Record of Letter Ballot Review by TC Chapter for Procedural Review

Region/Locale: North America
Global Technical Committee: EHS
TC Chapter Cochairs: Chris Evanston/Salus, Sean Larsen/KLA, Lucian Girlea/Nikon, Eric Sklar/Safety Guru
Standards Staff: Kevin Nguyen

	Scheduled in Background Statement	Actual
Date	10/15/2026	10/15/2026
Location	San Francisco/CA	San Francisco/CA
Reason for Change of Date and/or Location (if changed)	N/A	

Note: Refer to *Regulations* ¶ 9.5 Exceptions for allowable reason to change.

I. Document Number and Title

Document Number	Document Title
7470	Revision of SEMI S05-1121 Safety Guideline for Sizing and Identifying Flow Limiting Devices for Gases

II. Tally

Voting Tally: As-cast tally after close of voting period

Voting Interest:	Returned Votes		Distribution		Return Rate	
Letter Ballot	86	÷	143	=	60.14%	≥60%
Intercommittee Ballot	21					
Voting Interest Reject(s)	0		Total Voters with Rejects			0
Voting Interest Accept(s)	73					

III. Rejects

None

IV. Other Technical Issues

Note: TC Chapter may choose to address a technical issue that is not part of a Negative received on a Letter Ballot (i.e., a Comment or a reason not addressed by a Vote response) by handling it as a Negative and finding it related and technically persuasive. The TC Chapter may then fail the Document or address such technical issue by using the procedure defined in *Regulations* § 9.6.1.4.3 to make a technical change to the Document. (*Regulations* ¶ 9.6.1.4.2.5)

None

V. Comments

V- (i) Voters' Comments

Commenter 1 (Melissa Mendias/Exponent) - Comment 1

Co	**General**	
	: I am not sufficiently knowledgeable about this topic.	
	TF Recommendation: **TF recommends that the NA EHS TCC take no action in response to this Comment**	
Action	**The TC Chapter agreed to do one of the following actions.**	
	***No motion is required in this step.**	
		Already addressed by Commenter #, Comment #
	X	No further action was taken by the TC Chapter.
		Refer to the TF for more consideration.
		New Business
		Editorial Change

Commenter 2 (John Wang/AMEC) - Comment 1

Co	**General**	
	I don't have enough experience in this area to make an informed assessment.	
	TF Recommendation: **TF recommends that the NA EHS TCC take no action in response to this Comment**	
Action	**The TC Chapter agreed to do one of the following actions.**	
	***No motion is required in this step.**	
		Already addressed by Commenter #, Comment #
	X	No further action was taken by the TC Chapter.
		Refer to the TF for more consideration.
		New Business
		Editorial Change

Commenter 3 (Sunmin Lee/National institute of Chemical Safety) - Comment 1

Comment	**General**
	An FLD has no control effect on accidents involving rupture of the gas cylinder itself, failure of the cylinder valve or its connection, activation of the pressure relief device (PRD), or gas leakage occurring upstream of the FLD. Therefore, an FLD alone cannot prevent or isolate all high-pressure gas accidents. However, when rupture, disconnection, or valve misoperation occurs in piping or equipment downstream of the FLD, the device can limit the maximum gas release rate, thereby reducing the scale of the leak and the consequences of the accident. For this reason, an FLD can be regarded as an important supplementary safety device. SEMI S05 also defines the scope of an FLD as limiting abnormal gas release downstream of the device, while excluding upstream events such as cylinder rupture or PRD activation. An FLD is not a device that fundamentally prevents accidents; rather, it is a mitigation measure that reduces the gas release rate and the severity of damage after an accident occurs. Therefore, while FLDs should be applied, they must be used in conjunction with fundamental preventive and control measures addressing accidents involving cylinders, valves, PRDs, and upstream piping.
	TF Recommendation: **TF recommends that the NA EHS TCC take no action in response to this Comment**
Action	**The TC Chapter agreed to do one of the following actions.**
	***No motion is required in this step.**

