EU Gases & Liquid Chemicals Committee
Meeting Summary and Minutes

SEMICON Europa 2012
October 10, 2012, 14:00 – 17:00
Dresden, Germany

Next Committee Meeting (tentative)
SEMICON Europa 2013
Dresden, Germany

Table 1 Meeting Attendees

Co-Chairs: Jean-Marie Collard (Solvay Chemicals), Gummaar De Vos (FFEM), Gordon Ferrier (Air Products)
SEMI Staff: James Amano

Company	*Last*	*First*	*Company*	*Last*	*First*
Air Liquide	Omarjee	Vincent	M+W Group	Groezinger	Stefan
Air Products	Ferrier	Gordon	Solvay Chemicals	Schwarze	Thomas
Applied Materials	Neuber	Andreas	Solvay Chemicals	Neubauer	Brigitte
FFEM	De Vos	Gummar	Solvay Chemicals	Pittroff	Michael
Hi Pure Tech	Burkhart	Marty	Solvay Chemicals	Sell	Michael
Honeywell	Bloedorn	Wilhelm	Solvay Chemicals	Collard	Jean-Marie
ICL	Parker	Frank	Tiger Optics	Leggett	Graham
ICL	Stover	Fred			

Table 2 Leadership Changes

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*
5328	New Standard: Guide for Tetrakis(Dimethylamino) Silane (TDMAS)	**Passed** as balloted
5329	New Standard: Guide for Tris(Dimethylamino) Silane (3DMAS)	**Passed** as balloted

Table 4 Authorized Ballots

#	*When*	*SC/TF/WG*	*Details*
5324	Cycle 1-2013 or Cycle 2-2013	Solvents in Advanced Processes Task Force	New Standard: Guide for Cyclopentanone
5326	Cycle 1-2013 or Cycle 2-2013	Solvents in Advanced Processes Task Force	New Standard: Guide for Methyl Isobutyl Carbinol (MIBC) or 4-Methyl 2-Pentanol
5491	Cycle 1-2013 or Cycle 2-2013	Precursor Specifications Task Force	New Standard: Guide for Titanium Tetrachloride (TiCl4)
5492	Cycle 1-	Solvents in	New Standard: Guide for Ethylene Glycol

Table 4 Authorized Ballots

#	When	SC/TF/WG	Details
	2013 or Cycle 2-2013	Advanced Processes Task Force	
5493	Cycle 1-2013 or Cycle 2-2013	Precursor Specifications Task Force	New Standard: Guide for Octa Methyl Cyclo Tetra Siloxane (OMCTS)
5494	Cycle 1-2013 or Cycle 2-2013	Precursor Specifications Task Force	New Standard: Guide for Tetra Methyl Cyclo Tetra Siloxane (TMCTS)
5495	Cycle 1-2013 or Cycle 2-2013	Solvents in Advanced Processes Task Force	New Standard: Guide for Cyclo Hexanone
5496	Cycle 1-2013 or Cycle 2-2013	Precursor Specifications Task Force	Revision to SEMI XXXX: Guide for Tetrakis(Dimethylamino) Silane (TDMAS)

Table 5 Authorized Activities

#	Type	SC/TF/WG	Details
5491	SNARF	Precursor Specifications Task Force	New Standard: Guide for Titanium Tetrachloride (TiCl4)
5492	SNARF	Solvents in Advanced Processes Task Force	New Standard: Guide for Ethylene Glycol
5493	SNARF	Precursor Specifications Task Force	New Standard: Guide for Octa Methyl Cyclo Tetra Siloxane (OMCTS)
5494	SNARF	Precursor Specifications Task Force	New Standard: Guide for Tetra Methyl Cyclo Tetra Siloxane (TMCTS)
5495	SNARF	Solvents in Advanced Processes Task Force	New Standard: Guide for Cyclo Hexanone
5496	SNARF	Precursor Specifications Task Force	Revision to SEMI XXXX: Guide for Tetrakis(Dimethylamino) Silane (TDMAS)

Note: SNARFs and TFOFs are available for review on the SEMI Web site at:
http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF

Table 6 New Action Items

Item #	Assigned to	Details
EUGLC 1210-01	Gummaar De Vos (FFEM)	Gummaar De Vos to check at FFEM to see if C61, Specification for Bar-Code

Table 6 New Action Items

Item #	*Assigned to*	*Details*
		Container Identification is still being used.
EUGLC 1210-02	Jean-Marie Collard (Solvay Chemicals)	Jean-Marie Collard to consider a SNARF to update SEMI F96, Specification for Port Configuration of Canisters to Contain CVD Precursors
EUGLC 1210-03	Gordon Ferrier (Air Products)	Gordon Ferrier to contact Jim McKinley and explain how to introduce the new activity, via a SNARF, into the SEMI Standards Program.

