UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

CAIHONG DISPLAY DEVICES CO., LTD.,
Petitioner

v.

CORNING INCORPORATED,
Patent Owner

---

Case IPR2025-00439
U.S. Patent No. 7,851,394

---

# PATENT OWNER DISCRETIONARY DENIAL BRIEF

***Mail Stop "PATENT BOARD"***
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

**TABLE OF CONTENTS**

I. INTRODUCTION ..... 1
II. STATEMENT OF PRECISE RELIEF REQUESTED ..... 3
III. FACTUAL BACKGROUND ..... 3
A. Overview of the Technology ..... 4
B. Overview of '394 Patent Claims ..... 5
C. Prosecution History of the '394 Patent ..... 6
IV. PERSON OF ORDINARY SKILL IN THE ART ("POSA") ..... 9
V. CLAIM CONSTRUCTION ..... 9
VI. REASONS THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION ..... 9
A. The Director should use discretion under § 314(a) to deny the Petition. ..... 9
1. Fintiv factors weigh in favor of Patent Owner and denial in view of parallel ITC investigation. ..... 10
2. The settled expectations of the parties weigh against institution ..... 14
3. Compelling economic and public health interests weigh against institution ..... 15
4. The Petition relies on a parroted expert declaration, which lacks substantial explanation or additional cited support, and lacks the requisite expert qualifications. ..... 19
5. Institution would not reflect an efficient use of the Board's limited resources ..... 21
B. The Director should use discretion under § 325(d) to deny the Petition. ..... 23
1. Petitioner's only cited references for each of Grounds 1-3: Miwa and Bange, were fully considered during prosecution. ..... 25
a. The Examiner would have appreciated the totality of Miwa's disclosure based on the copy of Miwa and the machine translation of Miwa submitted by Patent Owner. ..... 26

b. Converting from weight percentage to mole percentage is a routine skill that the Examiner was well-equipped to perform. ..... 30

c. The Examiner would have fully appreciated the glass compositions of Miwa when considering patentability of the '394 patent. ..... 31

2. Petitioner fails to identify Office material error in the Examiner's previous evaluation of Miwa and Bange. ..... 32

C. The Director should use discretion under § 312(a)(3) to deny the Petition. .....34

1. The Petition does not explain the combination of Miwa and Bange for Ground 1 ..... 35

2. The Petition does not explain how or why different embodiments of Miwa would be combined or the role that Bange plays in the analysis. ..... 38

D. The weakness of Petitioner's unpatentability arguments weighs against institution under § 314(a). .....39

1. Petitioner's arguments in Ground 1 lack the required rationale to establish that it would have been obvious to combine Miwa with Bange to arrive at what is claimed. ..... 42

2. Petitioner does not even attempt to establish a reasonable expectation of success for Ground 1..... 51

3. Petitioner's arguments in Ground 3 lack the required rationale to establish that it would have been obvious to modify Miwa to arrive at what is claimed. ..... 54

4. Petitioner does not even attempt to establish a reasonable expectation of success for Ground 3..... 60

VII. CONCLUSION ..... 62

# TABLE OF AUTHORITIES

## Cases

*Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GmbH*,
IPR2019-01469, Paper 6 (P.T.A.B. Feb. 13, 2020) (precedential March 24, 2020).....24, 25, 32

*Apple Inc. v. Fintiv, Inc.*,
IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020).....*passim*

*Becton, Dickinson & Co. v. B. Braun Melsungen AG*,
IPR2017-01586, Paper 8 (P.T.A.B. Dec. 15, 2017).....24, 32

*Belden Inc. v. Berk-Tek LLC*,
805 F.3d 1064 (Fed. Cir. 2015).....41

*Certain Glass Substrates for Liquid Crystal Displays, Products Containing the Same, and Methods for Manufacturing the Same*,
No. 337-TA-1441, Order 2.....12

*Chemours Co. FC v. Daikin Indus.*,
4 F.4th 1370 (Fed. Cir. 2021).....50, 59

*Chevron Oronite Co. LLC v. Infineum USA L.P.*,
IPR2018-00923, Paper 9 (P.T.A.B. Nov. 7, 2018) .....13, 21

*Deeper, UAB v. Vexilar, Inc.*,
IPR2018-01310, Paper 7 (P.T.A.B. Jan. 24, 2019).....13, 21

*Ecto World, LLC v. RAI Strategic Holdings, Inc.*,
IPR2024-01280, Paper 10 (P.T.A.B. Mar. 6, 2025).....32

*Eli Lilly & Co. v. Teva Pharms. Int'l GmbH*,
8 F.4th 1331 (Fed. Cir. 2021).....51

*Gillette Co. v. SC Johnson & Son, Inc.*,
919 F. 2d 720 (Fed. Cir. 1990).....48, 58

*Graham v. John Deere Co.*,
383 U.S. 1 (1966).....36, 38

*Honeywell Int'l Inc. v. DSM IP Assets, B.V.*,
IPR2024-00493, Paper 7 (P.T.A.B. Aug. 21, 2024) .....41, 51

*Honeywell Int'l Inc. v. Mexichem Amanco Holding S.A.*,
865 F.3d 1348 (Fed. Cir. 2017) .....51

*Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*,
821 F.3d 1359 (Fed. Cir. 2016) .....34, 40

*Juniper Networks, Inc. v. Correct Transmission, LLC*,
IPR2021-00682, Paper 26 (P.T.A.B. Oct. 3, 2022) .....53, 54, 61

