



Facilities & Gases Joint North America TC Chapter

Meeting Summary and Minutes

NA Standards Spring Meetings 2019

Tuesday, April 2, 09:00 – 12:00

SEMI Global Headquarters, Milpitas, California

TC Chapter Announcements

Next TC Chapter Meeting

SEMICON West Standards Meetings 2019

Tuesday, July 9, 09:00 – 12:00

Moscone Center, San Francisco, California

Table 1 Meeting Attendees

Italics indicate virtual participants

Facilities Co-Chairs: Steve Lewis (BW Design Group)

Gases Co-Chairs: Mohamed Saleem (Brooks Instrument)

SEMI Staff: Laura Nguyen

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Advanced Pressure (AP) Technology	Kiikvee	Bill	Daido Steel	Yoshida	Yutaka
<i>Air Liquide Electronics</i>	<i>Cowles</i>	<i>Dan</i>	<i>Festo</i>	<i>van de Berg</i>	<i>Max</i>
ASML Netherlands BV	Luijten	Carlo	Fujikin of America	Kitano	Erica
Bachman Instruments	Bachmann	Walter	MTA Labs	Blum	Mike
Brooks Instrument	Saleem	Mohamed	MTA Labs	Damron	Bill
Brooks Instrument	Findleton	Kevin	Swagelok	Shutler	Rob
Brooks Instrument	Nagarajan	Arun	TEL	Mashiro	Supika
BW Design Group	Lewis	Steve	Valex Corp	Kim	Joshua
BW Design Group	Sanders	Chris	WIKA Instruments	Christian	Jeff
Daido Steel	Mitsuhiro	Matsuda	WIKA Instruments	Fritz	Thomas
Daido Steel	Tomita	Noriyuki	SEMI	Nguyen	Laura

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
<i>Facilities</i>		
None		
<i>Gases</i>		
6290B	New Standard: Test Method for the Determination of Organic Contaminants Present on Wetted Surfaces of Ultra High Purity Chemical Delivery Systems and Components	Failed
6291B	New Standard: Test Method for the Determination of Metallic Elements Present on Wetted Surfaces of Ultra High Purity Gas Delivery Components and Plumbing Systems	Failed
6340C	Revision to SEMI F53-0600 (Reapproved 0412), Test Method for Evaluating the Electromagnetic Susceptibility of Thermal Mass Flow Controllers, with title change to Test Method for Evaluating the Electromagnetic Susceptibility of Mass Flow Controllers	Passed , Ratification Ballot to be issued.
6441	Revision to add a New Subordinate Standard, Test Method for Determination of Particle Contribution of Gas Delivery System and its Components through Dynamic (Pulse) Testing, to SEMI F70-0611 (Reapproved 0517), Test Method for Determination of Particle Contribution of Gas Delivery System	Failed
6492	Line Item Revision to SEMI C3.32-0614, Specification for Chlorine (Cl ₂), 99.996% Quality	
Line Item 1	Change “Specifications” section heading to “Requirements”.	Passed , as balloted.
Line Item 2	Address trademark(s) per Regulations Section 16.4.4.	Passed , Ratification Ballot to be issued.
6493	Line Item Revision to SEMI C3.37-0614, Specification for Hexafluoroethane (C ₂ F ₆), 99.97% Quality	
Line Item 1	Change “Specifications” section heading to “Requirements”.	Passed , as balloted.
Line Item 2	Address trademark(s) per Regulations Section 16.4.4.	Passed , as balloted.

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

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

Table 5 Activities Approved by the GCS between meetings of the TC Chapter

<i>#</i>	<i>Type</i>	<i>SC/TF/WG</i>	<i>Details</i>
<i>Facilities</i>			
None			
<i>Gases</i>			
6477	SNARF	Filters & Purifiers TF	Revision to SEMI F112-0613, Test Method for Determination of Moisture Dry Down Characteristics of Surface Mounted and Conventional Gas Delivery Systems by Cavity Ring Down Spectroscopy (CRDS) – <i>TC Member Review took place between 11/28/2018 and 12/11/2018.</i> – <i>Approved by GCS on 12/19/2018.</i>
6492	SNARF, Ballot	Gases Specifications TF	Line Item Revision to SEMI C3.32-0614, Specification for Chlorine (Cl ₂), 99.996% Quality – <i>Approved by GCS on 01/28/2019.</i>
6493	SNARF, Ballot	Gases Specifications TF	Line Item Revision to SEMI C3.37-0614, Specification for Hexafluoroethane (C ₂ F ₆), 99.97% Quality – <i>Approved by GCS on 01/28/2019.</i>



