

Record of Letter Ballot Review by TC Chapter for Procedural Review

Region/Locale: **North America**

Global Technical Committee: **3D Packaging & Integration**

TC Chapter Cochairs: **Richard Allen (NIST), Chris Moore (Covalent Metrology), Sesh Ramaswami (Applied Materials)**

Standards Staff: **Laura Nguyen**

	Scheduled in Background Statement	Actual
Date	04/04/2019	04/04/2019
Location	SEMI HQ, Milpitas, CA/USA	SEMI HQ, Milpitas, CA/USA
Reason for Change of Date and/or Location (if changed)		

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

I. Document Number and Title

Document Number 6075A	Document Title New Standard: Guide for Describing Glass-Based Material for Use in 3DS-IC Process
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II. Tally

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

Note: A minimum of 60% of the Voting Interests that have TC Members within the global technical committee that issued the Letter Ballot must return Votes. (*Regulations* ¶ 9.6.2.1.1)

Voting Tally (with example values):

Voting Interest:	Returned Votes		Distribution		Return Rate	
Letter Ballot	72	÷	110	=	65.5%	≥60%
Intercommittee Ballot	35					
Voting Interest Reject(s)	1		Total Voters with Rejects			1
Voting Interest Accept(s)	49					

Note: See *Regulations* § 3.2.1 for definition of Voting Interest.

III. Rejects

Voting Interest Reject 1 (Voting Interest Name: SEC)

Voter Reject 1 (Voter: Tsukasa Fukunaga/Shin-Etsu Polymer Co., Ltd.)

Negative 1

Negative	Referenced Section/ Paragraph	*TF/TC Chapter to fill in, including text in the ballot if necessary.					
	Negative Text	The term 'Fan Out' is/will be removed from PLP Panel and Panel FOUN standards because of a customer's input in 2018 NA fall (refer to the document 6332A). Thus I suggest applying the same change to this document, in section 7.2.					
TF input (optional)							
Withdrawal (check one)	<input checked="" type="checkbox"/>	No Negative withdrawal made by Voter.			GO TO "Related" subsection		
	<input type="checkbox"/>	Withdrawal document received by Standards staff on MM/DD/YYYY.			GO TO "Final" subsection → (A)		
Related	Motion and Reason (check one)	<input checked="" type="checkbox"/>	'Related' is mutually agreed upon. (Needs no motion.)			GO TO "Persuasive" subsection	
		<input type="checkbox"/>	Negative is not related. (Needs ≥2/3 votes to pass.)				
		Reason	XXXX				
Persuasive	Motion and Reason (check one)	<input checked="" type="checkbox"/>	Negative is related and persuasive. (Needs >1/3 votes to pass.)				
		<input type="checkbox"/>	Negative is related and not persuasive. (Needs ≥2/3 votes to pass.)				
		Reason	XXXX				
	Motion by/ 2 nd by	Cristina Chu (ASM-NEXX) / Ilona Schmidt (Corning)					
	Discussion	None.					
	Result of Vote (check one)	5 Y 0 N; Motion passed.					
		<input checked="" type="checkbox"/>	[Negative is related and persuasive.] > 1/3	Is a technical change recommended? (check one)	<input checked="" type="checkbox"/>	Y	GO TO "Address by Technical Change Option" subsection
		<input type="checkbox"/>	[Negative is related and not persuasive.] < 2/3		<input type="checkbox"/>	N	GO TO "Final" subsection → (E)
<input type="checkbox"/>		2/3 ≤ [Negative is related and not persuasive.] < 90%	GO TO "Final" subsection → (C)				
<input type="checkbox"/>	90% ≤ [Negative is related and not persuasive.]	GO TO "Not Significant Finding Option" subsection					
Add res	Technical Change Recommendations Original section/paragraph number and at least one full sentence are required in "FROM" and "TO" fields.						