*KSR Int'l v. Teleflex Inc.*,
550 U.S. 398 (2007).....44, 53, 57, 61

*Kyocera Senco Indus. Tools Inc. v. Int'l Trade Comm'n*,
22 F.4th 1369 (Fed. Cir. 2022).....21

*In re Magnum Oil Tools Int'l, Ltd.*,
829 F.3d 1364 (Fed. Cir. 2016).....40

*Medichem, S.A. v. Rolabo, S.L.*,
437 F.3d 1157 (Fed. Cir. 2006).....52, 61

*Microsoft Corp. v. AlmondNet, Inc.*,
IPR2022-01319, Paper 14 (P.T.A.B. Apr. 23, 2023).....24

*Microsoft Corp. v. AlmondNet, Inc.*,
IPR2022-01319, Paper 9 (P.T.A.B. Jan. 30, 2023).....24

*NJOY, LLC v. JUUL Labs, Inc.*,
IPR2024-00536, Paper 17 (P.T.A.B. Aug. 12, 2024) .....41, 51

*Orexo AB, v. Actavis Elizabeth LLC*,
903 F.3d 1265 (Fed. Cir. 2018).....53

*Pfizer Inc. v. Mylan Pharmaceuticals Inc.*,
71 F. Supp. 3d 458 (D. Del. 2014), *aff'd* 628 F. App'x 764 (Fed. Cir. 2016).....49, 50, 59

*Qiagen North American Holdings, Inc. v. HandyLab, Inc.*,
2021 WL 5024387 (Fed. Cir. 2021) .....53, 61

*Regents of the Univ. of Cal. v. Broad Inst., Inc.*,
903 F.3d 1286 (Fed. Cir. 2018) ..... 40

*SAS Inst. Inc. v. Iancu*,
138 S. Ct. 1348 (2018) ..... 13, 21

*TQ Delta, LLC v. Cisco Sys., Inc.*,
942 F.3d 1352 (Fed. Cir. 2019) ..... 19

*In re Van Os*,
844 F.3d 1359 (Fed. Cir. 2017) ..... 51, 60

*Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*,
97 F.4th 882 (Fed. Cir. 2024) ..... 36, 37, 39

*Vital Connect, Inc. v. Bardy Diagnostics, Inc.*,
IPR2023-00381, Paper 7 (P.T.A.B. July 11, 2023) ..... 32

*Volvo Penta of the Ams. LLC v. Brunswick Corp.*,
81 F.4th 1202 (Fed. Cir. 2023) ..... 36, 38

*Xerox Corp. v. Bytemark, Inc.*,
IPR2022-00624, Paper 12 (P.T.A.B. Feb. 10, 2023) ..... 19

**Statutes**

19 U.S.C. § 1337(b)(1) ..... 10

35 U.S.C. § 312(a)(3) ..... 2, 3, 34, 38

35 U.S.C. § 314(a) ..... 2, 3, 40

35 U.S.C. § 316(e) ..... 40

35 U.S.C. § 325(d) ..... 2, 3, 23, 24, 32, 33

**Other Authorities**

37 C.F.R. § 42.100 (2017) ..... 18, 23

# PATENT OWNER'S EXHIBIT LIST

| Exhibit No. | Description |
|---|---|
| 2001 | Dr. Goel vs. Dr. Ernst Declaration Comparison |
| 2002 | Letter from John Thorne to Rutgers |
| 2003 | Board Email (April 10, 2025) |
| 2004 | Meet and Confer Email; Opposing Motion Email (April 10, 2025; April 16, 2025) |
| 2005 | English-Language Translation and Japanese-Language Original Copies of Miwa Submitted by Patent Owner during Prosecution of the '394 Patent |
| 2006 | Declaration of Dr. Richard Brow in Support of Patent Owner Discretionary Denial Brief |
| 2007 | *Curriculum vitae* of Dr. Richard Brow |
| 2008 | Order 6: Scheduling Order (ITC-337-TA-1441) |
| 2009 | Office Action dated March 27, 2008 from U.S. Application No. 11/275252 |
| 2010 | 2007 Display Component of the Year, accessed Apr. 9, 2025 at: https://www.sid.org/Awards/Display-Industry-Awards/DIAAwardsArchive |
| 2011 | Corning wins awards for EAGLE XG(TM), May 23, 2007, accessed Apr. 9, 2025 at: https://www.glassonline.com/corning-wins-awards-for-eagle-xgtm/ |
| 2012 | In Handbook of Visual Display Technology, chapter 5.1.1 "Glass Substrates for AMLCD, OLED and Emerging Display Platforms," Peter L. Bocko, pp. 599-623 (2012) |

# I. INTRODUCTION

U.S. Patent No. 7,851,394 ("the '394 patent") claims innovative, non-obvious improvements to alkali-free boroaluminosilicate glass compositions. The inventor discovered that, by precisely controlling the amount of specific divalent metal oxides and metal oxide ratios in boroaluminosilicate glass, certain unexpected and desirable performance characteristics could be achieved. These characteristics included low inclusion levels (such as bubbles), low density, high liquidus viscosity, high strain point, and low coefficient of thermal expansion (CTE), all *without* the use of toxic arsenic (As) or antimony (Sb) for glass fining. Achieving these characteristics without using arsenic or antimony in the fining process was a long-felt, unmet need from major glass consumers for years prior to the '394 patent's filing. The inventor overcame that obstacle by precisely controlling the magnesium oxide (MgO) amount and the ratio of divalent metal oxides to aluminum oxide ($Al_2O_3$) to enable a small amount of tin oxide ($SnO_2$) to function as an effective fining agent—a result that no one in the art expected. Commercially, it led to the launch of Corning® EAGLE XG® glass, a best-selling product for Corning Incorporated ("Patent Owner") covered by claims of the '394 patent.