Table 7 Previous Meeting Action Items

Item #	*Assigned to*	*Details*
EUGLC 1110-01	Kevin Nguyen (SEMI)	To send Tatiana Tarazdarova (PERM Chemicals) a SEMI Standards membership application **CLOSED**
EUGLC 1110-02	Jean-Marie Collard (Solvay Chemicals)	To send SEMI Staff the following documents for cycle 1 or 2-2012 ballot: • Doc. 5325 New Standard: Guide For Dimethyl Dimethoxy Silane (DMDMOS) **OPEN** • Doc. 5328 New Standard: Guide for Tetrakis(Dimethylamino) Silane (TDMAS) **CLOSED** • Doc. 5329 New Standard: Guide for Tris(Dimethylamino) Silane (3DMAS) **CLOSED**
EUGLC 1110-03	Gummaar DeVos (FFEM)	To send SEMI Staff the following documents for cycle 1 or 2-2012 ballot: • Doc. 5325 New Standard: Guide For Dimethyl Dimethoxy Silane (DMDMOS) **OPEN** • Doc. 5328 New Standard: Guide for Tetrakis(Dimethylamino) Silane (TDMAS) **CLOSED** • Doc. 5329 New Standard: Guide for Tris(Dimethylamino) Silane (3DMAS) **CLOSED**

1 Welcome, Reminders, and Introductions

Committee Chair Jean-Marie Collard called the meeting to order at 14:00. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: Required Elements June 2, 2010.ppt

2 Review of Previous Meeting Minutes

The committee reviewed the minutes of the previous meeting.

Motion: To approve the minutes as written.
By / 2nd: Frank Parker (ICL)/Mary Burkhart (HiPureTech)
Discussion: None
Vote: 8-0

Attachment: EU GL Chemicals Committee Meeting Minutes20111012.pdf

3 Liaison Reports

3.1 *Japan Gases & Facilities Committee*

Jean-Marie Collard reported. Highlights:

- F1 Revision Task Force
  - SEMI F1-0812, Specification for Leak Integrity of High-Purity Gas Piping Systems and Components was published.
  - Will work on Japanese translation
- Gas Panel Test Method Task Force
  - No activity
- 5-year-review Task Force
  - SEMI F82 through F95, and F106 have been proofing and will be published in October.
  - Reapproval of SEMI F102-0306, Guide for Selecting Specifications for Dimension of Components for Surface Mount Gas Distribution Systems will be submitted for Cycle 7, 2012 and will be reviewed on Dec. 5.

Attachment: 121010_JA_G+F_LiaisonR_for_SEuropa_r1.0.ppt

3.2 *NA Gases Committee*

- New SNARFs
  - Materials of Constructions for Gas Delivery System TF
    - Doc. 5444, Revision of SEMI F72, Test Method for Auger Electron Spectroscopy (AES) Evaluation of Oxide Payer of Wetted Surfaces of Passivated 316L Stainless Steel Components
    - Doc. 5445, Revision of SEMI F60, Test Method for ESCA Evaluation of Surface Composition of Wetted Surfaces of Passivated 316L Stainless Steel Components
  - Gas Specifications TF
    - Doc. 5443, Revision of SEMI C3-0812, Specifications for Gases
  - Filters and Purifiers TF
    - Doc. 5446, New Standard: Test Method For Determination Of Moisture Dry-Down Characteristics Of Surface-Mounted And Conventional Gas Delivery Systems By Continuous Wave Cavity Ring-Down Spectroscopy (CW-CRDS)
- Inactive Standards
  - SEMI F33-0708 Test Method for Calibration of Atmospheric Pressure Ionization Mass Spectrometer (APIMS)
  - SEMI F58-0708 Test Method for Determination of Moisture Dry-Down Characteristics of Surface-Mounted and Conventional Gas Delivery Systems by Atmospheric Pressure Ionization Mass Spectrometry (APIMS)