Technical Changes	1	FROM: Section/Paragraph 7 7.2 <i>Glass Carrier Wafers or Panels for Fan-Out Processes</i> 7.2.1 Glass carrier wafers or panels are designed to provide support to silicon wafers during the Fan-Out processes. The carrier wafer or panel will be temporarily bonded to the silicon wafer. After the Fan-Out processes are finished, the glass carrier wafer or panel will be removed and may be reused.		
		TO: Section/Paragraph 7 7.2 <i>Glass Carrier Wafers or Panels for Fan-Out Processes</i> 7.2.1 Glass carrier wafers or panels are designed to provide support to <u>reconstituted silicon</u> wafers during the Fan-Out processes. The carrier wafer or panel will be temporarily bonded to the silicon wafer. After the Fan-Out processes are finished, the glass carrier wafer or panel will <u>may</u> be removed and may be reused. 7.3 <i>Glass Panels for Panel Level Processes</i> 7.2.1 7.3.1 Glass panels are designed to provide support to reconstituted wafer or dice during the panel level processes, such as Fan-Out. The glass panel will be temporarily bonded. After the panel level processes are finished, the panel will be removed and may be reused. 7.3 7.4 Glass Substrates for 3DS-IC Applications		
		Justification (if necessary)		
Motion		Negative is addressed by the technical change(s).		
Motion by/2 nd by		Bevan Wu (BW & Associates) / Stefan Radloff (Intel)		
Discussion		None.		
Result of Vote (check one)		5 Y 0 N; Motion passed. <input checked="" type="checkbox"/> 2/3 ≤ [Negative is addressed by the technical change(s).] GO TO "Incorporation of the Technical Change" subsection <input type="checkbox"/> [Negative is not addressed by the technical change(s).] < 2/3 GO TO "Final" subsection → (E)		
Incorporation of the Technical Change	Motion		To incorporate the technical change(s).	
	Motion by/2 nd by		Stefan Radloff (Intel) / Bevan Wu (BW & Associates)	
	Discussion		None.	
	Result of Vote (check one)		5 Y 0 N; Motion passed. <input checked="" type="checkbox"/> 90% ≤ [Agree to incorporate.] GO TO "Final" subsection → (F) <input type="checkbox"/> [Disagree to incorporate.] > 10% GO TO "Final" subsection → (E)	
Final	(check if applicable)	<input type="checkbox"/> (A)	Withdrawn (counted under h in disposition)	
		<input type="checkbox"/> (B)	Not related (counted under i in disposition)	
		<input type="checkbox"/> (C)	Related and not persuasive (significant)	
		<input type="checkbox"/> (D)	Not significant (counted under j in disposition)	
		<input type="checkbox"/> (E)	Related and persuasive and not addressed by technical change	DOCUMENT FAILS
		<input checked="" type="checkbox"/> (F)	Addressed by technical change (counted under k disposition)	
	(check if applicable)	<input type="checkbox"/>	Comment generated. See Section V-(ii) Comment # X.	

Disposition of Voting Interest Reject 1

Check only when the Document has not been failed.

1	Original number (#) of Negatives		(g)
0	Number of Negatives withdrawn		(h)
0	Number of Negatives found not related		(i)
0	Number of Negatives found not significant		(j)
1	Number of Negatives addressed by technical change (Negative becomes not significant)		(k)
Final	X	$g - (h + i + j + k) = 0$	Reject is Not Valid and is not included in the denominator of § VI. Approval Conditions Check
		$g - (h + i + j + k) > 0$	Reject is included in the denominator of § VI. Approval Conditions Check
		Reject without a Negative	Not Valid

This table is needed for each Voting Interest Reject.

Note: If all of the Negatives included with a Reject Vote are withdrawn, determined to be not related, or determined to be not significant, the Reject Vote is not valid. (*Regulations* ¶ 9.4.3.3)

Note: A Negative addressed by a technical change is automatically considered to be not significant. (*Regulations* ¶ 9.6.1.4.5.2)

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)

Technical Issue	Origin	Comment #2 (Voter: Larry Hartsough/UAA)		
	Referenced Section/ Paragraph	2.4		
	Reason	in 2.4, should the phrase 'but limited to' be 'but not limited to'?		
Handle technical issue identified above as a Negative.				
Related	Motion and Reason (check one)	X	'Related' is mutually agreed upon. (Needs no motion.)	GO TO "Persuasive" subsection
			Negative is not related and assigned to TF. (Needs ≥2/3 votes to pass.)	
			Negative is not related and placed on agenda of current TC Chapter meeting as new business. (Needs ≥2/3 votes to pass.)	
			Reason	XXXX
Persuasive	Motion and Reason (check one)	X	Negative is related and persuasive. (Needs >1/3 votes to pass.)	
			Negative is related and not persuasive. (Needs ≥2/3 votes to pass.)	