The claims reflect the precision needed to achieve the desired results by reciting specific oxide composition ranges and specific oxide mole-percent ratios.

For example, claim 1 recites that the alkali-free glass comprises, on an oxide basis, the following oxide ranges: $SiO_2$: 64.0-71.0, $Al_2O_3$: 9.0-12.0, $B_2O_3$: 7.0-12.0, MgO: 1.0-3.0, CaO: 6.0-11.5, SrO: 0-2.0, BaO: 0-0.1; wherein the ratio of the concentration of the divalent metal oxides (MgO, CaO, SrO, and BaO; collectively, RO) to $Al_2O_3$ is between 1.00 and 1.25; the glass has at least 0.01 mol% $SnO_2$; and the glass has a density of less than or equal to 2.41 grams/$cm^3$.

Caihong Display Devices Co., Ltd. ("Petitioner"), has challenged claims 1-16 of the '394 patent as anticipated and/or obvious in view of two prior-art references that were already considered during prosecution and do not even disclose the precise selection of specific ranges recited in the claims. The Petition is riddled with procedural and substantive defects, fails to identify its challenges with particularity, and fails to support its arguments with competent evidence. As explained in further detail below, these defects support discretionary denial under 35 U.S.C. §§ 314(a), 325(d), and 312(a)(3).

There are also several additional considerations identified under the interim bifurcation process (*see* Interim Process Memo, 2-3 (citing *Fintiv*, *General Plastic*, and *Advanced Bionics*)) that further support discretionary denial. For instance, the *Fintiv* factors support discretionary denial based on a co-pending ITC litigation involving the '394 patent. Trial in the co-pending ITC litigation is scheduled to commence nine months before a Final Written Decision (FWD) in this IPR.

Significant investment in the co-pending litigation has already occurred and will continue to accrue prior to institution.

Add to that inefficiency the weakness of the unpatentability challenge, the Petition's heavy reliance on unqualified expert testimony, the long-settled expectations of the parties in a market that has evolved around this old patent for over a decade, and the economic and public-health interests in Corning's commitment to toxin-free glass and its best-selling American-developed product, and there is nothing in this Petition that is worth the Board's limited resources. Every issue the Director considers supports discretionary denial.

## II. STATEMENT OF PRECISE RELIEF REQUESTED

Pursuant to 35 U.S.C. §§ 314(a), 325(d), and 312(a)(3), and the memorandum on Interim Processes for PTAB Workload Management issued March 26, 2025, Patent Owner Corning Incorporated respectfully requests that the Board exercise its discretion to deny institution of the '394 patent.

## III. FACTUAL BACKGROUND

The '394 patent is directed to boroaluminosilicate glasses that can be used for displays, such as LCDs. EX1001, Abstract. The '394 patent teaches that "arsenic raises environmental and health issues, and thus there has been a continuing effort in the art to produce glasses with lower arsenic levels and, preferably, glasses which are substantially arsenic free[,]" and that while efforts

have been made to replace arsenic with antimony, "antimony has its own environmental and health issues." EX1001, 3:26-37. The compositions claimed by the '394 patent allow for the fining (the removal of bubbles) of glass suitable for LCD screens without either of these toxic elements. EX1001, 11:63-12:31. This improvement is made possible through precise control of various metal oxide ratios, which is reflected in the claims.

### A. Overview of the Technology

The '394 patent identifies and improves upon a composition of silicate glass to solve a critical problem: the production of nearly defect-free glass without the use of harmful chemicals such as arsenic or antimony. During glass manufacturing, materials such as $SiO_2$, $Al_2O_3$, or $B_2O_3$ are melted to create molten glass, which can produce gas bubbles. If gas bubbles are not removed, they can create defects in the glass product. Removing gas bubbles from glass is called "fining." Historically, arsenic and antimony were used as "fining agents" to remove gas bubbles from molten glass, but they present environmental and health risks.

One of the key innovations of the '394 patent glass composition is the specified range of MgO and the precise ratio of RO to $Al_2O_3$ between 1 and 1.25. Although MgO had been used in display-glass compositions before the '394 patent, doing so was known to increase the liquidus temperature of the glass, making it more difficult to prevent crystals from forming prematurely during a

glass-sheet manufacturing process. The inventor of the '394 patent discovered that this effect could be counteracted by tightly controlling the amount of MgO along with the ratio of RO to $Al_2O_3$, and that within the claimed range of RO to $Al_2O_3$ ratio, adding MgO actually *decreased* the liquidus temperature rather than increasing it as expected at the time. EX1001, 10:19-54.

These claimed glass compositions are designed to be formed using a fusion downdraw process, which allows for tightly controlled and reproducible glass dimensions and allows for glass sheets that are flat, smooth, defect-free, and thermally and mechanically durable, without further mechanical surface processing, such as grinding or polishing. EX1001, 3:53-58, 4:59-67, 10:45-54, 12:56-13:4. The claimed glass compositions, suitable for the fusion downdraw process and lacking arsenic or antimony for fining, represent a substantial improvement over the prior-art glass compositions. EX1001, 3:53-67.