Attachment: LiaisonReportNAGases20120926.ppt

3.3 *Japan Liquid Chemicals Committee*

- New Published Standard
  - Doc.#5225A, New Standard: 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
  - Published as C77-0912.
- Upcoming Ballots
  - Doc.#5064, Revision to SEMI F66-1101, Specification for Port Marking and Symbol of Stainless Steel Vessels for Liquid Chemicals

- Doc.#5371 New Standard: Test Method for Tensile Strength Applied to Welded Connections Made by PFA Weld Fitting
- Doc.#5297 "New Standard: Test Method for Particle Removal Performance of Liquid Filter Rated below 50 nm with Liquid-borne Particle Counter"

Attachment: 121010_JA_LC_LiaisonR_for_SEuropa_r1.0

3.4 *NA Liquid Chemicals Committee*

- New SNARFs
  - 4544D, Revision to SEMI F40-0699E, Practice for Preparing Liquid Chemical Distribution Components for Chemical Testing
  - 4547D, Reapproval of SEMI F18-95, Guide for Determining the Hydrostatic Strength of, and Design Basis for, Thermoplastic Pipe and Tubing
  - 4989, New Standard: Test Method for Determining Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems by Atomic Force Microscopy
  - 5479, Revision to SEMI F31-0698, Guide for Bulk Chemical Distribution Systems
- TF Updates
  - Analytical Test Methods TF
    - Reviewing failed ballot documents from Cycle 4-2012
    - The failed documents will be reballoted for Cycle 5 and 6-12
    - Currently reviewing documents for five-year reviews
  - Statistical Methods TF
    - The TF has disbanded
  - F57 Revision TF
    - SEMI F57-0312 was published, however, the TF will not be disbanded
    - The TF is considering making small changes to F57 by a line item ballot
  - F104 Revision TF
      - The TF is still working on revising F104 (Particle Test Method Guide for Evaluation of Components) and is deciding how to proceed with it
    - The TF found revising the document is more difficult than they thought
  - Polymer Surface Roughness TF
    - Document #4989 will be balloted for Cycle 5-12
    - New Standard: Test Method for Determining Surface Roughness in Polymer Components Used in Ultrapure Water and Liquid Chemical Distribution Systems
  - UPW Filtration Efficiency TF
    - Document #5188, New Standard: Guide for Validation of the Efficiency of Final Filtration in Ultrapure Water Production Used in Semiconductor Processing
    - The document failed committee review and will be reballoted for Cycle 5 or 6-12.
    - The TF will address the negatives left by the reject voters
    - The TF will test their instrument using the NIST standard for 10 nm gold particles to show it can also be used on silica particles
  - F63 Revision TF
    - Document # 5415 will be balloted for Cycle 5-12
    - Revision to SEMI F63, Guide for Ultrapure Water Used in Semiconductor Processing
  - F31, F39, and F41 Rewrite TF
    - The TF is making great progress reviewing
      - F31(Guide for Bulk Chemical Distribution Systems),

- F39 (Guideline for Chemical Blending Systems),
- F41 (Guide for Qualification of a Bulk Chemical Distribution System)

  - There are F39 and F41 materials in F31. If the TF revised F31, then F39 and F41might also be done