	Motion by/ 2 nd by	Ilona Schmidt (Corning) / Cristina Chu (ASM-NEXX)					
	Discussion	None.					
	Result of Vote (check one)	5 Y 0 N; Motion passed.					
		<input checked="" type="checkbox"/>	[Negative is related and persuasive.] > 1/3	Is a technical change recommended? (check one)	<input checked="" type="checkbox"/>	Y	GO TO "Address by Technical Change Option" subsection
<input type="checkbox"/>		[Negative is related and not persuasive.] < 2/3	<input type="checkbox"/>		N	GO TO "Final" subsection → (E)	
		<input type="checkbox"/>	2/3 ≤ [Negative is related and not persuasive.] < 90%	GO TO "Final" subsection → (C)			
Address by Technical Change Option	Technical Change Recommendations Original section/paragraph number and at least one full sentence are required in "FROM" and "TO" fields.						
	Technical Changes	1	FROM: Section/Paragraph 2.4				
			2.4 The glass base material may be processed further to a substrate with openings, such as but limited to through vias and blind vias.				
			TO: Section/Paragraph 2.4				
	2.4 The glass base material may be processed further to a substrate with openings, such as but <u>not</u> limited to through vias and blind vias.						
	Justification (if necessary)						
	Motion		Negative is addressed by the technical change(s).				
	Motion by/2 nd by		Ilona Schmidt (Corning) / Bevan Wu (BW & Associates)				
	Discussion		None.				
	Result of Vote (check one)		5 Y 0 N; Motion passed.				
			<input checked="" type="checkbox"/>	2/3 ≤ [Negative is addressed by the technical change(s).]		GO TO "Incorporation of the Technical Change" subsection	
			<input type="checkbox"/>	[Negative is not addressed by the technical change(s).] < 2/3		GO TO "Final" subsection → (E)	
	Incorporation of the Technical Change	Motion		To incorporate the technical change(s).			
		Motion by/2 nd by		Ilona Schmidt (Corning) / Cristina Chu (ASM-NEXX)			
		Discussion		None.			
Result of Vote (check one)		5 Y 0 N; Motion passed.					
		<input checked="" type="checkbox"/>	90% ≤ [Agree to incorporate.]		GO TO "Final" subsection → (F)		
		<input type="checkbox"/>	[Disagree to incorporate.] > 10%		GO TO "Final" subsection → (E)		
Final	(check one)	<input type="checkbox"/>	(B)	Not related			
		<input type="checkbox"/>	(C)	Related and not persuasive			
		<input type="checkbox"/>	(E)	Related and persuasive and not addressed by technical change	DOCUMENT FAILS		
		<input checked="" type="checkbox"/>	(F)	Addressed by technical change			
	(check if applicable)	<input type="checkbox"/>	Comment generated. See Section V-(ii) Comment # X.				

V. Comments

V- (i) Voters' Comments

Commenter 1 (Larry Hartsough/UAA) - Comment 1

Comment	*TF/TC Chapter to fill in section/paragraph #, if necessary.	
	In 1.3 change section symbol to paragraph symbol.	
Action	The TC Chapter agreed to do one of the following actions.	
	*No motion is required in this step.	
	<input type="checkbox"/>	Already addressed by Commenter #, Comment #
	<input checked="" type="checkbox"/>	No further action was taken by the TC Chapter. The Style Manual states that the symbol can be shown either section or paragraph symbol (See Table 1-19).
	<input type="checkbox"/>	Refer to the TF for more consideration.
	<input type="checkbox"/>	New Business
	<input type="checkbox"/>	Editorial Change

