



North America Liquid Chemicals Committee Meeting Summary and Minutes



SEMI®
International
Standards

North America Standards Spring 2015 Meetings

31 March 2015, 0800 – 1630 Pacific Time
SEMI Headquarters in San Jose, California

Committee Announcements

Next Committee Meeting

NA Standards Meetings at SEMICON West 2015
Tuesday, July 14, 2015; 0800 – 1630 Pacific Time
San Francisco Marriott Marquis Hotel in San Francisco, California

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Frank Parker (ICL Performance Products), 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	KMG Electronic Chemicals	Salehi	Asaad
Air Liquide	Milstein	Lisa	Mega Fluid Systems	Kandiyeli	David
ICL Performance Products	Parker	Frank	SEMI	Amano	James
Intel	Hadder, Jr.	Don	SEMI	Tran	Michael

Table 2 Leadership Changes

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
None		



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.

Document #	Document Title	Committee Action
<i>Cycle 8, 2014 Ballots</i>		
5621B	New Standard: Guide for Determining the Quality of Ion Exchanged Resin Used in Polish Applications of Ultrapure Water System	Passed TC Chapter review with editorial changes.
5810	New Standard: Test Method for Testing PFA Materials Used In Liquid Chemical Distribution Systems	Failed TC Chapter review and returned to the TF for rework.
<i>Cycle 2, 2015 Ballots</i>		
5809	Line item revision to SEMI C69-0611, Test Method for the Determination of Surface Areas of Polymer Pellets	
Line item 1	Correct Equation for Prolate Spheroid and Add Equation for Oblate Spheroid in Table A1-2	Passed TC Chapter review as balloted. Superclean
5831	Revision to SEMI C27-0708 Specifications and Guidelines for Hydrochloric Acid with title change to: Specification and Guide for Hydrochloric Acid	Failed TC Chapter review and returned to the TF for rework.

Table 4 Authorized Activities

#	Type	SC/TF/WG	Details
None			

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

#	When	SC/TF/WG	Details
5642A	Cycle 4 or 5, 2015	Analytical Methods TF	Revision to SEMI C35-0708, Specifications and Guideline for Nitric Acid with title change to: Specification and Guide for Nitric Acid
5831A	Cycle 4 or 5, 2015	Analytical Methods TF	Revision to SEMI C27-0708 Specifications and Guidelines for Hydrochloric Acid with title change to: Specification and Guide for Hydrochloric Acid
5810A	Cycle 4 or 5, 2015	SEMI F57/ F40 Rewrite TF	New Standard: Test Method for Testing PFA Materials Used In Liquid Chemical Distribution Systems

Table 6 New Action Items

Item #	Assigned to	Details
2015Mar #01	Don Hadder, Jr.	Submit task force name change proposal for F57/F40 activity.
2015Mar #02	Slava Libman	Prepare F63 revision SNARF for SEMICON West 2015 meeting.
2015Mar #03	Michael Tran	Compile list of NA Liquid Chemicals Standards that have nonconforming titles per Appendix 4 of the Procedure Manual.



Table 7 Previous Meeting Actions Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2014Nov#01	Don Hadder Jr., Michael Tran	Send invites to the SEMI F40 Revision TF for SEMI F57 volunteers.
2014Apr#01	Frank Flowers	Contact Liquid-Borne Particle Counter (LPC) Task Force for interest in SEMI C77-0912.
2013Jul#03	Michael Tran	Send SEMI C63 (Organosilicate Precursors Used In Low K CVD Processes) to Wayne McDermott for 5 year review.
2013Jul#05	Michael Tran	Distribute to the TC Chapter the list of updated 5 year review Documents.

1 Welcome, Reminders, and Introductions

Frank Parker, committee co-chair, called the meeting to order at 2:05 AM. After welcoming all attendees, a round of introductions followed. The SEMI meeting reminders on membership requirements, antitrust, patentable technology, and meeting guidelines were then presented and explained.

Attachment: 01, SEMI Standards Required Meeting Elements

2 Review of Previous Meeting Minutes

The committee reviewed the minutes of the previous meeting held November 4 in conjunction with the NA Standards Fall 2014 meetings.

Motion: Accept the minutes of the previous meeting as written.