	Already addressed by Commenter #, Comment #
X	No further action was taken by the TC Chapter.
	Refer to the TF for more consideration.
	New Business
	Editorial Change

Commenter 4 (Sara Fagulha Pereira/ASML) - Comment 1

Comment	**5.1.6**		
	Terminology does not clarify the context at which it is used. Proposed solution - technical / scientific improvement: please add to the terminology also the definition of Standard Temperature and Pressure (which temperature, which pressure), according to scientific consensus for the use of that terminology. Combine with 5.2.14; Proposed solution - grammar: remove the comma after temperature.		
	TF Recommendation: The Comment asks that a definition of "standard temperature and pressure" be added to §5.2, stating what those temperature and pressure are. The ballot includes: 5.2.14 standard temperature and pressure (STP) — 0.0°C and 101.325 kPa. so the TF does not see what, if anything, needs to be added. The Comment also asks that the comma be removed from: 5.1.6 *STP* — standard temperature, and pressure **TF agrees this is appropriate and suggests the Committee remove the comma by Editorial Change in the adjudication meeting.** Implementing the Commenters suggestion to "Combine with 5.2.14" would comprise a violation of SEMI's style.		
Action	**The TC Chapter agreed to do one of the following actions.**		
	***No motion is required in this step.**		
		Already addressed by Commenter #, Comment #	
		No further action was taken by the TC Chapter.	
		Refer to the TF for more consideration.	
		New Business	
	X	Editorial Change	
	Options for editorial change **(check one)**		**Case 1: No vote in this section:**
			To be included and voted on as a group in § VI. *Editorial Changes Other than Those Voted on in § V.*
		x	**Case 2: Voted in this section:**
			Original section number and at least one full sentence are required in "FROM" and "TO" fields.
Editorial	1	**FROM: Section/Paragraph** 5.1.6 *STP* — standard temperature, and pressure	
		TO: Section/Paragraph 5.1.6 *STP* — standard temperature~~,~~ and pressure	
		Justification (If necessary) Correct typographical error	

Motion	To approve above editorial change(s)
Motion by/2nd by	**By:** Eric Sklar (Safety Guru, LLC) **Second:** Lauren Crane (Lam Research)
Discussion	None
Vote	*12-Y 0-N Voting Result: Pass - 100%*

Commenter 5 (Wilbert Pennings/ASML) - Comment 1

Comment	**5.1.6**
	: Terminology does not clarify the context at which it is used. Proposed solution: Technical / scientific improvement: please add to the terminology also the definition of Standard Temperature and Pressure (which temperature, which pressure), according to scientific consensus for the use of that terminology. Combine with 5.2.14. Grammar: Remove the comma after temperature.
	TF Recommendation: This Comment is remarkably similar to Commenter 4 Comment 1. **TF recommends the Committee take no further action, as this was addressed by dealing with Commenter 4, Comment 1.**
Action	**The TC Chapter agreed to do one of the following actions.**
	***No motion is required in this step.**

X	Already addressed by Commenter 4, Comment 1
	No further action was taken by the TC Chapter.
	Refer to the TF for more consideration.
	New Business
	Editorial Change

Commenter 6 (Takahiro Okuyama/Horiba Stec) - Comment 1

Com	**5.1.6**	
	: In the clause 5.1.6, the term "STP —standard temperature, and pressure" is listed without the reference [e.g. SEMI E56]. The IUPAC was defined the same term as 0 °C and 10^5 Pa.	
	TF Recommendation: "STP" is used in dozens of SEMI Standards. The most recent Compilation of Terms (0624) attributes the expansion to SEMI MS10. Curiously, there is only one entry in the CoT for "standard temperature and pressure". It is attributed to SEMI S2, but appears unsuitable for our use as it is not stated in SI units and defines the phrase as referring to two different conditions. The TF does not feel any reason to conform to IUPAC's choice. There is no request in the comment. **TF recommends that the NA EHS TCC take no action in response to this Comment**	
Action	**The TC Chapter agreed to do one of the following actions.**	
	***No motion is required in this step.**	
		Already addressed by Commenter #, Comment #
	X	No further action was taken by the TC Chapter.
		Refer to the TF for more consideration.
		New Business
		Editorial Change