### B. Overview of '394 Patent Claims

Independent claim 1 of the '394 patent recites a glass composition comprising, in mole percent on an oxide basis, the following: $SiO_2$: 64.0-71.0, $Al_2O_3$: 9.0-12.0, $B_2O_3$: 7.0-12.0, MgO: 1.0-3.0, CaO: 6.0-11.5, SrO: 0-2.0, BaO: 0-0.1; wherein the ratio of the concentration of the divalent metal oxides (RO) to $Al_2O_3$ is between 1.00 and 1.25; the glass has at least 0.01 mol% $SnO_2$; and the glass has a density of $\leq 2.41$ g/cm$^3$. EX1001, 21:1-22. Independent claim 5

contains the same limitations as claim 1, except the SrO amount is at most 1.0 mol% and claim 5 does not specify a density of ≤ 2.41 g/cm$^3$. EX1001, 21:32-49. Finally, independent claim 8 recites a glass with the following composition in mole percent on an oxide basis: $SiO_2$: 64.0-71.0, $Al_2O_3$: 9.0-120, $B_2O_3$: 7.0-12.0, MgO: 1.0-3.0, CaO: 6.0-11.5, SrO: 0-1.0, BaO: 0-0.1; wherein the ratio of the concentration of RO to $Al_2O_3$ is greater than 1.00. EX1001, 22:7-22.

### C. Prosecution History of the ’394 Patent

The application that resulted in the ’394 patent went through an extensive examination at the Office. Four substantive Office Actions were mailed. Patent Owner utilized two inventor declarations to establish the criticality and unexpected results of the claimed invention in front of the Examiner.

The Examiner issued a Non-Final Office Action on the merits on 4/1/2008. EX1002, 259-270. This first Office Action rejected all claims as obvious over prior art references Dumbaugh and Narita, arguing that Dumbaugh disclosed “overlapping ranges with the composition of the instant claims,” and that Narita disclosed a “substantially arsenic free” fining agent. EX1002, 264, 267. Patent Owner responded with arguments that overcame the Examiner’s initial rejections. EX1002, 171-172. The Examiner then issued a Final Office Action on 11/28/2008, rejecting all claims as obvious over a newly-cited primary reference, Chacon, and the previously cited Narita reference, arguing that Chacon’s “composition has

overlapping ranges with the composition of the instant claims." EX1002, 152. In response, Patent Owner submitted a Rule 132 declaration of Adam Ellison (the inventor of the '394 patent and a co-inventor of the Chacon reference), explaining the criticality of the claimed MgO and $RO/Al_2O_3$ ratios that led to unexpected results relative to the Chacon reference. EX1002, 134-143.

The Examiner responded on 10/13/2009 with another Non-Final Office Action rejecting the claims (i) as obvious over the same cited prior art, Chacon and Narita, and (ii) as obvious over a single, newly-cited reference, Nishizawa. EX1002, 76-84. In response, Patent Owner submitted a second Rule 132 declaration of the inventor, with data showing that "the unexpected results come from applicant's invention." EX1002, 63.

In response, the Examiner issued another Final Office Action on 4/15/2010. EX1002, 50-56. The Examiner withdrew the rejection based on Chacon and Narita and agreed that Patent Owner's Rule 132 declarations were successful in establishing criticality of the claimed oxide ranges. EX1002, 54. However, the Examiner maintained a rejection of pending claims 1, 2, 4, 5, and 8 based on Nishizawa. EX1002, 52-53.

In response, on 07/15/2010, Patent Owner amended the rejected claims by incorporating features of non-rejected dependent claims to overcome the rejection

based on Nishizawa. EX1002, 35-41. The claims as amended on 07/15/2010 are the claims that issued in the '394 patent.

The Examiner issued a Notice of Allowance on 8/10/2010, explaining that "the claimed glass with the given composition requirement that $RO/Al_2O_3$ is greater than unity combined with the narrow and precise representation of the given composition lead to the patentability of the claims. *Applicant has shown through [declaration] evidence that the ratio between the alkali earth and aluminum components causes dramatic changes in the glass, which would be unexpected in the art*." EX1002, 19 (emphasis added).

Notably, included in the art considered by the Examiner during prosecution of the '394 patent were both of Petitioner's cited art references—Miwa and Bange. An IDS form citing Bange was filed on June 28, 2006, EX1002, 365, and an IDS form citing Miwa was filed on August 4, 2008. EX1002, 177. The Examiner initialed these forms for the two references, indicating that he considered them, on April 4, 2008, and November 28, 2008, respectively. EX1002, 164, 275. Miwa and Bange were two of a total of 22 applicant-cited references considered by the Examiner, all of which the Examiner judged did not disclose or suggest the narrow and precise representation of claimed glass composition that causes dramatic and unexpected changes in the glass relative to the prior art. *See* EX1002, 19 (Notice of Allowance).

## IV. PERSON OF ORDINARY SKILL IN THE ART ("POSA")

Only for the purposes of this Discretionary Denial Brief, Patent Owner does not dispute Petitioner's level of skill for a person of ordinary skill in the art (POSA) as articulated in the Petition—which is different than the level of skill in the art articulated in the Ernst Declaration. *Compare* Pet., 15-16, *with* EX1003 (substitute); *see also* Patent Owner's Motion to Strike, Paper 8, 8; EX2005.

## V. CLAIM CONSTRUCTION

The Board need not construe any term in order to determine that institution should be discretionarily denied. Patent Owner reserves the right to contest Petitioner's implicit or explicit constructions during any further proceedings.

