summary and Minutes

N.A. Standards Spring 2014 Meetings  
Tuesday, 01 April 2014, 1:00 PM – 4:00 PM PST  
SEMI Headquarters in San Jose, California

### Next Committee Meeting

The next N.A. Liquid Chemicals standards meetings are tentatively scheduled for July 7-8, 2014 at the San Francisco Marriott Marquis Hotel in San Francisco, California in conjunction with the NA Standards SEMICON West 2014 meetings. Exact meeting dates and details will be announced when finalized and will be available at: <http://www.semi.org/node/49446>

### Table 1 Meeting Attendees

*Italics* indicate virtual participants

**Co-Chairs:** Frank Parker (ICL), Frank Flowers (PeroxyChem)

**SEMI Staff:** Michael Tran

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Air Liquide	Libman	Slava	Mega Fluid Systems	Murai	Koh
ICL	Parker	Frank	PeroxyChem	Flowers	Frank
ICL	Stover	Fred			
Intel	Hadder	Don	SEMI N.A.	Tran	Michael

### Table 2 Leadership Changes

There were no leadership changes.

### Table 3 Ballot Results

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

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

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5638A	Revision to SEMI C18-0708, Specification for Acetic Acid	<b>Passed</b> as balloted Superclean
5640A	Revision to SEMI C23-0708, Specifications for Buffered Oxide Etchants	<b>Passed</b> as balloted Superclean

### Table 4 Authorized Activities

<i>#</i>	<i>Type</i>	<i>SC/TF/WG</i>	<i>Details</i>
5708	SNARF	Analytical Methods TF	Reapproval of SEMI C10-1109, Guide for Determination of Method Detection Limits
5709	SNARF	Analytical Methods TF	Reapproval of SEMI C64-0308, SEMI Statistical Guidelines for Ship To Control
5710	SNARF	Analytical Methods TF	Reapproval of SEMI F48-0600 (Reapproved 0709), Test Method for Determining Trace Metals in Polymer Materials

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

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

**Table 5 Authorized Ballots**

Listing of documents approved by the committee for letter ballot.

#	When	SC/TF/WG	Details
5621	Cycle 4, 2014	IX Resin TF	New Standard: Test Method for Determining Ion Exchange Resin Contamination Contribution in High Purity Applications
5708	Cycle 3 or 4, 2014	Analytical Methods TF	Reapproval of SEMI C10-1109, Guide for Determination of Method Detection Limits
5709	Cycle 3 or 4, 2014	Analytical Methods TF	Reapproval of SEMI C64-0308, SEMI Statistical Guidelines for Ship To Control
5710	Cycle 3 or 4, 2014	Analytical Methods TF	Reapproval of SEMI F48-0600 (Reapproved 0709), Test Method for Determining Trace Metals in Polymer Materials
5675	Cycle 3 or 4, 2014	Determining Roughness of Polymer Surfaces Task Force	New Standard: Test Method for Determining Roughness Of Polymer Surfaces Used In Ultrapure Water and Liquid Chemical Distribution Systems By Contact Profilometry

**Table 6 New Action Items**

Item #	Assigned to	Details
2014Apr#01	Frank Flowers	Contact the Liquid-Borne Particle Counter (LPC) Task Force for interest in SEMI C77-0912.
2014Apr#02	Michael Tran	Draft the UPW TF proposals in a report for Document 5421A and send to the Japan Liquid Filter TF.
2014Apr#03	Michael Tran	Send Slava Libman SEMI F48 (Determining Trace Metals in Polymer Materials) and SEMI F61 (Ultrapure Water System Used in Semiconductor Processing) for 5 year review.

**Table 7 Previous Meeting Actions Items**

Item #	Assigned to	Details	Status
2013Oct#01	NA Liquid Chemicals committee	Arrange a teleconference with the Japan Liquid Filters TF to discuss Document 5421 from Japan (Test Method for Particle Removal Performance of Liquid Filter Rated Below 30 nm with ICP-MS)	CLOSED.
2013Jul#03	Michael Tran	Send SEMI C63 (Organosilicate Precursors Used In Low K CVD Processes) to Wayne McDermott for 5 year review.	Open? Michael Tran will have to check.
2013Jul#05	Michael Tran	Distribute to the committee the list of updated 5 year review Documents.	Recurring.