Commenter 4 (Sara Fagulha Pereira/ASML) - Comment 2

Comme	**5.2.4**	
	if the conditions at which flow rate is defined are removed, remove too the follow up statement on the calibration conditions of mass flow controllers. Proposed solution - consistency: remove the sentence which follows the removed words on flow conditions.	
	TF Recommendation: TF does not see any "inconsistency". The removed words were removed because they are redundant. The following sentence, however, is both true and information not stated previously in this Document. **The TF recommends that the Committee take no action in response to this Comment**	
Action	**The TC Chapter agreed to do one of the following actions.**	
	***No motion is required in this step.**	
		Already addressed by Commenter #, Comment #
	X	No further action was taken by the TC Chapter.
		Refer to the TF for more consideration.
		New Business
		Editorial Change

Commenter 5 (Wilbert Pennings/ASML) - Comment 2

Comment	**5.2.4**
	If the conditions at which flow rate is defined are removed, remove too the follow up statement on the calibration conditions of mass flow controllers. Proposed solution: Consistency: remove the sentence which follows the removed words on flow conditions.
	TF Recommendation: This Comment is remarkably similar to Commenter 4 Comment 2. **TF recommends the Committee take no further action, as this was addressed by dealing with Commenter 4, Comment 2.**
Action	**The TC Chapter agreed to do one of the following actions.**
	***No motion is required in this step.**

X	Already addressed by Commenter 4, Comment 2
	No further action was taken by the TC Chapter.
	Refer to the TF for more consideration.
	New Business
	Editorial Change

Commenter 4 (Sara Fagulha Pereira/ASML) - Comment 3

Comme	**6.1.2**
	the statement is good, but should be even clearer on the FLD sizing. Proposed solution - technical / scientific improvement: add to the end of the sentence statement "(…) and that the FLD size is correct according to associated design calculations in order to reach an acceptable risk level".
	TF Recommendation: TF does not understand what the submitter is intending that the user do. If it is that the user check to see if the size is the size specified for the application, that seems reasonable because it is a matter of matching the size stated on the "identification" described in 6.1.1 to the specified size. TF doesn't see how adding the suggested text will help. If, however, it is suggesting that the user perform both flow and risk calculations, TF thinks that's beyond the capabilities and job scope of the personnel usually handling the cylinders and that it is not likely to be done at all, much less correctly. TF doesn't think the balloted text would suffer significant mis-interpretation, and is okay as is. **The TF recommends that the Committee take no action in response to this Comment**
Action	**The TC Chapter agreed to do one of the following actions.**
	***No motion is required in this step.**

	Already addressed by Commenter #, Comment #
X	No further action was taken by the TC Chapter.
	Refer to the TF for more consideration.
	New Business
	Editorial Change

Commenter 5 (Wilbert Pennings/ASML) - Comment 3

Comment	**6.1.2**
	The statement is good, but should be even clearer on the FLD sizing. Proposed solution: Technical / scientific improvement: add to the end of the sentence statement "(…) and that the FLD size is correct according to associated design calculations in order to reach an acceptable risk level".