Table 6 Authorized Activities

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

#	Type	SC/TF/WG	Details
<i>Facilities</i>			
None.			
<i>Gases</i>			
6512	SNARF	NA Gases Committee	Reapproval of SEMI E12-1213, Guide for Standardized Pressure, Temperature, Density, and Flow Units Used in Mass Flow Meters and Mass Flow Controllers
6510	SNARF	Materials of Construction of Gas Delivery Systems TF	Line Item to SEMI F32-0211, Test Method for Determining of Flow Coefficient for High Purity Shutoff Valves
SEMI C3.20	PIP	Gases Specification TF	SEMI C3.20-0414 (Reapproved 0319), Specification for Helium (He), in Cylinders, 99.9995%
SEMI C3.24	PIP	Gases Specification TF	SEMI C3.24-0414 (Reapproved 0319), Specification for Sulfur Hexafluoride (SF6) in Cylinders, 99.97% Quality

#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
<i>Facilities</i>			
None.			
<i>Gases</i>			
R6340C	Cycle 4, 2019	Mass Flow Controller TF	Revision to SEMI F53-0600 (Reapproved 0412), Test Method for Evaluating the Electromagnetic Susceptibility of Thermal Mass Flow Controllers, with title change to Test Method for Evaluating the Electromagnetic Susceptibility of Mass Flow Controllers
R6492	Cycle 4, 2019	Gases Specification TF	Line Item Revision to SEMI C3.32-0614, Specification for Chlorine (Cl2), 99.996% Quality
6394	Cycle 4 or 5, 2019	Materials of Construction of Gas Delivery Systems TF	Line Item Revision to SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems
6512	Cycle 4 or 5, 2019	Mass Flow Controller TF	Reapproval of SEMI E12-1213, Guide for Standardized Pressure, Temperature, Density, and Flow Units Used in Mass Flow Meters and Mass Flow Controllers
6510	Cycle 4 or 5, 2019	Materials of Construction of Gas Delivery Systems TF	Line Item to SEMI F32-0211, Test Method for Determining of Flow Coefficient for High Purity Shutoff Valves

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

None.

Table 9 SNARF(s) Abolished

#	TF	Title
<i>Facilities</i>		
None.		
<i>Gases</i>		
6442	Mass Flow Controller TF	Revision to SEMI E68-0997 (Reapproved 0913), Test Method for Determining Warm-Up Time of Mass Flow Controllers – <i>Motion was made to Abolish SNARF. TF Rationale: Warm up time is defined by each manufacturer, and it is difficult to standardize method due to differences in MFC architecture. Also consider effort vs value of revising this Document.</i>
6443	Mass Flow Controller TF	Revision to SEMI E69-0298 (Reapproved 0913), Test Method for Determining Reproducibility and Zero Drift for Thermal Mass Flow Controllers, with title change to Test Method for Determining Reproducibility and Zero Drift for Mass Flow Controllers – <i>Motion was made to Abolish SNARF. TF Rationale: Difficult to standardize method due to differences in MFC architecture. There is a separate Document E56 that already talks about repeatability, which uses same graphs and same definition as E69. Therefore, E69 is redundant. (Other discussion points: Definition of repeatability vs reproducibility in the Document is questionable.)</i>

Table 10 Standard(s) to receive Inactive Status

Standard Designation	Title
<i>Facilities</i>	
None.	
<i>Gases</i>	
SEMI E68-0997 (Reapproved 0913)	Test Method for Determining Warm-Up Time of Mass Flow Controllers
SEMI E69-0298 (Reapproved 0913)	Test Method for Determining Reproducibility and Zero Drift for Thermal Mass Flow Controllers
SEMI F97-0305	Specification for Facility Package Integration, Monitoring and Control
SEMI F107-0309	Guide for Process Equipment Adapter Plate

Table 11 New Action Items

Item #	Assigned to	Details
2019Apr#01	Laura Nguyen	Send Max ballot results for Doc 6441.
2019Apr#02	Milk Blum	Prepare proposal for SEMICON West.
2019Apr#03	Steve Lewis	To contact Alex McEachern.
2019Apr#04	Laura/James	Communicate helium shortage to SEMI Executives.

Table 12 Previous Meeting Action Items

Item #	Assigned to	Details
2017July#02	Bala Mohammed	Bala Mohammed will send Matt information for someone that is familiar with this space that works with him at Applied Materials. Ongoing.
2018April #02	Bill Kiiikvee	To set up an offline meeting to discuss SEMI F32 with Mohamed, Matt, Bill; cc: Yanli Chen, Brian Sullivan. Ongoing.
2018July#01	Jurgen Lobert	To put together feedback from test specialist for Doc 6291A. Completed. Closed.



1 Welcome, Reminders, and Introductions

Steve Lewis (BW Design Group) called the meeting to order at 09:00. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meetings Elements

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion: To accept the previous meeting minutes as written.

By / 2nd: Thomas Fritz (WIKA) / Rob Shutler (Swagelok)

Discussion: None.

Vote: 14-0 in favor. Motion passed.

Attachment: [2018Fall] F&G NA Minutes FINAL

3 Liaison Reports

3.1 Gases & Liquid Chemicals Europe TC Chapter

There is no update since last meeting. The next Gases & Liquid Chemicals Europe TC Chapter will be held in conjunction with SEMICON Europa 2019.