By / 2nd: Don Hadder, Jr. (Intel) / David Kandiyeli (Mega Fluid Systems)

Discussion: None

Vote: 4-0 in favor. Motion passed.

Attachment: 02, NA Liquid Chemicals Fall 2014 meeting (November 4) minutes

3 Ballot Review

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.

NOTE 1: Committee adjudication on Cycles 8, 2014 and Cycle 2, 2015 ballots are 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 document is provided below the summary tables.

3.1 *Cycle 8, 2014 Ballot*

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5621B	New Standard: Guide for Determining the Quality of Ion Exchanged Resin Used in Polish Applications of Ultrapure Water System	Passed TC Chapter review with editorial changes.
5810	New Standard: Test Method for Testing PFA Materials Used In Liquid Chemical Distribution Systems	Failed TC Chapter review and returned to the TF for rework.



3.2 Cycle 2, 2015 Ballots

Document #	Document Title	Committee Action
5809	Line item revision to SEMI C69-0611, Test Method for the Determination of Surface Areas of Polymer Pellets	
Line item 1	Correct Equation for Prolate Spheroid and Add Equation for Oblate Spheroid in Table A1-2	Passed TC Chapter review as balloted. Superclean
5831	Revision to SEMI C27-0708 Specifications and Guidelines for Hydrochloric Acid with title change to: Specification and Guide for Hydrochloric Acid	Failed TC Chapter review and returned to the TF for rework.

Attachment: 03, Ballot Review for Doc. 5621B
04, Ballot Review for Doc. 5809-LI1

4 Liaison and Staff Reports

4.1 Europe Gases and Liquid Chemicals Report

Michael Tran presented the Europe Gases & Liquid Chemicals liaison report. The key items were as follows:

- Approved for balloting
 - Doc. 5765: Revision to SEMI C15: *Test Method for ppm and ppb Humidity Standards*
- Ballots
 - Passed (C5-14)
 - Doc. 5492, New Standard: *Guide for Ethylene Glycol*
 - Failed, to be reballoted in 2015 (C5-14)
 - 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)*
- New Standards
 - 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*
- Next meeting: SEMICON Europa 2015 (Dresden, Germany)

Attachment: 05, Europe Gases & Liquid Chemicals Liaison Report

4.2 Japan Liquid Chemicals Report

Michael Tran presented the Europe Gases & Liquid Chemicals liaison report. The key items were as follows:

- Committee Co-chairs
 - Hiroshi Tomita (Toshiba)



- Hiroyuki Araki (Dainippon Screen Manufacturing)
- Liquid Chemicals ESD Study Group
 - Since the all tasks have been finished, the SG was disbanded, and Keiichi Yamakawa / NihonGore and Takuya Nagafuchi / Nihon Entegris were relieved of the SG co-leader position.
- No ballot results or upcoming ballots. No new TFOFs or SNARFs
- Diaphragm Valve Task Force
 - No activities
- Welding Fitting Task Force
 - No activities
- Liquid-Borne Particle Counter (LPC) Task Force
 - No activities
- Liquid Filter Task Force
 - Letter of Assurance (LOA) of Doc. 5421A, New Standard: *Test Method for Particle Removal Performance of Liquid Filter Rated below 30 nm with ICP-MS* was submitted.
 - Will be published soon
- 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 and liquated silica in IPA.
- Liquid Chemicals ESD Study Group
 - Since the all tasks have been finished, the SG was disbanded.
- Next meeting: To be determined

Attachment: 06, Japan Liquid Chemicals Liaison Report

4.3 SEMI Staff Report

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

- 2015 Global Calendar of Events
 - SEMICON Southeast Asia (April 22-24, Penang, Malaysia)
 - Advanced Semiconductor Manufacturing Conference [ASMC] (May 3-6, Saratoga Springs, New York)
 - Intersolar Europe (June 10-12, Munich Germany)
 - SEMICON Russia (June 17-18, Moscow)
 - SEMICON West (July 14-16, San Francisco, California)
 - SEMICON Taiwan (September 2-4, Taipei)
 - European MEMS Summit (September 17-18, Milan, Italy)
 - Strategic Materials Conference [SMC] (September 22-23, Mountain View, California)
 - SEMICON Europa (October 6-8, Dresden, Germany)
 - SEMICON Japan (December 16-18, Tokyo)