	TF Recommendation: This Comment is remarkably similar to Commenter 4 Comment 3. **TF recommends the Committee take no further action, as this was addressed by dealing with Commenter 4, Comment 3.**

Action		
	The TC Chapter agreed to do one of the following actions.	
	***No motion is required in this step.**	
	X	Already addressed by Commenter 4, Comment 3
		No further action was taken by the TC Chapter.
		Refer to the TF for more consideration.
		New Business
		Editorial Change

Commenter 7 (Michael Wotta/Tokyo Electron) - Comment 1

Co	
	Table R1-1
	The Heat Capacity for Hydrogen Selenide is listed as "-0.432" and should be a positive value.
	TF Recommendation: **TF recommends that the NA EHS TCC correct this typographical error.** This appears to be a typographical, not a technical, change because there is no gas known to the TF to have a negative heat capacity. Also, as this is in an RI, the change is editorial by rule, regardless of its content.

Action		
	The TC Chapter agreed to do one of the following actions.	
	***No motion is required in this step.**	
		Already addressed by Commenter #, Comment #
		No further action was taken by the TC Chapter.
		Refer to the TF for more consideration.
		New Business
	X	Editorial Change

	Options for editorial change **(check one)**		**Case 1: No vote in this section:**
			To be included and voted on as a group in § VI. *Editorial Changes Other than Those Voted on in § V.*
		x	**Case 2: Voted in this section:**

Editorial Changes

1

FROM: Section/Paragraph
Table R1-1 Heat Capacities and Critical Pressure Ratios

Gas	*Formula*	*CAS #*	*Heat Capacity at Constant Pressure (CP) (kJ/[kg K])*	*Heat Capacity at Constant Volume (CV) (kJ/[kg K])*	*Ratio of Heat Capacities γ = CP/CV*	*Critical Pressure*
Hydrogen selenide	H_2Se	7783-07-5	-0.432	*0.321*	*1.315*	*1.84*

TO: Section/Paragraph
Table R1-1 Heat Capacities and Critical Pressure Ratios

Gas	*Formula*	*CAS #*	*Heat Capacity at Constant Pressure (CP) (kJ/[kg K])*	*Heat Capacity at Constant Volume (CV) (kJ/[kg K])*	*Ratio of Heat Capacities γ = CP/CV*	*Critical Pressure*
Hydrogen selenide	H_2Se	7783-07-5	0.432	*0.321*	*1.315*	*1.84*

Justification (If necessary) Correct typographical error

Motion	To approve above editorial change(s)
Motion by/2nd by	**By:** Eric Sklar (Safety Guru, LLC) **Second:** Lauren Crane (Lam Research)
Discussion	XXXX
Vote	*15-Y 0-N Voting Result: Pass - 100%*

Commenter 8 (Jimmy Li/Tokyo Electron) - Comment 1

Co

Table R1-1

I believe Hydrogen Selenide's value of -0.432 has a typo and should not be negative.*i*

TF Recommendation:
TF recommends that the NA EHS TCC take no further action in response to this Comment

Action

The TC Chapter agreed to do one of the following actions.

***No motion is required in this step.**

X	Already addressed by Commenter 7, Comment 1
	No further action was taken by the TC Chapter.
	Refer to the TF for more consideration.
	New Business
	Editorial Change

Options for editorial change **(check one)**		**Case 1: No vote in this section:**
		To be included and voted on as a group in § VI. *Editorial Changes Other than Those Voted on in § V.*
		Case 2: Voted in this section:
		Original section number and at least one full sentence are required in "FROM" and "TO" fields.

V-(ii) Comments Created by Handling Negative

None

VI. Editorial Changes Other than Those Voted on in § V

Original section/paragraph number and at least one full sentence are required in "FROM" and "TO" fields.

None

VII. Approval Conditions Check

VII. - (i). Approval Rate

APPROVAL CONDITION 1: All Negatives have been discussed and were withdrawn, found not related, found not persuasive, or addressed by a technical change. (*Regulations* ¶ 9.6.2.1.2)

APPROVAL CONDITION 2: At least 90% of the sum of valid Voting Interest Accept and Voting Interest Reject Votes must be Accept. (*Regulations* ¶ 9.6.2.1.3)

Note: If both approval conditions are not satisfied, the Document fails.