**1 Welcome, Reminders, and Introductions**

1.1 Frank Parker (ICL) called the meeting to order at 1:01 PM PDT. 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

**2 Review of Previous Meeting Minutes**

2.1 The committee reviewed the minutes of the previous meeting.

**Motion:** To approve the minutes of the previous meeting as written.

**By / 2<sup>nd</sup>:** Fred Stover (ICL) / Frank Flowers (PeroxyChem)

**Discussion:** None.

**Vote:** 4-0 in favor. Motion passed.

**Attachment:** 02, NA Liquid Chemicals Committee meeting minutes (Fall 2013)

### 3 Liaison Reports

#### 3.1 Europe Gases and Liquid Chemicals Committee

3.1.1 Michael Tran (SEMI N.A.) reported for the Europe Gases and Liquid Chemicals committee. Of note:

- Meeting Information
  - Last Meeting
    - October 8, 2013 at SEMICON Europa in Dresden, Germany
  - Next Meeting
    - 7-9 October, 2014 at SEMICON Europa in Grenoble, France
- Ballot results
  - All passed as balloted:
    - Doc. 5496, Revision to SEMI C80: Guide for Tetrakis(Dimethylamino) Silane (TDMAS)
    - Doc. 5324 New Standard: Guide for Cyclopentanone
    - Doc. 5326 New Standard: Guide for Methyl Isobutyl Carbinol (MIBC) or 4-Methyl 2-Pentanol
    - Doc. 5635 Withdrawal of SEMI C61: Specification for Bar Code Container Identification
- New SNARFs
  - Doc. 5658, New Standard: Guide for PDMAT (pentakis dimethyl amino Tantalum)
  - Doc. 5656, Revision to SEMI C65: Guide for trimethyl silane (3MS)
  - Doc. 5657, Revision to SEMI C66: Guide for trimethyl Aluminium (TMAI)
- Existing SNARFs
  - Doc. 5495, New Standard: Guide for Cyclo Hexanone
  - Doc. 5491, New Standard: Guide for Titanium Tetrachloride (TiCl<sub>4</sub>)
  - Doc. 5492, New Standard: Guide for Ethylene Glycol
  - Doc. 5493, New Standard: Guide for Octa Methyl Cyclo Tetra Siloxane (OMCTS)
  - Doc. 5494, New Standard: Guide for Tetra Methyl Cyclo Tetra Siloxane (TMCTS)
  - Doc. 5325, New Standard: Dimethyl Dimethoxy Silane (DMDMOS)
- The draft documents resulting from the SNARFs once completed will be balloted and reviewed at the next meeting in conjunction with SEMICON Europa 2014
- SEMI Europe Contact: Andrea Busch, abusch@semi.org

**Attachment:** 03, Europe Gases & Liquid Chemicals Committee Report (Spring 2014)

#### 3.2 Japan Liquid Chemicals Committee

3.2.1 Michael Tran (SEMI N.A.) reported for the Japan Liquid Chemicals committee. Of note:

- Meeting Information
  - Last Meeting

- December 3, 2013 at SEMI Japan in conjunction with SEMICON Japan 2013 in Tokyo, Japan
- Next Meeting
  - April 11, 2014 at SEMI Japan in conjunction with Japan Spring 2014 Meetings in Tokyo, Japan
- Liquid Filter (LF) Task Force
  - Authorized Ballot
    - Doc. 5421A, New Standard: Test Method for Particle Removal Performance of Liquid Filter Rated Below 30 nm with ICP-MS
    - Balloted for Cycle 2-2014 and reviewed at the next Japan Liquid Chemicals Committee meeting on April 11.
- Liquid-Borne Particle Counter (LPC) Task Force
  - The Task Force is asking the particle manufacturers to indicate the uncertainty of the mass concentration of the test particle to add to SEMI C77-0912 (Liquid-Borne Particle Counters Between 30 nm and 100 nm)
- Two new Working Groups formed:
  - Ultrapure Water Evaluation Study Group
  - Liquid Chemicals ESD Study Group
- SEMI Japan Contact: Chie Yanagisawa, cyanagisawa @semi.org