## VI. REASONS THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION

The facts and circumstances here warrant denying review under at least one of §§ 325(d), 312(a)(3), and 314(a). The Petition contains several procedural defects that make its ultimate success on the merits unlikely, and various facial flaws on the merits that make institution an inefficient use of the Board's limited resources.

### A. The Director should use discretion under § 314(a) to deny the Petition.

At least *Fintiv* factors 1-3, 5, and 6 weigh in favor of discretionary denial (factor 4 is a worst neutral), as do memo factors concerning the settled expectations of the parties, economic and public health interests, and the Petition's

reliance on testimony of an unqualified expert. Overall, institution would not reflect an efficient use of the Board's resources.

### 1. Fintiv factors weigh in favor of Patent Owner and denial in view of parallel ITC investigation.

On March 24, 2025, the Office issued new guidance clarifying how the Board will apply the precedential *Fintiv* and *Sotera* decisions to parallel proceedings, including those before the ITC ("*Fintiv* Guidance"). *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020) (articulating six nonexclusive factors for determining whether to institute an AIA post-grant proceeding where there is parallel litigation).

Here, the Director should exercise its discretion to deny the Petition both because (i) at least factors 1–3 and 5 support discretionary denial; and (ii) the Petition does not provide a strong meritorious challenge (factor 6).

***Fintiv* factor 1**: Factor 1 weighs in favor of denying institution. The ITC is under a congressional mandate to conclude its investigations and make determinations "at the earliest practicable time." 19 U.S.C. § 1337(b)(1). The ITC does not stay its proceedings based on a pending IPR.

***Fintiv* factor 2**: Factor 2 weighs in favor of discretionary denial. The projected statutory deadline for issuing a FWD in this IPR would be September 10, 2026. Trial in the co-pending ITC litigation is scheduled to be completed the week of January 6, 2026—over nine months before FWD. EX2008, 3. Further, a final

initial determination in the co-pending ITC litigation is scheduled to issue on April 7, 2026 (over 5 months before FWD) and the target date for completion of the ITC investigation is August 7, 2026 (over a month before FWD). EX2008, 3. The ITC's trial schedule weighs in favor of denial. *Fintiv* Guidance, 2 ("[I]nstituting an IPR or a PGR where the ITC has set a target date for completing its investigation (i.e., the full Commission's final determination) to occur earlier than the Board's deadline to issue a final written decision in a challenge involving the same patent claims means that multiple tribunals may be adjudicating validity at the same time, which may increase duplication and expenses for the parties and the tribunals.").

***Fintiv* factor 3**: Factor 3 weighs in favor of denying institution. In factor 3, the Board "consider[s] the amount and type of work already completed in the parallel litigation by the court and the parties at the time of the institution decision." *Fintiv*, 9. The deadline for issuing a Decision on Institution (DI) in this IPR is September 10, 2025. By that time, the parties will have already: (i) exchanged expert reports and briefs on claim construction (May 13th through June 16th), (ii) completed the *Markman* hearing (June 23rd), (iii) completed fact discovery (August 26th), and (iv) exchanged initial expert reports on all other issues, including any invalidity defenses (September 10th). EX2008, 1-2. Given the June 23rd *Markman* hearing date, it is likely the ITC will issue a *Markman* order before September 10th.

Because the parties and the ITC will have expended significant resources by the September 10, 2025 DI deadline, factor 3 weighs in favor of denying institution.

***Fintiv* factor 4**: Factor 4 is—at best for Petitioner—neutral with respect to denying institution. To date, the parties have not exchanged invalidity contentions in the co-pending ITC litigation. All 16 claims of the patent are challenged in this IPR, while only two dependent claims are currently at issue in the ITC litigation. That the claims at issue between the two proceedings are not identical, without more, does not warrant institution. It is common in ITC investigations that the patent owner will (and often must) reduce the number of claims that are ultimately adjudicated. *See Certain Glass Substrates for Liquid Crystal Displays, Products Containing the Same, and Methods for Manufacturing the Same,* No. 337-TA-1441, Order 2, Ground Rule 3. As a practical result, there will never be substantial correspondence between the claims that the ITC adjudicates and the claims challenged in a co-pending IPR. Accordingly, if differing claim sets between an IPR and an ITC investigation presented a valid reason for granting institution, then co-pending ITC investigations could never weigh in favor of discretionary denial. That untenable result would undermine the Board's *Fintiv* Guidance.

***Fintiv* factor 5**: Factor 5 weighs in favor of denying institution. Petitioner, Caihong Display Devices Co., Ltd., is the first-named respondent in the co-pending ITC litigation.

***Fintiv* factor 6**: Factor 6 weighs in favor of denying institution. On its face, the Petition fails to demonstrate a motivation to combine—discussed in only one paragraph—or a reasonable expectation of success for obviousness Grounds 1 and 3. *See* Section VI.D. Petitioner provides nothing more than cursory rationale and arguments for why claims of the '394 patent are allegedly obvious. In many instances, Petitioner fails to provide any supporting rationale and/or evidence that could support its unpatentability arguments. And any alleged support from Petitioner's expert, Dr. Ernst, should be disregarded because Dr. Ernst fails to meet Petitioner's own definition of a POSA. *See* Section VI.A.4. Moreover, as discussed in Section VI.D, Petitioner's own cited art (Miwa) actually contradicts Petitioner's overly simplistic and unsupported positions.