		Accepts		(Accepts + Valid Rejects)				
Approval Rate	=	73		73	=	100%		≥90%

VII. – (ii) Approval Level (check one)

Note: Refer to *Regulations* § 9.6.2 for further information.

X	**Globally Approved (No Ratification Ballot needed):** **The Letter Ballot meets the Letter Ballot approval conditions for the global technical committee.**
	Need a Ratification Ballot: **The Letter Ballot meets the Letter Ballot approval conditions for the TC Chapter and a Ratification Ballot will be issued to validate technical changes.**

VIII. Safety Check

Note: Refer to *Regulations* § 15 for further information.

Motion			
			This is not a Safety Document, when all safety-related information is removed, the Document is still technically sound and complete. (*Regulations* ¶ 8.7.1)
	X		**This is a Safety Document**, when all safety-related information is removed, the Document is not technically sound and complete. (*Regulations* ¶ 8.7.2)
		X	Safety Checklist (*Regulations* ¶ 15.3) is complete and has been included with the Document throughout the balloting process. (*Regulations* ¶ 15.1.2)
Motion by/2nd by			**By:** Eric Sklar (Safety Guru, LLC) **Second:** Lauren Crane (Lam Research)

Discussion	XXXX
Vote	13-Y 0-N Voting Result: Pass - 100%

IX. Intellectual Property (IP) Check

Note: This Letter Ballot may cover all or part of a Standard or Safety Guideline. Regardless of the coverage, this IP check applies to the entire Standard or Safety Guideline*. Refer to *Regulations* § 16 for further information.

x	The TC Chapter meeting chair asked those participating, if they were aware of any patented technology that might be relevant (refer to *Regulations* ¶ 16.3.1.1) to the Standard or Safety Guideline; or, any copyrighted items or trademarks that are used/reproduced (refer to *Regulations* ¶ 16.4.1.2) in the Standard or Safety Guideline. (Also refer to *Regulations* § 8.8)					
	x	The question is NOT answered in affirmative (No potentially material patented technology or use/reproduction of copyrighted items/trademarks is known.)	**GO TO SECTION X.**			
		The question is answered in affirmative	Is any of the known IPs a patented technology?		**Yes, at least one of them is a patented technology**	**GO TO IX (a) "Patented Technology" subsection**
					No	**GO TO IX (b) "Copyright items" subsection**

IX(a) Patented Technologies subsection

IX(a1) Total numbers of Patented Technologies to be dealt with

# **Fill number**	**(l)** Known Patented Technology that might be relevant to the Standard/Safety Guideline	**#** **Fill number**	**(m)** Number of patented technologies first became known to the TC Chapter on or after the day of the issuance of this Letter Ballot	**Postpone assessment of such patented technologies to be performed at the next scheduled TC Chapter meeting.**
		# **Fill number**	**(n)** Number of patented technologies first became known to the TC Chapter before the day of the issuance of this Letter Ballot	**GO TO IX (a2)**

IX(a2) Assessment of disclosed patented technologies

Disclosed patented technology #1 (***Brief description, e.g., patent title and number***):			**Date of Assessment** **(If different from the date of Letter Ballot adjudication)** MM/DD/YYYY			
Is disclosed patented technology #1 found to be "might be material" to the Standard/Safety Guideline?		YES (It is a PMPT)	Is the use of this PMPT technically justified?		**YES**	**PROCEED to assess NEXT one, or if this is the last one, GO TO IX(a3)**

					NO	**The Document is failed and returned to the TF**
		NO	No further action is needed for patented technology #1			

This table is needed for each disclosed patented technology.