- NA Standards Spring 2015 Meetings (March 29 to April 2)
 - Committees meeting at SEMI Headquarters (San Jose)
 - 3DS-IC | EHS | Facilities & Gases | HB-LED | Information & Control | Liquid Chemicals | MEMS/NEMS | Metrics | PV Materials
 - SEMI thanks Intel (Santa Clara) for hosting the Physical Interfaces & Carriers (PIC) committee and task force meetings.
 - SEMI thanks KLA-Tencor (Milpitas) for hosting the Silicon Wafer committee and task force meetings.
- Upcoming North America Meetings (2015)
 - 2015:
 - NA Compound Semiconductor Materials TC Chapter Meeting (May 20 in conjunction with CS MANTECH, Scottsdale, Arizona)
 - NA Standards Meetings at SEMICON West 2015 (July 13-16, San Francisco, California)
 - NA Standards Fall 2015 Meetings (November 2-5, San Jose, California)
 - 2016:
 - NA Standards Spring 2016 Meetings (April 4-7, San Jose, California)
- Technical Ballot Critical Dates for NA Standards meetings at SEMICON West 2015
 - Cycle 4: due April 10 / Voting Period: April 21 – May 21
 - Cycle 5: due May 8 / Voting Period: May 22 – June 22
- Standards Publications Report

Cycle	New	Revised	Reapproved	Withdrawn
November 2014	1	4	1	0
December 2014	3	4	3	0
January 2015	5	2	0	1
February 2015	3	7	3	0


- Total in portfolio – 928 (includes 110 Inactive Standards)
- New Requirements/Process Reminders for TC Chapter Meetings
 - Standards Document Development Project Period
 - Project period shall not exceed 3 years (Regs 8.3.2)
 - SNARF approval to TC Chapter approval
 - If document development activity is found to be continuing, but cannot completed with the project period, TC Chapter may grant one-year extension at a time, as many times as necessary.
 - SNARF Review Period
 - A submitted SNARF for a new, or for a major revision to an existing, Standard or Safety Guideline is made available to all members of a TC Chapter’s parent global technical committee for two weeks for their review and comment. (Regs 8.2.1)
 - If the SNARF is submitted at a TC Chapter meeting, the committee can review and approve, but the SNARF will need to be distributed for two weeks and then approved via GCS.