**Discussion:** Liquid-Borne Particle Counter (LPC) Task Force - Frank Flowers said it is difficult to get agreement of the particle size under 30 nm among different equipment and methods of calibration. Koh Murai said a lot of people can't use the calibration methods because of Intellectual Property.

**Action Item:** 2014Apr#01, Frank Flowers to contact the Liquid-Borne Particle Counter (LPC) Task Force for interest in SEMI C77-0912.

**Attachment:** 04, Japan Liquid Chemicals Committee Report (Spring 2014)

### 3.3 SEMI Staff Report

3.3.1 Michael Tran (SEMI N.A.) gave the SEMI N.A. Staff Report. The key items were as follows:

- 2014 Global Calendar of Events
  - European 3D TSV Summit (January 21-22, Grenoble, France)
  - SEMICON Korea / LED Korea (February 12-14, Seoul)
  - SEMICON China (March 18-20, Shanghai)
  - SEMICON Singapore (April 23-25, Marina Bay Sands)
  - SEMICON Russia (May 14-15, Moscow)
  - SEMI Advanced Semiconductor Manufacturing Conference [ASMC] (May 19-21, Saratoga Springs, New York)
  - SEMICON West (July 8-10, San Francisco, California)

- SEMICON Taiwan (September 3-5, Taipei)
- SEMICON Europa / Plastic Electronics (October 7-9, Grenoble, France)
- SEMICON Japan (December 3-5, Tokyo)
- NA Standards Spring 2014 Meetings (March 31 – April 3)
  - Committees meeting at SEMI Headquarters (San Jose)
    - 3DS-IC | EHS | Facilities & Gases | Information & Control | Metrics | PV Materials
  - SEMI thanks Intel (Santa Clara) for hosting the PIC and Silicon Wafer meetings
- Upcoming North America Meetings (2014)
  - NA Compound Semiconductor Materials in conjunction with CS MANTECH 2014 (May 21, Denver, Colorado)
  - NA Standards Meetings at SEMICON West 2014 (July 7- 10, San Francisco, California)
  - NA Standards Fall 2014 Meetings (November 3-6, San Jose, California)
- Standards Publications Report
  - November 2013 Cycle
    - New Standards – 1, Revised Standards – 6, Reapproved Standards – 3, Withdrawn Standards – 0
  - December 2013 Cycle
    - New Standards – 2, Revised Standards – 11, Reapproved Standards – 4, Withdrawn Standards – 0
  - January 2014 Cycle
    - New Standards – 3, Revised Standards – 3, Reapproved Standards – 0, Withdrawn Standards – 1
  - February 2014 Cycle
    - New Standards – 4, Revised Standards – 5, Reapproved Standards – 0, Withdrawn Standards – 1
  - Total in portfolio – 901 (includes 99 Inactive Standards)
- Official SEMI Standards Groups
  - LinkedIn
    - <http://www.linkedin.com/groups/Official-SEMI-Standards-Group-1774298/about>
  - Twitter
    - @SEMI\_standard
- SEMI N.A. Standards staff contact: Michael Tran, [mtran@semi.org](mailto:mtran@semi.org)

**Attachment:** 05, SEMI North America Standards Staff Report (Spring 2014)

## 4 Ballot Review

NOTE 1: Committee adjudication on ballots is detailed in the Audits & Reviews (A&R) Subcommittee Forms for procedural review. These A&R forms are available as attachments to these minutes. The attachment number for each balloted document is provided under each committee review motion below.