Attachment: NA LChem report Sept 2012 MT rev2.ppt

3.5 PV Gas and Liquid Chemical Purity TF

- Approximately 45 Task Force Members were involved in generating 18 PV standards.
- The Task Force will be disbanded during the SEMI Fall Standards Meeting in San Jose, CA.
- Key members will remain on standby in case other standards are needed. As well, this core team will be assembled again for the 5 year reviews.
- Published Standards
  - SEMI PV3-0310 Guide for High Purity Water Used in Photovoltaic Cell Processing
  - SEMI PV5-1110 Guide for Oxygen (O2), Bulk, Used in Photovoltaic Applications
  - SEMI PV6-1110 Guide for Argon (Ar), Bulk, Used in Photovoltaic Applications
  - SEMI PV7-1110 Guide for Hydrogen (H2), Bulk, Used in Photovoltaic Applications
  - SEMI PV8-1110 Guide for Nitrogen (N2), Bulk, Used in Photovoltaic Applications
  - SEMI PV11-1110 Specifications for Hydrofluoric Acid, Used in Photovoltaic Applications
  - SEMI PV12-1110 Specifications for Phosphoric Acid Used in Photovoltaic Applications
  - SEMI PV14-0211 Guide for Phosphorus Oxychloride, Used in Photovoltaic Applications
  - SEMI PV16-0611 Specifications for Nitric Acid, Used in Photovoltaic Applications
  - SEMI PV20-1011 Specifications for Hydrochloric Acid, Used in Photovoltaic Applications
  - SEMI PV21-1011 Guide for Silane (SiH4), Used in Photovoltaic Applications
  - SEMI PV24-1011 Guide for Ammonia (NH3) in Cylinders, Used in Photovoltaic Applications
  - SEMI PV26-1011 Guide for Hydrogen Selenide (H2Se) in Cylinders, Used in Photovoltaic Applications
  - SEMI PV27-1011 Specifications for Ammonium Hydroxide, Used in Photovoltaic Applications
  - SEMI PV30-0212 Specifications for 2-Propanol, Used in Photovoltaic Applications
  - SEMI PV33-0212 Specifications for Sulfuric Acid, Used in Photovoltaic Applications
  - SEMI PV36-0912 Specifications for Hydrogen Peroxide, Used in Photovoltaic Applications
  - SEMI PV37-0912 Guide for Fluorine (F2), Used in Photovoltaic Applications
- In addition to the 18 standards, an Auxiliary document was released that lists existing SEMI Standards already filling PV needs:
  - Diborane,
  - Phosphine,
  - Sulfur Hexafluoride and
  - Carbon Tetrafluoride,
  - Nitrogen Trifluoride (NF3)
  - Helium
  - Potassium Hydroxide, 45% Solution

Attachment: PV Gas and Liquid Chemical TF Overview for SEMICON Europa_100112.ppt

3.6 *SEMI Staff Report*

- 2013 Critical Dates
  - Cycle 1, 2013
    - Ballot Submission Date: January 3, 2013

        - Voting Period Starts: January 16, 2013
        - Voting Period Ends: February 15, 2013
    - Cycle 2, 2013
        - Ballot Submission Date: February 4, 2013
        - Voting Period Starts: February 18, 2013
        - Voting Period Ends: March 20, 2013
    - Cycle 3, 2013
        - Ballot Submission Date: April 17, 2013
        - Voting Period Starts: May 1, 2013
        - Voting Period Ends: May 31, 2013
- Standards due for 5-year review
    - SEMI C61-0707 - Specification for Bar-Code Container Identification

Attachment: SEMI Staff Report SEMICON Europa Oct 2012 v2.ppt

4 Ballot Review

4.1 Document # 5328, New Standard: Guide for Tetrakis(Dimethylamino) Silane (TDMAS)

Document 5328 was approved by the committee and will be forwarded to the ISC Audits and Reviews Subcommittee for procedural review. See attachment below for ballot adjudication details.

Attachment: 5328ProceduralReview.doc

4.2 Document # 5329, New Standard: Guide for Tris(Dimethylamino) Silane (3DMAS)

Document 5329 was approved by the committee and will be forwarded to the ISC Audits and Reviews Subcommittee for procedural review. See attachment below for ballot adjudication details.

Attachment: 5329ProceduralReview.doc

5 Subcommittee & Task Force Reports

5.1 Precursor Specifications Task Force

- The TF issued ballots 5328 and 5329 (see above) earlier in the year, and both ballots were approved at today's meeting. Based on feedback, the TF will issue a revision ballot to change the Aluminum specification from 100 ppb to 5 ppb to reflect today's industry accepted contamination level.

Motion: To approve the SNARF to revise the published version of ballot 5328, Guide for Tetrakis(Dimethylamino) Silane (TDMAS)

By / 2nd: Marty Burkhart (HiPureTech)/Willie Bloedorn (Honeywell)

Discussion: None

Vote: 8-0

- List of next candidates for standardization:
    - Titanium Tetrachloride (TiCl4)
    - Octa Methyl Cyclo Tetra Siloxane (OMCTS)
    - Tetra Methyl Cyclo Tetra Siloxane (TMCTS)
    - ZrCl4 (per end-user request) – need leader
    - PDMAT [Ta(N(CH3)2)5] – need leader
    - Others: see ITRS Precursors table
- Under Development

- 5325 Dimethyl Dimethoxy Silane (DMDMOS)
- 5327 Mono Methyl Silane
- Tetrakis(Dimethylamino) Silane (TDMAS) – Passed at Oct 2012 TC, next step A&R Procedural Review
- Tris(Dimethylamino) Silane (3DMAS) – Passed at Oct 2012 TC, next step A&R Procedural Review