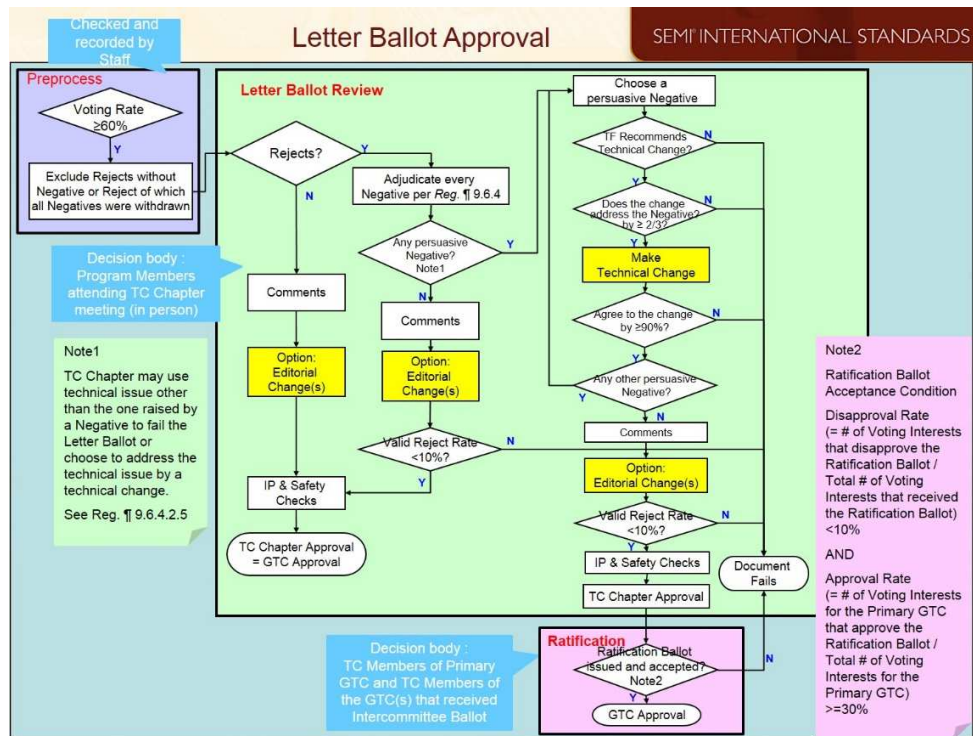
- New SNARF & TFOF forms *{embedded in Staff Report, see Attachment 03 of these minutes}*
- Procedures for Correcting Nonconforming Titles of Published Standards Document (PM Appendix 4)
 - Some Standards qualify for a special procedure where a line item change can be used to correct the titles. Otherwise, the corrective action will likely require a major revision.
- Table of Content (TOC)
 - No section of a Standard or Safety Guideline may contain a list of section numbers and titles (e.g., similar to a Table of Contents).
 - Table of content can be approved editorially during Reapproval
- Assignment of Draft Document Numbers
 - Upon successful publication of a Document, or termination of work on it by the TF, Standards staff retires the Document number and its associated SNARF, and they are not to be used for further Document development activity.
 - For a Document with Line Item(s) that passed while others failed, the same SNARF may be used to rebalot only those failed Line Item(s).
 - A new SNARF is required to introduce new Line Item(s).
- SNARF
 - SNARFs may be submitted and approved for new, revised, reapproved, or reinstated Documents that have been approved by the TC Chapter, but not yet published (i.e., no new Publication Date Code exists yet). (PM NOTE 8)
- Minority Report (MR)
 - The motion passes if a simple majority of the total GCS voting membership (i.e., not just those who return votes) approve the motion (Regs 9.9)
- Latest Approvals/Next Revisions
 - Follow-up revisions of Regulations and Procedure Manual were published on 27 March, 2015 for use in NA Spring Standard meetings.
- Regulations/PM Ballot Revisions



<i>Group #</i>	<i>Title</i>	<i>Regs</i>	<i>PM</i>
1	Clarification on Standards Document Development Project Period	Y	Y
2	GCS Voting Period for Minority Reports	Y	Y
3	Improvement on Minority Report Handling for Shorter Time to Publication	Y	Y
4	TC Membership Requirement	Y	N
5	Ballot Adjudication Process Improvement	Y	Y
6	Revision to Procedural Review	Y	Y
7	Clarification of TC Chapter Review and Adjudication Term	Y	Y
8	Clarification of Procedure Guide to Procedure Manual	Y	Y
9	Miscellaneous Changes of Regulations	Y	N
10	Add New Requirements Related to Notices	N	Y
11	Add New Guidance Related to Note	N	Y
12	Clarification on SNARF and TFOF submitter	N	Y
13	Clarification on SNARF approval procedures for New Standards/Safety Guidelines and major revision of existing Standards/Safety Guidelines	N	Y
14	Update Appendix 4 Related to Correction of Nonconforming Titles	N	Y
15	Clarifications of Procedures Related to Table of Contents	N	Y
16	Clarifications on Use of Shall, Must, and Should	N	Y
17	Miscellaneous Changes to Procedure Manual	N	Y

 Indicates follow-up from Oct-Nov 2014 Regs ballot

- Ballot Adjudication Process Improvement (Group 5)
 - Problem
 - Publications of Documents can be delayed by the need to go through another cycle of Letter Ballot issuance and adjudication at a TC Chapter meeting to make any technical change.
 - Proposed Solution
 - Allow TC Chapter to make technical changes on balloted Standard Document during its adjudication under certain conditions. Conduct a Ratification Ballot in order to ensure global consensus on supporting the technical changes made by the TC Chapter.
 - NOTE: This Group was originally proposed as Group 10 in the previous Regulations Ballot to ISC and failed.
 - Taking suggestion of ISC at its SEMICON Japan 2014 meeting in December, the scope of the Ratification Ballot is now limited to technical changes made by TC Chapter during adjudication of a Letter Ballot.