3.2 Facilities and Gases Japan TC Chapter

Hirromichi Enami (Hitachi High-Technologies) reported for the Japan TC Chapter. Of note:

Meeting Information

- Last meeting: Friday, November 30, 2018; SEMI Japan Standards Fall Meetings; SEMI Japan office
- Next meeting: Friday, April 12, 2019; SEMI Japan Standards Spring Meetings; SEMICON Japan

F&G Leadership

- Committee Co-chairs
 - Hirromichi Enami (Consultant), and Isao Suzuki (Consultant), Masafumi Kitano (Fujikin)

F&G Current Organization Chart of Japan TC Chapter {See attachment for Org Chart}

Gases

Five-Year Review

- SEMI F89-1012, Specification for Dimension of Compact Size Mass Flow Controllers and Mass Flow Meters for 1.5 Inch Type Surface Mount Gas Distribution Systems

Facilities

Ballot Results

Doc #	Document Title	TC Chapter Action
6395	Revision to SEMI F1-0812, Specification for Leak Integrity of High Purity Gas Piping Systems and Components	Failed, returned to TF for rework

Authorized Ballots

Doc #	When	TF	Document Title/Details
6395A	Cycle4 or 5, 2019	F1 revision TF	Revision to SEMI F1-0812, Specification for Leak Integrity of High Purity Gas Piping Systems and Components

Task Force Highlights

- F1 Revision TF
 - 6323: Reinstatement of SEMI F1-0812, Specification for Leak Integrity of High-Purity Gas Piping Systems and Components
 - SNARF was approved at Facilities Japan TC Chapter meeting on December 12, 2017.
 - Ballot was submitted for Cycle 2-2018 and failed at Facilities Japan TC Chapter meeting on April 24, 2018.
 - 6395: Revision to SEMI F1-0812, Specification for Leak Integrity of High Purity Gas Piping Systems and Components
 - SNARF was approved at Facilities Japan TC Chapter meeting on April 24, 2018.
 - Ballot will be submitted for Cycle 7-2018
 - There were 2 rejects voting and 4 accepts voting with comments.
 - TF meeting was held on November 2nd. We discussed that there are some rooms to be reviewed in the Scope, Limitation and Wording of the document in addition to the returned comments because the original standard was published in 1990 and there were a lot of innovations and changes in gas piping systems from 1990.
 - The next TF meeting will be held in April 2019.
- 5-year-review TF
 - 6321: Reapproval of SEMI F45-0307, Specification for Machined Stainless Steel Reducing Weld
 - SNARF was approved at Facilities Japan TC Chapter meeting on December 12, 2017.
 - Ballot was submitted for Cycle 2-2018 and passed at Facilities Japan TC Chapter meeting on April 24, 2018.
 - Passed A&R in May 2018
 - Published as SEMI F45-0307(Reapproved 0818)
- 6322: Reapproval to SEMI F44-0307, Specification for Machined Stainless Steel Weld Fittings of Machined Stainless Steel Weld Fittings
 - SNARF was approved at Facilities Japan TC Chapter meeting on December 12, 2017.
 - Ballot was submitted for Cycle 2-2018 and passed at Facilities Japan TC Chapter meeting on April 24, 2018.
 - Passed A&R in May 2018
 - Published as SEMI F44-0307(Reapproved 0818)

New Activities in Metrics Committee related to Gases/Facilities

- Currently SCIS Critical Chamber Components (CCC) Gr activities will be moved to CCC TF in NA Metrics Committee.
- SNARFs written below have been reviewed 2-weeks and expected to be approved Nov. 7th at NA Metrics Committee.
 - New Standard: Test Method for Measuring Surface Metal Contamination through ICP-MS of Critical Chamber Components Used in Semiconductor Wafer Processing
 - New Subordinate Standard: Test Method for Measuring Surface Metal Contamination through ICP-MS of Showerheads Used in Semiconductor Wafer Processing



- Those Test Methods will be related to the activities of Gases & Facilities Committee hereafter.
- The Questionnaire asking “whether Gases & Facilities Committee to be the Liaison committee” was sent to GCS members and we got 3 approvals. So this direction will be proposed at 6th & 7th Metrics Related meetings.

Five-Year Review

Designation	Standard Title	Action By	Assigned to
SEMI F102-0306 (Reapproved 0513)	Guide for Selecting Specifications for Dimension of Components for Surface Mount Gas Distribution Systems	Past due	--

Staff Contact: Mizue Iwamura, miwamura@semi.org

Attachment: 20190314_JA_G+F_LiaisonR_v1.0

3.1 *Facilities Korea TC Chapter*

There is no update for this TC Chapter at this time.