Further, with respect to anticipation Ground 2, it would be inconsistent with *SAS*, *Chevron*, and *Deeper*, as well as the Director's recent policy statements to reduce waste and increase efficiency, to decide that Ground 2 against only two claims tips the scale in factor 6 towards institution. *See* Section VI.A.5.

In sum, the ITC's trial is scheduled to commence nine months before a FWD in this IPR, with the ITC's initial determination expected on April 7, 2026, and the

trial expected to conclude on August 7, 2026 (over a month before FWD). Institution would lead to unnecessary duplication and the potential for inconsistent results. Based on these facts and Petitioner's weak, unsupported unpatentability arguments, the Director should exercise discretion to deny the Petition under Section 314(a).

### 2. The settled expectations of the parties weigh against institution

The '394 patent was granted in December 2010 (over 14 years ago). As discussed above, Corning has been practicing this patent since the release of its groundbreaking commercial product, EAGLE XG Glass. *See* Section VI.A.3 (discussing economic and public health considerations). Corning's EAGLE XG Glass has been lauded in the field and Corning's New York-based innovation team has received praise in the industry related to the inventive work. EAGLE XG Glass has become the industry standard among the world's leading panel makers. Corning has produced more than 25 billion square feet of EAGLE XG Glass—enough to pave the Great Wall of China 25 times, or cover nearly 390,000 football fields.

Petitioner Caihong is a Chinese company having a principal place of business at Area A, China-Korea Industrial Park, Qindu District, Xianyang City, Shaanxi Province, 712023, China. Caihong has been competing with Corning's EAGLE XG Glass for years. Competitors and customers alike have been well

aware of both Corning's and Caihong's products, and the market reflects Corning's established superiority. Accordingly, after using a different glass composition that the market recognized as inferior, Caihong copied Corning's EAGLE XG Glass and began using Corning's patented compositions.

This is not the first time a competitor has attempted to copy Corning's patented glass. Another LCD glassmaker infringed Corning's foreign counterpart patents in the past, and Corning initiated legal proceedings to protect its patent rights. Corning's consistent enforcement of its patents on Eagle XG Glass further confirms the expectations of everyone in the industry. Corning and its various subsidiaries and licensees have been manufacturing and selling Corning's patented glass composition for years.

The challenged patent has been in force for over a dozen years and the market has evolved around it. There is no societal benefit to ridding the industry of this particular patent—which expires next year—where supply chains are established and stable. The settled expectations of the parties (and the industry at large) are that Corning's '394 patent protects Corning's proprietary EAGLE XG Glass, as it has for many years.

### 3. Compelling economic and public health interests weigh against institution

Corning has spent decades and invested approximately one billion dollars in developing the fusion-draw glassmaking process discussed in the '394 patent (and

other Corning patents). Corning has also spent decades developing glass compositions, including those recited in the '394 patent, designed to be manufactured using this fusion-draw process. The patented boroaluminosilicate glass compositions of the '394 patent, developed at Corning's upstate New York headquarters, cover Corning's flagship LCD glass product, EAGLE XG Glass. Corning has facilities and employees in the United States where it makes the machinery, develops the technologies, and provides support for the production of EAGLE XG Glass. For example, Corning produces, manufactures, and assembles components for its fusion manufacturing systems that make EAGLE XG Glass at a manufacturing facility in Erwin, New York, near its headquarters in Corning, New York.

Corning has invested and continues to invest in U.S.-based research, development, manufacturing, and engineering to make EAGLE XG Glass and its next-generation fusion-draw products. Those investments paid off in the form of EAGLE XG Glass' popularity in the marketplace. Corning has sold more than 25 billion square feet of EAGLE XG Glass. EAGLE XG has also won multiple industry awards. *See, e.g.*, EX2010, 14 (2007 Display Component of the Year; Gold Award: Corning Inc. Eagle XG™ Glass Substrate); EX2011 (Advanced Display of the Year (ADY) award).

Corning continues to reinvest the proceeds from EAGLE XG Glass in significant research and development, including composition related work, attribute improvements, equipment manufacturing, cost reduction programs, and process improvements for its next generation of LCD fusion-draw glass. Those investments are threatened by Caihong's importation of infringing glass from China and its retaliatory challenges to Corning's patents (like the present Petition).

In addition to economic investments, there are also important public health concerns at stake. Corning developed its patented EAGLE XG Glass in response to a long-felt need in the art for non-toxic glass LCD panels, i.e., glass LCD panels without significant amounts of added heavy metals or halides. EX2012, 14, 18. In the 1990's, the only feasible way to make glass smooth enough and high-quality enough for LCD screens was to use highly toxic materials like arsenic in the manufacturing process. EX2012, 14, 18. Corning's customers wanted an alternative that was free from this hazardous poison. "The elimination of heavy metals from the glass composition was seen as necessary in the long term because of emerging environmental regulations worldwide." EX2012, 18. So in 2006, Corning commercialized EAGLE XG Glass, which offers incredible flatness and dimensional stability, all while being amazingly defect-free and free of added arsenic and antimony. EX2012, 18. Through these properties, EAGLE XG Glass

enables manufacturers of display panels to provide thinner, lighter, and more environmentally friendly products.