- GCS Voting Period for Minority Report (Group 2)
 - Problem
 - Voting period for Minority Report is too short to solicit sufficient votes from GCS voting members.
 - Proposed Solution
 - To let GCS member have 2 weeks voting period, which is same length as the Minority Report submission window.
 - NOTE: This problem was raised by the NARSC at its Fall 2014 meeting at which the ISC Ballot on Regulations change was discussed. Following-up on this problem by additional changes in the Regulations was suggested by the Regulations SC Chair at the time.
- Improvement on Minority Report Handling for Shorter Time to Publication (Group 3)
 - Problem
 - Despite the rare occurrence of MR submission, every Document approved by the TC Chapter has to wait at least a month before it qualifies for A&R procedural review, which in turn results in a longer time to publish.
 - Proposed Solution
 - Expedite the process by allowing A&R procedural review to be commenced as soon as record of ballot review made available.
 - If an MR is submitted on a Document, Publication will be on hold until responsible parties reach conclusion on the MR. If the Document is returned to the TF for rework based on consideration of the MR, A&R approval is nullified.
 - NOTE: This problem was raised by JARSC at its SEMICON Japan 2014 meeting. ISC members expressed their support on improvement toward faster publication.

Attachment: 07, SEMI Standards Staff Report



5 Task Force Reports

5.1 Analytical Methods Task Force

Documents under development:

- Doc. 5642A – Revision to SEMI C35-0708, *Specifications and Guideline for Nitric Acid* with title change to: *Specification and Guide for Nitric Acid*
- Doc. 5831A – Revision to SEMI C27-0708, *Specifications and Guidelines for Hydrochloric Acid* with title change to: *Specification and Guide for Hydrochloric Acid*

5.2 F57 Discussion / ITRS Alignment / SEMI F40 (Practice for Preparing Liquid Chemical Distribution Components for Chemical Testing) Revision Task Force

Don Hadder, Jr. reported that the group reviewed voting results for ballot 5810 (New Standard: *Test Method for Testing PFA Materials Used in Liquid Chemical Distribution Systems*). Also, Don reported that the TF plans to change its name to “Critical PFA Material Testing for Chemicals Application Task Force.”

Action Item: 2015Mar #01, Don Hadder, Jr. to submit task force name change proposal for F57/F40 activity.

5.3 SEMI F31 (Guide for Bulk Chemical Distribution Systems), SEMI F39 (Guideline for Chemical Blending Systems), and SEMI F41 (Guide for Qualification of a Bulk Chemical Distribution System) Rewrite Task Force

With SEMI F31 and F39 updated, David Kandiyeli reported that the TF is now working on SEMI F41.

5.4 SEMI F63 (Ultrapure Water Used in Semiconductor Processing) Task Force

Slava Libman reported that he plans to submit a SNARF for F63 revision for SEMICON West 2015.

Action Item: 2015Mar #02, Slava Libman to prepare F63 revision SNARF for SEMICON West 2015 meeting.

5.5 Ion Exchange (IX) Task Force

Slava Libman reported that the group reviewed voting results for ballot 5621B (New Standard: *Guide for Determining the Quality of Ion Exchanged Resin Used in Polish Applications of Ultrapure Water System*).

6 Old Business

6.1 Status update on action items generated from the previous meetings:

Item #	Assigned to	Details	Status
2014Nov#01	Don Hadder Jr., Michael Tran	Send invites to the SEMI F40 Revision TF for SEMI F57 volunteers.	Open
2014Apr#01	Frank Flowers	Contact Liquid-Borne Particle Counter (LPC) Task Force for interest in SEMI C77-0912.	Open
2013Jul#03	Michael Tran	Send SEMI C63 (Organosilicate Precursors Used In Low K CVD Processes) to Wayne McDermott for 5 year review.	Open
2013Jul#05	Michael Tran	Distribute to the TC Chapter the list of updated 5 year review Documents.	Open



6.2 5-Year Review Update

The N.A. Liquid Chemicals TC Chapter reviewed and updated the master 5-year review documents file. Reviewers were assigned to each document that needed 5-year review and review updates for each was reported

Attachment: 08, NA Liquid Chemicals 5-Year Review Tracking Sheet

6.3 SNARFs Past Three Year Document Development Period

Per *Regulations* section 8.3.2, the Standard Document Development Project Period shall not exceed three years. The EXCEPTION for *Regulations* section 8.3.2 enables the TC Chapter to grant a one-year extension at a time if Document development activity is found to be continuing.