3.2 *SEMI Staff Report*

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

SEMI Global 2019 Calendar of Events

- SEMICON SEA (May 7-9, Kuala Lumpur, Malaysia)
- SEMICON West (July 9-11, San Francisco, California)
- SEMICON Europa (November 12-15; Munich, Germany)
- SEMICON Japan (December 11-13; Tokyo, Japan)

Upcoming North America Standards Meetings

- SEMICON West 2018 (July 8-11, 2019, San Francisco, California)
- NA Standards Fall 2019 Meetings (November 4-7, 2019, SEMI HQ in Milpitas, California)
- NA Standards Spring 2020 Meetings (March 30-April 2, 2020, SEMI HQ in Milpitas, California)

Letter Ballot Critical Dates for 2019

- Cycle 3-2019: ballot submission due: Mar 12/Voting Period: Mar 26 – Apr 25
- Cycle 4-2019: ballot submission due: Apr 16/Voting Period: Apr 20-May 30
- Cycle 5-2019: ballot submission due: May 10/Voting Period: May 24-Jun 24
- Cycle 6-2019: ballot submission due: Jul 19/Voting Period: Jul 31-Aug 30
- Cycle 7-2019: ballot submission due: Aug 22/Voting Period: Sept 4-Oct 4
- Cycle 8-2019: ballot submission due: Oct 11/Voting Period: Oct 25 – Nov 25
- Cycle 9-2019: ballot submission due: Nov 14/Voting Period: Nov 26 – Dec 26

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

Standards Publications Report

Cycle	New	Revised	Reapproved	Withdrawn
-------	-----	---------	------------	-----------



November 2018	1	0	2	0
December 2018	0	7	6	0
January 2019	2	0	0	0
February 2019	1	3	4	0

Total in portfolio – 1,000 (includes 268 Inactive Standards)

New Standards

<i>Cycle</i>	<i>Designation</i>	<i>Title</i>	<i>Committee</i>	<i>Region</i>
November 2018	SEMI C97	Specification for Determination of Particle Levels of Gases Delivered as Pipeline Gas or by Pressurized Gas Cylinder	Gases	NA
January 2019	SEMI M88	Practice for Sample Preparation Methods for Measuring Minority Carrier Diffusion Length in Silicon Wafers by Surface Photovoltage Methods	Silicon Wafer	JA
January 2019	SEMI T23	Specification for Single Device Traceability for the Supply Chain	Traceability	NA
February 2019	SEMI PV89	Test Method for Current-Voltage Measurement in Indoor Lighting for Dye-Sensitized Solar Cell and Organic Photovoltaic	Photovoltaic	TW

Inactive Standards

<i>Committee</i>	<i>Number of Inactive Standards</i>
Assembly & Packaging	48
Automated Test Equipment	2
Compound Semiconductor Materials	4
Environmental Health & Safety	8
Facilities	15
FPD – Equipment	5
FPD – Factory Automation	14
FPD – Materials & Components	12
FPD – Substrate	1
Gases	18
Information & Control	37
Liquid Chemicals	24
MEMS	3
Metrics	9
Micropatterning	29
Photovoltaic	1
Physical Interfaces & Carriers	19
Silicon Wafer	11
Traceability	8

connect@SEMI

- Web link - <https://connect.semi.org>
 - Login using Standards account (username and password)
- Program Member
 - Join any task forces; Post discussion thread
- TF Leader/Community Admin



- Add member
- Upload meeting minutes
- Communicate TF members
- Contact your staff if a TF Site is desired
- Details
 - www.semi.org/standards >> Committee Info >> Collaboration Community

New Forms, Regulations & Procedure Manual

- *Regulations* (Feb 28, 2019)
 - Latest version clarifies procedures applicable for Copyrighted Items and trademarks
- *Procedure Manual* (Feb 28, 2019)
- SNARF (Feb 2019)
- www.semi.org/standards
 - Bottom left, under **Resources**

Style Manual Update

- Style Manual Version 6 (March 25, 2019)
 - Additions and revisions to harmonize with updated *Regulations* and *Procedure Manual*
- Updates
 - Company or Organization Trademarks (Table 1, #1-24)
 - Active vs. Passive Voice (Table 4, #4-4)
 - Word Usage (Table 4, #4-5)
 - New Safety Guideline Conformance Notice (Table 8, #8-1)
- www.semi.org/standards/standardspublications
 - Under Document Authoring Tools

F&G Nonconforming Titles (See PM Appendix 4) {None}

Facilities & Gases Five-Year Review {See attachment for full list}

SNARF 3 Year Status, TC Chapter may grant a one-year extension

- Facilities
 - 5155, New Standard: Guide for Facilities Data Package for Semiconductor Equipment Installation
 - 6037, New Standard: Specification for Power Grid Harmonics Compatibility
- None for Gases