Corning worked extensively to design a defect-free glass composition suitable for use in LCD panels that was free of added arsenic, and did not merely substitute arsenic for a similarly toxic material like antimony or halides. The compositions covered by the '394 patent overcame the problems with toxic elements and manufacturing defects. But they did not come cheap. It took nearly four years of diligent work, hundreds of experiments, and a cost of about $3 million every six months (not including raw material costs). The only way to recoup that kind of investment is through patent protection. It is also the only way Corning can continue to fund research into the next generation of fusion-draw glass that remains free of toxic chemicals.

Accordingly, instituting review of the '394 patent will not serve the fundamental purpose of the IPR process in eliminating counterproductive patents that stifle innovation. *See* 37 C.F.R. § 42.100 (2017) (observing the purpose of IPR as streamlining the patent system, improving patent quality, and thereby promoting innovation). Corning is a leading American innovator, and the '394 patent reflects its contributions to research and development. The Director should exercise discretion to deny institution.

**4. The Petition relies on a parroted expert declaration, which lacks substantial explanation or additional cited support, and lacks the requisite expert qualifications.**

Petitioner's obviousness and anticipation arguments are largely conclusory and rely heavily on the say-so of Petitioner's supporting expert declaration. For example, the Petition states that one of skill in the art would combine Bange with Miwa and modify Miwa to arrive at the challenged claims, but provides no analysis as to why the POSA would be motivated to change Miwa, or why he would look to Bange to do so. *See, e.g.*, Pet., 25, 29. Petitioner's expert purports to fill in the gaps with allegations regarding what one of skill in the art would know and be motivated to do. *See, e.g.*, EX1003(substitute) ¶¶36, 46, 53, 59, 67. There are significant problems with Petitioner's approach.

*First*, aside from Petitioner's expert's *ipse dixit*, the Petition has no evidentiary support for a POSA's alleged knowledge and motivation to combine. The Federal Circuit has made clear that the *ipse dixit* of an expert is not sufficient to support obviousness challenges at the PTAB. *See, e.g.*, *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352 (Fed. Cir. 2019) (reversing PTAB obviousness finding regarding motivation to combine based only on conclusory expert testimony as not supported by substantial evidence). The PTAB has also made clear that an expert declaration that merely parrots the petition without providing additional technical detail, analysis, or evidentiary support is entitled to little if any weight. *See Xerox*

*Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 12 (P.T.A.B. Feb. 10, 2023). The Petition therefore fails to cite evidence sufficient to warrant institution.

*Second*, Petitioner's expert does not meet Petitioner's own definition of a POSA. Petitioner's expert, Dr. Ernst, is a ceramic engineer and metallurgist. He identifies no significant experience with glass chemistry or material science specifically dealing with glass for LCD displays. He does not have "5-10 years of experience with design, synthesis and characterization of silicate, borosilicate, aluminosilicate, and boroaluminosilicate glasses," Petitioner's defining credential of a POSA. Pet., 15-16. Indeed, the description of Dr. Ernst's background credentials in his expert report does not describe *any* years of experience with design, synthesis, and characterization of silicate, borosilicate, aluminosilicate, and boroaluminosilicate glasses. *See* EX1003(substitute) ¶¶5-7 (describing experience in ceramic engineering, ceramic/metal interfaces, and microscopy). Tellingly, he deleted Petitioner's glass-focused experience from his declaration's definition of a POSA—which is now inconsistent with the definition offered by Petitioner in the Petition—because he does not satisfy it. *Compare* EX1003(substitute), *with* Pet., 15-16; *see also* EX2001, ¶36.

The Federal Circuit has made clear that "to be qualified to offer expert testimony on issues from the vantage point of an ordinarily skilled artisan in a patent case, an expert must at a minimum possess ordinary skill in the art."

*Kyocera Senco Indus. Tools Inc. v. Int'l Trade Comm'n*, 22 F.4th 1369, 1377 (Fed. Cir. 2022). Petitioner's expert does not have, and does not even claim to have, what the Petition has identified as the level of ordinary skill in the relevant art. Without a qualified expert, the Petition has no competent evidentiary support and the PTAB cannot render a FWD granting the Petition that would be supported by substantial evidence. *See id.*

The Board should not institute review of a Petition that is fundamentally flawed and devoid of competent supporting evidence.

**5. Institution would not reflect an efficient use of the Board's limited resources**

The Supreme Court has provided that IPR institution is an all-or-nothing proposition, and that the PTAB must institute on and adjudicate all claims and grounds (or deny institution). *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355-56 (2018). As a result, where only a small subset of grounds and claims in the Petition present meritorious challenges, it is appropriate for the Board to deny institution and avoid expending its limited resources on deficient arguments. *See Chevron Oronite Co. LLC v. Infineum USA L.P.*, IPR2018-00923, Paper 9 at 9-11 (P.T.A.B. Nov. 7, 2018) (denying institution on all claims under §314(a) when petitioner's arguments and proofs were deficient with respect to a subset of claims); *Deeper, UAB v. Vexilar, Inc.*, IPR2018-01310, Paper 7 at 41-43 (P.T.A.B. Jan. 24, 2019) (denying institution because "instituting a trial with respect to all twenty-three

claims and on all four grounds based on evidence and arguments directed to only two claims and one ground would not be an efficient use of the Board's time and resources.").

As discussed in detail below, Grounds 1 and 3 of the Petition—which constitute the vast majority of the arguments and challenged claims—are fundamentally flawed and cannot succeed on their merits. *See* Sections VI.B.1-2. (explaining how Grounds 1 and 3 present art and arguments that were already considered and overcome during prosecution); VI.C.1-2 (explaining how Grounds 1 and 3 fail to identify the challenges to the claims with particularity); VI.D.1-4. (explaining how Grounds 1 and 3 are based on weak and unsupported arguments). While Ground 2 does not share all the same facial flaws, it is based on art already considered during prosecution and Patent Owner submits that it will still ultimately fail on the merits. Moreover, Ground 2 only challenges claims 1 and 3.