Motion: To approve the SNARF for: New Standard: Guide for Titanium Tetrachloride (TiCl4)
By / 2nd: Marty Burkhart (HiPureTech)/Willie Bloedorn (Honeywell)
Discussion: None
Vote: 8-0

Motion: To approve the SNARF for: New Standard: Guide for Octa Methyl Cyclo Tetra Siloxane (OMCTS)
By / 2nd: Fred Stover (ICL)/Marty Burkhart (HiPureTech)
Discussion: None
Vote: 8-0

Motion: To approve the SNARF for: New Standard: Guide for Tetra Methyl Cyclo Tetra Siloxane (TMCTS)
By / 2nd: Marty Burkhart (HiPureTech)/Vincent Omarjee (Air Liquide)
Discussion: None
Vote: 8-0

5.2 Solvents Task Force

The Task Force is current drafting ballots 5324, New Standard: Guide for Cyclopentanone, and 5326, New Standard: Guide for Methyl Isobutyl Carbinol (MIBC) or 4-Methyl 2-Pentanol

Motion: To approve issue of ballots for 5324 and 5326 in Cycle 1 or 2, 2013
By / 2nd: Gummaar De Vos (FFEM)/Vincent Omarjee (Air Liquide)
Discussion: None
Vote: 8-0

There was also a new SNARF to start development on guides for Ethylene Glycol and Cyclo Hexanone

Motion: To approve the SNARF for New Standard: Guide for Ethylene Glycol
By / 2nd: Willie Bloedorn (Honeywell)/Marty Burkhart (HiPureTech)
Discussion: None
Vote: 8-0

Motion: To approve the SNARF for New Standard: Guide for Cyclo Hexanone
By / 2nd: Willie Bloedorn (Honeywell)/Marty Burkhart (HiPureTech)
Discussion: None
Vote: 8-0

5.3 ITRS Update

Andreas Neuber reported on the latest developments in the International Roadmap for Semiconductors

Attachment: ITRS_SEMI_WECC_Update_121005_AN.ppt

6 Old Business

6.1 Five-Year review

SEMI C61-0707 - Specification for Bar-Code Container Identification, is due for five-year review

Action Item: Gummaar De Vos to check at FFEM to see if C61 is still being used.

SEMI F96-0704 - Specification for Port Configuration of Canisters to Contain CVD Precursors, is inactive, but Jean-Marie reported that both Air Liquide and SAHC state that the standard is not up to date.

Action Item: Jean-Marie Collard to consider a SNARF to update SEMI F96.

7 New Business

7.1 Permeation Tubes For Accurate Gas Standards In The Absence Of A True Zero Reference

Gordon Ferrier addressed the committee on this topic on behalf of Jim McKinley of Kin-Tek Laboratories. While moisture contamination in gases is important to customers (corrosion, process damage, yield declines), there are no standards covering controlled generation of trace levels of moisture to support analyser calibrations.

Action Item: Gordon Ferrier to contact Jim McKinley and explain how to introduce the new activity, via a SNARF, into the SEMI Standards Program

Attachment: Calibrating for Trace H2O.ppt

8 Action Item Review

8.1 *Open Action Items*

James Amano (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*

James Amano (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

The next meeting of the EU Gases & Liquid Chemicals Committee is scheduled for SEMICON Europa in October 2013. Additional meetings may also be held at the PV Fab Managers Forum (March 2013, Berlin) or Intersolar Europe (June 2013, Munich).

Respectfully submitted by:
James Amano
SEMI HQ

Minutes approved by:

<Name> (<Company>), Co-chair	<Date approved>
<Name> (<Company>), Co-chair	<Date approved>

Table 8 Index of Available Attachments [#1]

#	*Title*	#	*Title*
1	Required Elements June 2, 2010.ppt	7	PV Gas and Liquid Chemical TF Overview for SEMICON Europa_100112.ppt
2	EU GL Chemicals Committee Meeting Minutes20111012.pdf	8	SEMI Staff Report SEMICON Europa Oct 2012 v2.ppt
3	121010_JA_G+F_LiaisonR_for_SEuropa_r1.0.ppt	9	5328 ProceduralReview.doc
4	LiaisonReportNAGases20120926.ppt	10	5329 ProceduralReview.doc
5	121010_JA_LC_LiaisonR_for_SEuropa_r1.0	11	ITRS_SEMI_WECC_Update_121005_AN.ppt
6	NA LChem report Sept 2012 MT rev2.ppt	12	Calibrating for Trace H2O.ppt

#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.