In progress/Needs action

- Facilities
 - SEMI E51, Guide for Typical Facilities Services and Termination Matrix
 - Abolished SNARF Fall 2017 - Reapproval ballot failed Committee review, new SNARF needs to be issued to reflect change in scope
 - SEMI F47, Specification for Semiconductor Processing Equipment Voltage Sag Immunity
 - Failed committee review; Spring 2018
- Gases
 - Heater Jacket TF
 - SEMI F109, Guide for Heater Systems Requirements
 - Abolished Spring 2018; issue new SNARF to incorporate major revision (title cannot have Guide and Requirements)



- Filters & Purifiers
 - 6457: Revision to SEMI F38, Test Method for Efficiency Qualification of Point-of-Use Gas Filters
- Mass Flow Controller TF
 - 6442: Revision to SEMI E68-0997 (Reapproved 0913), Test Method for Determining Warm-Up Time of Mass Flow Controllers
 - 6443: Revision to SEMI E69-0298 (Reapproved 0913), Test Method for Determining Reproducibility and Zero Drift for Thermal Mass Flow Controllers, with title change to Test Method for Determining Reproducibility and Zero Drift for Mass Flow Controllers
- Materials of Construction of Gas Delivery Systems TF
 - 6394: Line Item Revision to SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems
 - SEMI F32-0211, Test Method for Determining of Flow Coefficient for High Purity Shutoff Valves

SNARF(s) Approved by GCS in between TC Chapter Meetings

- 6477: Revision to SEMI F112-0613, Test Method for Determination of Moisture Dry Down Characteristics of Surface Mounted and Conventional Gas Delivery Systems by Cavity Ring Down Spectroscopy (CRDS)
- 6492: Line Item Revision to SEMI C3.32-0614, Specification for Chlorine (Cl₂), 99.996% Quality
- 6493: Line Item Revision to SEMI C3.37-0614, Specification for Hexafluoroethane (C₂F₆), 99.97% Quality

Attachment: Staff Report April 2019_F&G

4 Ballot Review

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

4.1 *Facilities*

None.

4.2 *Gases*

4.2.1 Document # 6290B, New Standard: Test Method for the Determination of Organic Contaminants Present on Wetted Surfaces of Ultra High Purity Chemical Delivery Systems and Components

- The committee found the negatives related and persuasive. The ballot failed and returned to the task force for rework. See attachment for ballot results.

Motion: To find negative TEL-1 related and technically persuasive, fail the document and return to the TF for rework.

By / 2nd: Chris Sanders (BW Design Group) / Jeff Christian (WIKA)

Discussion: None.

Vote: 14-0 in favor. Motion passed.

Attachment: [Ballot Results] Cycle 09-2018 Gases FP



4.2.2 Document # 6291B, New Standard: Test Method for the Determination of Metallic Elements Present on Wetted Surfaces of Ultra High Purity Gas Delivery Components and Plumbing Systems

- The committee found the negatives related and persuasive. The ballot failed and returned to the task force for re-work and re-ballot. See attachment for ballot results.

Motion: To find negative TEL-1 related and technically persuasive, fail the document and return to the TF for rework.

By / 2nd: Rob Shutler (Swagelok) / Thomas Fritz (WIKA)

Discussion: None.

Vote: 14-0 in favor. Motion passed.

Attachment: [Ballot Results] Cycle 09-2018 Gases FP

4.2.3 Document # 6340C, Revision to SEMI F53-0600 (Reapproved 0412), Test Method for Evaluating the Electromagnetic Susceptibility of Thermal Mass Flow Controllers, with title change to Test Method for Evaluating the Electromagnetic Susceptibility of Mass Flow Controllers

- The ballot passed TC Chapter review with technical changes. Ratification Ballot to be issued. See attachment for ballot adjudication.

Attachment: 6340C_Ballot Review rev1

4.2.4 Document # 6441, Revision to add a New Subordinate Standard, Test Method for Determination of Particle Contribution of Gas Delivery System and its Components through Dynamic (Pulse) Testing, to SEMI F70-0611 (Reapproved 0517), Test Method for Determination of Particle Contribution of Gas Delivery System

- The committee found the negatives related and persuasive. The ballot failed and returned to the task force for re-work and re-ballot. See attachment for ballot results.

Motion: To find negative TEL-1 related and technically persuasive, fail the document and return to the TF for rework.

By / 2nd: Erica Kitano (Fujikin) / Bill Kiikvee (AP Tech)

Discussion: Regarding section 3.4, discussed technical component for how dynamic elements behave.

Vote: 14-0 in favor. Motion passed.

Action Item: 2019Apr#01, Laura to send Max ballot results for Doc 6441.

Attachment: [Ballot Results] Cycle 02-2019 Gases FP

4.2.5 Document # 6492, Line Item Revision to SEMI C3.32-0614, Specification for Chlorine (Cl₂), 99.996% Quality

4.2.6 Line Item #1: Change “Specifications” section heading to “Requirements”.

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

Attachment: 6492_Ballot Review rev1

4.2.7 Line Item #2: Address trademark(s) per Regulations Section 16.4.4.

- The ballot passed TC Chapter review with technical changes. Ratification Ballot to be issued. See attachment for ballot adjudication.