IX(a3) LOA status check of PMPT of which inclusion assessed to be justified

LOA Status of PMPT #1						
Has an LOA for this patented technology been received from every owner ?		YES	**PROCEED to check NEXT one, or if this is the last one, GO TO IX(b)**			
		NO	MOTION		Ask ISC for special permission to publish.	
					Quit activity.	**The Document is failed and returned to the TF**
					Wait for LOA	**PROCEED to check NEXT one, or if this is the last one, GO TO IX(b1)**
			Motion by/ 2nd by		Name (Company)/Name (Company)	
			Discussion		XXXX	
			Vote		XX **Y**-XX **N**; Motion passed (or failed)	

This table is needed for each PMPT of which inclusion assessed to be justified.

IX(b1) Total numbers of copyrighted items to be dealt with

# Fill number	**(o)** Known copyrighted items that are used or reproduced to the Standard/Safety Guideline		**o > 0** There is at least one known copyrighted items that might be relevant to the Standard/Safety Guideline	**GO TO IX (b2)**
			o = 0 There is no disclosed copyrighted item	**GO TO IX (c)**

IX(b2) Assessment of disclosed copyrighted items

Disclosed copyrighted item #1 (***Brief description of its use in the Document***):						
Is disclosed copyrighted item #1 used or reproduced in the Standard/Safety Guideline?		YES	Is the use/reproduction of this copyrighted item technically justified?		YES	**PROCEED to assess NEXT one, or if this is the last one, GO TO IX(b3)**
					NO	**The Document is failed and returned to the TF**
		NO	No further action is needed for copyrighted item #1			

This table is needed for each disclosed copyrighted item.

IX(b3) Copyright release status check of copyrighted item of which inclusion assessed to be justified

Copyright release Status of copyrighted item #1						
Has the copyright release been received from its owner ?.		YES	**PROCEED to assess NEXT one, or if this is the last one, GO TO IX(c)**			
		NO	MOTION		Ask ISC for special permission to publish.	
					Quit activity.	**The Document is failed and returned to the TF**
					Wait for copyright release letter	**PROCEED to check NEXT one, or if this is the last one, GO TO IX(c)**
			Motion by/ 2nd by			Name (Company)/Name (Company)
			Discussion			XXXX
			Vote			XX **Y**-XX **N**; Motion passed (or failed)

This table is needed for each copyrighted item of which use/reproduction assessed to be justified.

IX(c) Assessment of disclosed (identified) trademark

Is there any trademark in the Standard/Safety Guideline?		YES	Is every instance of trademark use technically justified?	YES	**GO TO** IX(d)
				NO	**The Document is failed and returned to the TF**
		NO	**GO TO IX(d)**		

IX(d) IP check completion condition check

The co-chair checks if any Patented Technologies first become known to the TC Chapter on or after the day of the issuance of this Letter Ballot? i.e., m>0 in IX(a1)		YES	**Sections IX(a2) and IX(a3) shall be completed and recorded for such patented technologies at next scheduled meeting of the TC Chapter. Until then, the TC Chapter shall NOT go to X** (making motion to pass/fail this Document) **(refer to *Regulations* ¶16.4.1.2)** **Until then this Letter Ballot Review is on hold.**
		NO	**GO TO X**

X. Action for This Document

Motion		This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural review.
	X	This Document passed TC Chapter review with editorial changes and will be forwarded to the ISC A&R SC for procedural review.
		This Document passed TC Chapter review with technical changes and with or without editorial changes and will be forwarded to the ISC A&R SC for procedural review. A Ratification Ballot will be issued to verify the technical changes.
		This Document failed TC Chapter review and will be returned to the TF for rework.
		This Document failed TC Chapter review and work will be discontinued.
Motion by/ 2nd by		**By:** Eric Sklar (Safety Guru, LLC) **Second:** Lauren Crane (Lam Research)

Discussion	XXXX	
Vote	13-Y 1-N Voting Result: Pass - 93%	
Final Action	x	Motion passed
		Motion failed

Note: If the use of PMPT or copyrighted item is justified by the TC Chapter, LOA or release form must be received before publication can proceed.