The following activities under the NA Liquid Chemicals TC Chapter are past the three-year document development period:

- SNARF # 4957 – Revision to SEMI C41-0705, *Specifications and Guidelines for 2-Propanol*, with title change to: *Specifications for 2-Propanol*
- SNARF # 5416 – Revision of SEMI F104-0312, *Particle Test Method Guide for Evaluation of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems*
- SNARF # 5527 – Revision to SEMI F40-0699E, *Practice for Preparing Liquid Chemical Distribution Components for Chemical Testing*

Motion: Find development of Documents 4957, 5416, and 5527 as continuing.

By / 2nd: Don Hadder, Jr. (Intel) / Slava Libman (Air Liquide)

Discussion: None

Vote: 4-0 in favor. Motion passed.

6.4 Published Standards with Nonconforming Titles

Many of the published SEMI Standards have titles that do not conform to the requirements specified in the SEMI Standards *Regulations* and *Procedure Manual*. Appendix 4 of the SEMI Standards *Procedure Manual* establishes a procedure for correcting nonconforming titles of published Standards Documents. A number of Liquid Chemicals Standards have been identified as having nonconforming titles that must be corrected.

Action Item: 2015Mar #03, Michael Tran to compile list of NA Liquid Chemicals Standards that have nonconforming titles per Appendix 4 of the *Procedure Manual*.

7 New Business

7.1 Authorizations for Ballot Submission

5642A	Cycle 4 or 5, 2015	Analytical Methods TF	Revision to SEMI C35-0708, Specifications and Guideline for Nitric Acid with title change to: Specification and Guide for Nitric Acid
5831A	Cycle 4 or 5, 2015	Analytical Methods TF	Revision to SEMI C27-0708 Specifications and Guidelines for Hydrochloric Acid with title change to: Specification and Guide for Hydrochloric Acid
5810A	Cycle 4 or 5, 2015	SEMI F57/ F40 Rewrite TF	New Standard: Test Method for Testing PFA Materials Used In Liquid Chemical Distribution Systems

Motion: Approve ballot submissions for the Documents listed above.

By / 2nd: Slava Libman (Air Liquide) / Don Hadder, Jr. (Intel)

Discussion: None

Vote: 4-0 in favor. Motion passed.



8 Action Item Review

8.1 Open Action Items

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

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 Adjournment

The next NA Liquid Chemicals TC Chapter meeting is scheduled for July 14 in conjunction with SEMICON West 2015 in San Francisco, California. The tentative schedule is provided below:

SEMICON West 2015 Meetings

July 13-16, 2015

San Francisco Marriott Marquis Hotel

780 Mission Street

San Francisco, California 94103

U.S.A.

Monday, July 13

- 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 14

- F57/ F40 Rewrite TF (9:00 AM to 10:00 AM)
- F39, F31 & F41 Rewrite TF (10:00 AM to 11:00 AM)
- Analytical Methods TF (11:00 AM to 12:00 Noon)
- NA Liquid Chemicals TC Chapter (2:00 PM to 5:00 PM)

Having no further business, a motion was made to adjourn the NA Liquid Chemicals Committee meeting on March 31 in conjunction with the NA Standards Spring 2015 Meetings. Adjournment was at 5:30 PM.

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 Performance Products)	
Frank Flowers (PeroxyChem)	n/a



Table 8 Index of Available Attachments #1

#	<i>Title</i>
1	SEMI Standards Required Meeting Elements
2	NA Liquid Chemicals Fall 2014 (November 4) Meeting Minutes
3	Ballot Review for Doc. 5621B
4	Ballot Review for Doc. 5809-LI1
5	Europe Gases & Liquid Chemicals Liaison Report
6	Japan Liquid Chemicals Liaison Report
7	SEMI Standards Staff Report
8	NA Liquid Chemicals 5-Year Review Tracking Sheet

#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 Michael Tran at the contact information above.

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