Attachment: 6492_Ballot Review rev1

4.2.8 Document # 6493, Line Item Revision to SEMI C3.37-0614, Specification for Hexafluoroethane (C₂F₆), 99.97% Quality



4.2.9 Line Item #1: Change “Specifications” section heading to “Requirements”.

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

Attachment: 6493_Ballot Review

4.2.10 Line Item #2: Address trademark(s) per Regulations Section 16.4.4.

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

Attachment: 6493_Ballot Review

5 Subcommittee and Task Force Reports

5.1 Facilities

5.1.1 *Power Grid Harmonics Task Force – Did not meet*

5.1.2 *SEMI F51 Revision Task Force – Did not meet*

5.1.3 *Building Information Modeling (BIM) for Semiconductor Capital Equipment Task Force – Did not meet*

5.1.4 *Voltage Sag Immunity Task Force – Did not meet F2F (This TF meets monthly via teleconference)*

5.2 Gases

5.2.1 *Heater Jacket Task Force – Did not meet*

5.2.2 *Materials of Construction of Gas Delivery Systems Task Force*

Bill Kiikvee (AP Tech) reported for this task force. Of note:

- SEMI F32: Reviewed changes presented by Eric Sklar and others. Line items can be reballoted.
- Agreed to move forward with SEMI F32 as a stand alone document.
- TF agreed to look at Subatmospheric Testing as a subordinate document such as SEMI F32.1.
- Write up SNARF for subatmospheric Testing
- SEMI F74: Reviewed changes in SEMI F74
- Change units to SI...i.e. use Newtons versus kgf as units.
- Need a SNARF to push document through.
- Presentation from Rob Shulter from Swagelok on testing at Subatmospheric conditions.
- Commitments from Swagelok, AP Tech, Parker for testing round robin to confirm proposed vacuum testing.

New Business

- reviewing E49.6 and E49.8 write for this Task Force to work on.

Bill addressed the Committee on the below:

Motion: Motion to approve SNARF for LI to SEMI F32 and authorize for ballot in Cycle 4 or 5-2019.

By / 2nd: Thomas Fritz (WIKI) / Rob Shutler (Swagelok)

Discussion: None.



Vote: 12-0 in favor. Motion passed.

Motion: Motion to authorize Document 6394 for ballot in Cycle 4 or 5-2019.

By / 2nd: Rob Shutler (Swagelok) / Kevin Findleton (Brooks Instrument)

Discussion: None.

Vote: 13-0 in favor. Motion passed.

Attachment: Spring 2019 Meeting Minutes_Materials of Constructions of Gas Delivery Systems

5.2.3 Filters & Purifiers Task Force

Mohamed Saleem (Brooks Instrument) reported for this Task Force. Of note:

Filters and Purifiers TF Updates 04-01-2019

- Document 6212- SEMI F38 (Failed in Cycle 06-2017) still being worked on. Hope to wrap it up by Semicon West Standards 2019 meetings.
- 6290 (Test Method for Hydrocarbons) and 6291 (Test Method for Metallic Impurities) (Documents from SCIS activities) failed cycle 09-2018 (After Fall 2018 Standards meetings). Joyce prepared responses but does not adequately address rejects. Supika's reject comment, TEL-1, was found technically related and persuasive for both 6290 and 6291. Action at TC Chapter Meeting: Find the reject technically persuasive and fail the documents.

TEL-1	2.4	Negative/ The paragraph describe something other than scope. Even if the paragraph was intended to call attention of the standard users of potential interference from elastomeric material to analysis results, it is not written in a way acceptable as the scope description.	[Justification] Any requirement to perform the test method specified in this Standard should not be included in the Scope section. (See ¶ 3.3.2 of the <i>Procedure Manual</i> .) [Suggestion] Move the paragraph to the Limitation section and reword something like; "The analysis results can be affected if elastomeric materials exist and are wetted during the test. In order to avoid such interference, obtaining the spectra of the elastomeric material separately, and then the deducing it from the analysis results should be considered."	T	Accept
-------	-----	---	--	---	--------

- Reviewed 6415 (Revision to F112); found one comment technically persuasive and fail the document.
Comment from Dan Cowles:
→ Increase minimal moisture level of analyzer from 200 ppt to 2 ppbV, in order to widen the range of CRDS models which can execute the test. Even though the moisture concentration of the test piece will ultimately fall below the LDL, the test can still benused to compare systems. And the test will be much less expensive and faster to execute.
- Ballot results for 6441 (SEMI F70 subordinate): Reject comments from Supika found technically related and persuasive and fail the document:

Comment ID	Section/Line Item	Negative/Comment	Reason/ Justification/Suggestion
------------	-------------------	------------------	----------------------------------