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5638A	Revision to SEMI C18-0708, Specification for Acetic Acid	<b>Passed</b> as balloted Superclean
5640A	Revision to SEMI C23-0708, Specifications for Buffered Oxide Etchants	<b>Passed</b> as balloted Superclean

**Motion:** Document 5638A passed committee review as balloted and will be forwarded to the A&R for procedural review.

**By / 2<sup>nd</sup>:** Frank Flowers (PeroxyChem) / Fred Stover (ICL)

**Discussion:** None.

**Vote:** 4-0 in favor. Motion passed.

**Attachment:** 06, Procedural Review for Document #5638A

**Motion:** Document 5640A passed committee review as balloted and will be forwarded to the A&R for procedural review.

**By / 2<sup>nd</sup>:** Koh Murai (Mega Fluid Systems) / Fred Stover (ICL)

**Discussion:** None.

**Vote:** 4-0 in favor. Motion passed.

**Attachment:** 07, Procedural Review for Document #5640A

## 5 Subcommittee & Task Force Reports

### 5.1 Analytical Methods Task Force

5.1.1 Frank Flowers (PeroxyChem) reported for the TF. The TF reviewed documents due for five year reviews.

- The following documents for will be balloted for reapproval in Cycle 3 or 4, 2014:
  - SEMI C10-1109, Guide for Determination of Method Detection Limits
  - SEMI C64-0308, SEMI Statistical Guidelines for Ship To Control
  - SEMI F48-0600 (Reapproved 0709), Test Method for Determining Trace Metals in Polymer Materials

### 5.2 SEMI F57 (Specification for Polymer Materials and Components Used in Ultrapure Water and Liquid Chemical Distribution Systems) Revision / ITRS Alignment Task Force

5.2.1 Marty Burkhardt (Hi Pure Tech) reported for the SEMI F57 Task Force. The TF discussed the following issues in SEMI F57:

- Adding a standard trace metals leaching test method for PFA (perfluoroalkoxy)
- Is the list of contaminants in SEMI F57 complete?
- The ITRS does not recognize some elements from the NA Liquid Chemicals committee
- Raw materials and tubing would be included
- What about other products?

- What is the most critical application (acid, temp, time)?
- Would pre-rinsing of the component be required?
- What are the requirements for the level of contamination allowed?
- What is the frequency of testing?

5.2.2 These issues and more will be discussed over teleconferences before the next TF meeting at SEMICON West 2014

### 5.3 *Polymer Surface Roughness Task Force*

5.3.1 Marty Burkhart (Hi Pure Tech) reported for the Polymer Surface Roughness Task Force. The TF discussed Draft Document 5675, New Standard: Test Method for Determining Roughness of Polymer Surfaces Used In Ultrapure Water and Liquid Chemical Distribution Systems By Contact Profilometry. The document draft is done and will be balloted in Cycle 3 or 4, 2014.

### 5.4 *SEMI F31(Guide for Bulk Chemical Distribution Systems), F39 (Guideline for Chemical Blending Systems), F41 (Guide for Qualification of a Bulk Chemical Distribution System) Rewrite TF*

5.4.1 Koh Murai (Mega Fluid Systems) reported for the Task force. Of note:

- SEMI F31 was revised and published in March 2013.
- SEMI F39 revision draft (doc. 5528) is not ready yet and needs work done to one section and to the wording.
- The revision to SEMI F41 will begin after Doc. 5528 (Revision to SEMI F39) is complete and balloted.

### 5.5 *SEMI F63 (Ultrapure Water Used in Semiconductor Processing) Revision Task Force*

5.5.1 The committee reported for the TF. The TF is reviewing SEMI F63 which is due for five year review.

### 5.6 *Ultrapure Water Filtration Efficiency Task Force*

5.6.1 Slava Libman reported for the TF. The TF reviewed Document 5421A (Test Method for Particle Removal Performance of Liquid Filter Rated Below 30 nm with ICP-MS) from Japan. The TF drafted proposals to the Japan Liquid Filters TF to come to a compromise for the reject votes it left for document 5421A.