Comment 2

Comment	*TF/TC Chapter to fill in section/paragraph #, if necessary.	
	in 2.4, should the phrase 'but limited to' be 'but not limited to'?	
Action	The TC Chapter agreed to do one of the following actions.	
	*No motion is required in this step.	
	<input checked="" type="checkbox"/>	Already addressed by Commenter #, Comment # Addressed in Section VI.
	<input type="checkbox"/>	No further action was taken by the TC Chapter.
	<input type="checkbox"/>	Refer to the TF for more consideration.
	<input type="checkbox"/>	New Business
	<input type="checkbox"/>	Editorial Change

Comment 3

Comment	*TF/TC Chapter to fill in section/paragraph #, if necessary.	
	In 5.2.1, delete 'glass is' from the definition	
Action	The TC Chapter agreed to do one of the following actions.	
	*No motion is required in this step.	
	<input type="checkbox"/>	Already addressed by Commenter #, Comment #
	<input type="checkbox"/>	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. <i>Editorial Changes Other than Those Voted on in § V.</i>
		Case 2: Voted in this section: Original section number and at least one full sentence are required in "FROM" and "TO" fields.
	1	FROM: Section/Paragraph 5.2.1.1 5.2.1.1 <i>Glass</i> —glass is an amorphous solid, which means it has no crystalline structure, and that exhibits a glass transition from a brittle and solid state to a viscous liquid.
		TO: Section/Paragraph 5.2.1.1 5.2.1.1 <i>Glass</i> —glass is an amorphous solid, which means it has no crystalline structure, and that exhibits a glass transition from a brittle and solid state to a viscous liquid.
Justification (If necessary) "glass is" is repetitive.		
Motion		To approve above editorial change(s)
Motion by/2 nd by		Stefan Radloff (Intel) / Ilona Schmidt (Corning)
Discussion		None.
Vote		5 Y 0 N; Motion passed.

Commenter 2 (Masahiro Tsuruya/iNEMI) - Comment 1

Comment	*TF/TC Chapter to fill in section/paragraph #, if necessary.	
	Can this document be combined with other Glass based material document?	
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. This document was created based on a request to have a more specific document covering this topic. The TF does not foresee this document being combined with other glass-based documents. <The TF will leave as is for the time being.>
		Refer to the TF for more consideration.
		New Business
		Editorial Change

V-(ii) Comments Created by Handling Negative None

VI. Editorial Changes Other than Those Voted on in § V 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	=	49	/	49	=	100.0%	≥90%	

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

Note: See *Regulations § 9.6.2* for further information.

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Globally Approved (No Ratification Ballot needed):

The Letter Ballot meets the Letter Ballot approval conditions for the global technical committee.

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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: See *Regulations § 15* for further information.

Motion	<input checked="" type="checkbox"/>	This is not a Safety Document, when all safety-related information is removed, the Document is still technically sound and complete. (<i>Regulations ¶ 8.7.1</i>)
	<input type="checkbox"/>	This is a Safety Document, when all safety-related information is removed, the Document is not technically sound and complete. (<i>Regulations ¶ 8.7.2</i>)
	<input type="checkbox"/>	Safety Checklist (<i>Regulations ¶ 15.3</i>) is complete and has been included with the Document throughout the balloting process. (<i>Regulations ¶ 15.1.2</i>)
Motion by/2 nd by		Bevan Wu (BW & Associates) / Mike O'Brien (Intel)
Discussion		None.
Vote		5 Y 0 N; Motion passed.

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*. See *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 (see <i>Regulations ¶ 16.3.1.1</i>) to the Standard or Safety Guideline; or, any copyrighted items or trademarks that are used/reproduced (see <i>Regulations ¶ 16.4.1.2</i>) in the Standard or Safety Guideline. (Also see, <i>Regulations § 8.8</i>)	
	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.		

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.
		This Document passed TC Chapter review with editorial changes and will be forwarded to the ISC A&R SC for procedural review.
	X	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		Ilona Schmidt (Corning) / Cristina Chu (ASM-NEXX)
Discussion		None.
Vote		5 Y 0 N
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.