TEL-1	3.4	<p>Negative/ As written, 3.4 seems to state extendibility of the Test Method defined in this Document but not a limitation. It should be changed to describe how sole use of this Test Method would result in erroneous result, or what is (are) missing in this Test Method in order to apply it to MFCs.</p>	<p>[Justification] As written, 3.4 does not meet A3-4 of Appendix 3 in the <i>Procedure Manual</i></p> <p>[Suggestion] Move the paragraph to the Scope section (= Section 2) and reword something like; “When mass flow controllers are also used for switching, the procedure from this standard may be applicable to determine the particle contribution per switch.” In addition to above, a NOTE may be added to refer SEMI E66 for the test method used to determine particle contribution of MFCs. These modification may be made at the time of adjudication of the Ballot by the TC Chapter as a Technical Change.</p>
-------	-----	--	--

5. Work with Metallic Materials for Gas Delivery for SEMI E49.6 and E49.8 revision. E49.8 revision requires re-defining lower limit of particle limit.

Attachment: FP Meeting Minutes_Spring 2019 Meeting

5.2.4 Mass Flow Controller Task Force

Erica Kitano (Fujikin) reported for this task force. Of note:

Reviewed Ballot Results as mentioned in Section 4 {See attachment for embedded file}

Old Business

- E68, Test Method for Determining Warm-Up Time of Mass Flow Controllers
- E69, Test Method for Determining Reproducibility and Zero Drift for Thermal Mass Flow Controllers

E68 and E69 are due for 5 year review.

SNARF for revising these two documents were approved on 8/20/2018.

Update (4/1):

E68 - Abolish SNARF and make E68 inactive.

Rationale: warm up time is defined by each manufacturer, and it is difficult to standardize method due to differences in MFC architecture. Also consider effort vs value of revising this Document.

Erica Kitano (Fujikin) addressed the Committee on the above topic:

Motion: Motion to abolish SNARF 6442 and send SEMI E68 to Inactive Status.

By / 2nd: Jeff Christian (WIKA) / Arun Nagarajan (Brooks Instrument)

Discussion: None.

Vote: 10-0 in favor. Motion passed.

E69 – Abolish SNARF to make E69 inactive.

Rationale: Difficult to standardize method due to differences in MFC architecture.

There is a separate Document E56 that already talks about repeatability, which uses same graphs and same definition as E69. Therefore, E69 is redundant.

(Other discussion points: Definition of repeatability vs reproducibility in the Document is questionable.)

Erica Kitano (Fujikin) addressed the Committee on the above topic:



Motion: Motion to abolish SNARF 6443 and send SEMI E69 to Inactive Status.
By / 2nd: Arun Nagarajan (Brooks Instrument) / Bill Kiikvee (AP Tech)
Discussion: None.
Vote: 14-0 in favor. Motion passed.

New Business

- E12: due for 5 year review, send out for reapproval
- EtherCAT MFC Physical Requirements

EtherCAT Background:

- Currently, EtherCAT MFC physical requirements are specified in the ETG (EtherCAT Technology Group) SDP (Specific Device Profile) MFC Specification Document ETG5003-2020.
- The scope of ETG specification is EtherCAT communication protocol, not physical requirements of the devices.
- ETG MFC task group asked SEMI to consider writing the physical requirements of EtherCAT MFCs in the SEMI Standard.
- Discussion within SEMI MFC TF:

SEMI F82 (1.125" ... inactive; This Document is under Japan TC chapter)/

SEMI F88 (1.5" ...active)

These Documents specify the envelope of MFCs such as height, width, mounting locations, etc, but the scopes of both of these documents are not tied to any specific types of communication. Therefore, the MFCs covered by these two Documents would include all types of communications (analog, RS485, DeviceNET, EtherCAT...).

- Therefore, rather than modifying F82/F88, we should create a new Standard specifying the physical requirements of EtherCAT MFCs.
- Action Item: Need to create a SNARF
- Action Item: Contact ETG to ask if we can use some of the information from the ETG Document.

Update (4/1): Contacted ETG since last SEMI Standards meeting in Fall. ETG is ok with SEMI Standards taking over the task of documenting the physical requirements of EtherCAT MFCs; however, ETG would like to make it clear in the next ETG meeting in May 2019 that the objective is to move this scope of work from ETG to SEMI Standards completely so that specifications won't exist in two different places. ETG would like to receive everyone's consensus at the ETG meeting officially before SEMI Standards proceeds with this task.

- Note to create SNARF between this meeting and next meeting at SEMICON West, after discussing at ETG meeting in May 2019.

Erica Kitano (Fujikin) addressed the Committee on the above topic of New Business:

Motion: Motion to approve SNARF for Reapproval of SEMI E12.
By / 2nd: Chris Sanders (BW Design Group) / Erica Kitano (Fujikin)
Discussion: None.
Vote: 13-0 in favor. Motion passed.