**Action Item:** 2014Apr#02, Michael Tran to draft the UPW TF proposals in a report for Document 5421A and send to the Japan Liquid Filter TF.

**Attachment:** 08, UPW TF Report for Document 5421A to the Japan Liquid Filter TF

### 5.7 *IX Resin Task Force Discussion*

5.7.1 The committee reported for the IX Resin TF. Document #5621, (Determining IX Resin Contamination) is 85-95% complete. It will be balloted in Cycle 3 or 4, 2014.

5.7.2 The TF defined the test method in the document and used it to confirm the validation testing to make sure it is adequate. The success criterion is based on the best data available and data from the validation testing.

## 6 Old Business

### 6.1 5-Year Review Update

6.1.1 The NA Liquid Chemicals Committee reviewed and updated the master 5-year review documents file.

**Action Item:** 2014Apr#03, Michael Tran to send Slava Libman SEMI F48 (Determining Trace Metals in Polymer Materials) and SEMI F61 (Ultrapure Water System Used in Semiconductor Processing) for 5 year review.

**Attachment:** 09, NA Liquid Chemicals Master 5-Year Review Summary (Spring 2014)

## 7 New Business

### 7.1 New SNARFs

The following SNARFs were reviewed by the committee:

#	Type	SC/TF/WG	Details
5708	SNARF	Analytical Methods TF	Reapproval of SEMI C10-1109, Guide for Determination of Method Detection Limits
5709	SNARF	Analytical Methods TF	Reapproval of SEMI C64-0308, SEMI Statistical Guidelines for Ship To Control
5710	SNARF	Analytical Methods TF	Reapproval of SEMI F48-0600 (Reapproved 0709), Test Method for Determining Trace Metals in Polymer Materials

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

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

**Motion:** To approve the SNARF #5708

**By / 2<sup>nd</sup>:** Koh Murai (Mega Fluid Systems) / Fred Stover (ICL)

**Discussion:** None.

**Vote:** 5-0 in favor. Motion passed.

**Motion:** To approve the SNARF #5709

**By / 2<sup>nd</sup>:** Koh Murai (Mega Fluid Systems) / Fred Stover (ICL)

**Discussion:** None.

**Vote:** 5-0 in favor. Motion passed.

**Motion:** To approve the SNARF #5710

**By / 2<sup>nd</sup>:** Fred Stover (ICL) / Koh Murai (Mega Fluid Systems)

**Discussion:** None.

**Vote:** 5-0 in favor. Motion passed.

### 7.2 New Ballots Authorizations

7.2.1 The following documents were submitted for letter ballot authorization:

#	When	SC/TF/WG	Details
5621	Cycle 4, 2014	IX Resin TF	New Standard: Test Method for Determining Ion Exchange Resin Contamination Contribution in High Purity Applications
5708	Cycle 3 or 4, 2014	Analytical Methods TF	Reapproval of SEMI C10-1109, Guide for Determination of Method Detection Limits
5709	Cycle 3 or 4, 2014	Analytical Methods TF	Reapproval of SEMI C64-0308, SEMI Statistical Guidelines for Ship To Control



#	When	SC/TF/WG	Details
5710	Cycle 3 or 4, 2014	Analytical Methods TF	Reapproval of SEMI F48-0600 (Reapproved 0709), Test Method for Determining Trace Metals in Polymer Materials
5675	Cycle 3 or 4, 2014	Determining Roughness of Polymer Surfaces Task Force	New Standard: Test Method for Determining Roughness Of Polymer Surfaces Used In Ultrapure Water and Liquid Chemical Distribution Systems By Contact Profilometry

**Motion:** To approve letter ballot of Document 5621 in Cycle 4, 2014.  
**By / 2<sup>nd</sup>:** Koh Murai (Mega Fluid Systems) / Frank Flowers (PeroxyChem)  
**Discussion:** None.  
**Vote:** 5-0 in favor. Motion passed.

**Motion:** To approve letter ballot of Document 5708 in Cycle 3 or 4, 2014.  
**By / 2<sup>nd</sup>:** Koh Murai (Mega Fluid Systems) / Fred Stover (ICL)  
**Discussion:** None.  
**Vote:** 5-0 in favor. Motion passed.

**Motion:** To approve letter ballot of Document 5709 in Cycle 3 or 4, 2014.  
**By / 2<sup>nd</sup>:** Koh Murai (Mega Fluid Systems) / Fred Stover (ICL)  
**Discussion:** None.  
**Vote:** 5-0 in favor. Motion passed.

**Motion:** To approve letter ballot of Document 5710 in Cycle 3 or 4, 2014.  
**By / 2<sup>nd</sup>:** Fred Stover (ICL) / Koh Murai (Mega Fluid Systems)  
**Discussion:** None.  
**Vote:** 5-0 in favor. Motion passed.

**Motion:** To approve letter ballot of Document 5675 in Cycle 3 or 4, 2014.  
**By / 2<sup>nd</sup>:** Slava Libman / Frank Flowers (PeroxyChem)  
**Discussion:** None.  
**Vote:** 5-0 in favor. Motion passed.

## 8 Action Item Review

### 8.1 Open Action Items

8.1.1 Michael Tran (SEMI) reviewed the open action items. These can be found in the Open Action Items table at the beginning of these minutes.

### 8.2 New Action Items

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

## 9 Next Meeting and Adjournment

9.1 The next N.A. Liquid Chemicals standards meetings are tentatively scheduled for July 7-8, 2014 at the San Francisco Marriott Marquis Hotel in San Francisco, California in conjunction with the NA Standards SEMICON West 2014 meetings. Exact meeting dates and details will be announced when finalized and will be available at:

<http://www.semi.org/node/49446>

**Tentative Schedule:**

Monday, July 7\*

- Polymer Surface Roughness TF (1:00 PM to 2:00 PM)
- SEMI IX Resin TF (2:00 PM to 3:00 PM)
- UPW Filtration TF/ F63 TF (3:00 PM to 5:00 PM)

Tuesday, July 8\*

- F57 Discussion/ITRS Alignment (8:00 AM to 9:00 AM)
- F39, F31 & F41 Rewrite TF (9:00 AM to 10:00 AM)
- Analytical Methods TF (10:00 AM to 12 Noon)
- Liquid Chemicals Committee (2:00 PM to 5:00 PM)

\*All times are in PDT. Times and dates are subject to change without notice.

For meeting details, registration, the latest schedule, and travel information please visit

<http://www.semi.org/node/49446>

9.2 Having no further business, a motion was made to adjourn the N.A. Liquid Chemicals committee meeting on April 01, 2014 in conjunction with the N.A. Standards Spring 2014 Meetings at SEMI Headquarters in San Jose, California. Adjournment was at 3:57 PM (PDT).

Respectfully submitted by:

Michael Tran  
 Senior Standards Engineer  
 SEMI North America  
 Phone: 1-408-943-7019  
 Email: mtran@semi.org

Minutes approved by:

Frank Parker (ICL), Co-chair	June 9, 2014
Frank Flowers (PeroxyChem), Co-chair	June 9, 2014

**Table 8 Index of Available Attachments #1**

#	Title	#	Title
01	SEMI Standards Required Meeting Elements	06	Procedural Review for Document #5638A
02	NA Liquid Chemicals Committee previous meeting minutes (Fall 2013)	07	Procedural Review for Document #5640A
03	EU Liquid Chemicals Committee Report (Spring 2014)	08	UPW Filtration TF Report for Document 5421A to the Japan Liquid Filter TF.
04	Japan Liquid Chemicals Committee Report (Spring 2014)	09	NA Liquid Chemicals Master 5-Year Review Summary Spring 2014
05	SEMI North America Standards Staff Report (Spring 2014)		

#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](http://www.semi.org). For additional information or to obtain individual attachments, please contact Michael Tran at the contact information above.