Erica Kitano (Fujikin) addressed the Committee on the above topic of New Business:

Motion: Motion to authorize Reapproval of SEMI E12 for ballot in Cycle 4 or 5-2019.
By / 2nd: Kevin Findleton (Brooks Instrument) / Thomas Fritz (WIKA)
Discussion: None.
Vote: 14-0 in favor. Motion passed.

Attachment: April 01 2019 MFC TF Meeting Summary_R2

5.2.5 Gases Specification Task Force

Mohamed Saleem (Brooks Instrument) reported for this Task Force. Of note:

The task force:

- Review previous meeting minutes.
- Reviewed Ballot Results as mentioned in Section 4 *{See attachment for embedded file}*

No other action items.

Attachment: Agenda_GS_TF - Spring Standards 2019_A_Minutes190401

6 Old Business

6.1 Previous Action Items

6.1.1 Previous action items are noted in Table 12 in 'red' and for recent updates in 'blue'. There is no further old business.

7 New Business

7.1 Discussion of pitting tests for surfaces (Proposal presentation at West)

Mike Blum (MTA Labs) addressed the committee on this topic.

- SEMI Standards to look into creating a new standard for measurement of Pitting Potential of Stainless Steels
- Currently there is only one relevant standard, SEMI F77 that addresses measurement of critical pitting temperature-CPT
 - While both measurements are good indicators for onset of corrosion in stainless steel, it is possible that pitting potential measurement test setup (and sample size/prep) is relatively easier than CPT measurement.
 - CPT tests are less user-friendly to complex surfaces such as glands and elbows.
 - Pitting potential measurement may be easier to perform with complex shaped parts.

Attachment: 2019April#02, Mike Blum to prepare proposal for SEMICON West.

7.2 SEMI Publication Improvement Proposal (PIP) Forms

Laura Nguyen (SEMI) addressed the committee on this topic.

Motion: Motion to approve PIP for SEMI C3.24 as shown in the meeting.

By / 2nd: Chris Sanders (BW Design Group) / Erica Kitano (Fujikin)

Discussion: None.

Vote: 14-0

Attachment: PIP SEMI C3.20_Spring2019

Motion: Motion to approve PIP for SEMI C3.20 as shown in the meeting.

By / 2nd: Chris Sanders (BW Design Group) / Erica Kitano (Fujikin)

Discussion: None.

Vote: 14-0

Attachment: PIP SEMI C3.20_Spring2019



7.3 Other Business (1)

Laura Nguyen (SEMI) addressed the committee on the topics below.

- Task Forces that have not met for some time. Next steps?
- Steve Lewis offered to contact Alex McEachern regarding the Power Grid Harmonics TF.

Action Item: 2019April#03, Steve Lewis to contact Alex McEachern

7.4 Other Business (2)

Rob Shutler (Swagelok) addressed the committee on this topic.

- Topic on Helium shortage.
- Does SEMI know anything about this?

Discussion:

- Is it outside our topic?
- Is there an alternate methodology for helium gas?
- Should Standards be “swept” for helium?

Action Item: 2019April#04, Laura to communicate helium shortage to SEMI Executives.

8 Next Meeting and Adjournment

The next meeting is scheduled for Tuesday, July 8, in conjunction with SEMICON West 2019 at the Moscone Center in San Francisco, California. See <http://www.semi.org/standards-events> for the current list of events.

Tentative Schedule:

Monday, July 8

Gases Task Force Meetings

09:00-10:00 Materials of Construction of Gas Delivery Systems (TF)

10:00-11:00 Filters and Purifiers (TF)

11:00-12:00 Mass Flow Controller (TF)

13:00-14:00 Gas Specification (TF)

14:00-15:00 Heater Jacket (TF)

Facilities Task Force Meetings

14:00-16:00 Voltage Sag Immunity (TF)

Tuesday, July 9

09:00-12:00 Facilities & Gases (C)

Adjournment: 11:31.



Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

Phone: +1.408.943.7019

Email: lnguyen@semi.org

Minutes tentatively approved by:

Steve Lewis (BW Design Group), Facilities Co-chair	June 27, 2019
Mohamed Saleem (Brooks Instrument), Gases Co-chair	<Date Approved>

Table 13 Index of Available Attachments#1

<i>Title</i>	<i>Title</i>
SEMI Standards Required Meetings Elements	6493_Ballot Review
[2018Fall] F&G NA Minutes FINAL	Spring 2019 Meeting Minutes_Materials of Constructions of Gas Delivery Systems
20190314_JA_G+F_LiaisonR_v1.0	FP Meeting Minutes_Spring 2019 Meeting
Staff Report April 2019_F&G	April 01 2019 MFC TF Meeting Summary_R2
[Ballot Results] Cycle 09-2018 Gases FP	Agenda_GS_TF - Spring Standards 2019_A_Minutes190401
6340C_Ballot Review rev1	PIP SEMI C3.24_Spring2019
[Ballot Results] Cycle 02-2019 Gases FP	PIP SEMI C3.20_Spring2019
6492_Ballot Review rev1	

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