Accordingly, even if Ground 2 presented a reachable merits issue, it would not be an efficient use of the Board's resources to institute on all grounds and claims for a Petition that only presents a coherent unpatentability position on one ground for two claims. Doing so here is especially a waste of the Board's resources in view of the fact that claims 1 and 3 (the only claims challenged in Ground 2) are not even asserted against Petitioner or any other party in any other forum. Nor are they likely to be asserted going forward, since the dependent claims cover the

commercial embodiments and the patent expires next year. Instituting review of this Petition is therefore unlikely to streamline any dispute or expand the industry's freedom to operate in this space, and therefore does not promote the purpose of IPR proceedings. *See* Changes to Implement Inter Partes Review Proceedings, Post-Grant Review Proceedings, and Transitional Program for Covered Business Method Patents, 77 Fed. Reg. 48680-01 (Aug. 14, 2012) (codified at 37 C.F.R. § 42.100 (2017)). The Director should deny institution.

### B. The Director should use discretion under § 325(d) to deny the Petition.

The facts here support denial under § 325(d) because Petitioner relies on art that was expressly considered during prosecution. Both Bange and Miwa were squarely in front of the Examiner, who would have appreciated the totality of both references at the time of examination.

The Board has discretion to deny review where "the same or substantially the same prior art or arguments previously were presented to the Office." 35 U.S.C. § 325(d). The Board's two-part framework considers:

> (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
>
> (2) if either condition of [the] first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

*Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (P.T.A.B. Feb. 13, 2020) (precedential March 24, 2020). The Board considers the *Becton, Dickinson* factors when applying the framework. *Advanced Bionics*, IPR2019-01469, Paper 6 at 9; *see also Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17-18 (P.T.A.B. Dec. 15, 2017) (informative).

Under the second part of the *Advanced Bionics* framework, Petitioner carries the burden of demonstrating material error: "If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review." *Advanced Bionics*, IPR2019-01469, Paper 6 at 8–9; *see also Becton, Dickinson*, IPR2017-01586, Paper 8 at 17–18 (explaining that factor (e) asks "whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art"); *Microsoft Corp. v. AlmondNet, Inc.*, IPR2022-01319, Paper 9 at 11 (P.T.A.B. Jan. 30, 2023) (denying institution under § 325(d) where Petitioner did not sufficiently address whether the Office materially erred); *Microsoft Corp. v. AlmondNet, Inc.*, IPR2022-01319, Paper 14 (P.T.A.B. Apr. 23, 2023) (denying Petitioner's rehearing request of decision denying institution). Notably, "[i]f reasonable minds can disagree regarding the purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to

patentability. At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown." *Advanced Bionics*, IPR2019-01469, Paper 6 at 9.

**1. Petitioner's only cited references for each of Grounds 1-3: Miwa and Bange, were fully considered during prosecution.**

Petitioner does not contest that Bange was cited in an IDS during prosecution: *See* Pet., 8. Bange was initialed by Examiner Hoban on the IDS form filed on June 28, 2006, on 3/20/2008. EX1002, 275. Examiner Hoban's initials confirm Bange was previously presented and considered during prosecution. *See Advanced Bionics*, Paper 6 at 7–8 ("Previously presented art includes art . . . provided to the Office by an applicant, such as on an Information Disclosure Statement (IDS), in the prosecution history of the challenged patent.").

Petitioner also does not contest that Miwa was cited in an IDS during prosecution. *See* Pet., 8. Miwa was also initialed as considered by Examiner Hoban on the IDS form filed August 4, 2008, on 11/24/2008. EX1002, 164; EX2006, ¶14. Nor does Petitioner point to any specific disclosure in Miwa or Bange that is not cumulative of the references applied in rejections, which also allegedly disclosed ranges overlapping the claims.

Petitioner attempts to sidestep this issue by alleging that "all the specific parameters that form the bases for either obviousness or anticipation of the Challenged Claims in this Petition are only disclosed by Miwa in the Tables, not in

the text. However, the Applicant omitted all Tables in the English translation of Miwa when submitting the SIDS." Pet., 8-9. Petitioner's allegation misses the mark for at least the following reasons.

**a. The Examiner would have appreciated the totality of Miwa's disclosure based on the copy of Miwa and the machine translation of Miwa submitted by Patent Owner.**

The prosecution history of the '394 patent shows that Patent Owner submitted both an English-language translation of Miwa, as well as the Japanese-language version. EX1002, 195-226. Both versions of Miwa submitted during prosecution are included here as Exhibit 2005.

Examiner Hoban would have fully understood and appreciated the totality of Miwa during prosecution for at least the following reasons, which are supported by Patent Owner's Expert, Dr. Richard Brow, an expert in glass composition and glass properties with over forty years' experience in the field.

The English translation of Miwa repeatedly and consistently describes the glass compositions listed therein as weight percentages. EX2005, 2; EX2006, ¶17. Examiner Hoban would have been certain, based on the English translation of Miwa, that Miwa describes glass compositions using weight percentage. EX2006, ¶17.

Although Tables 1-5 are not shown in the English machine translation submitted during prosecution, they are referenced in the English translation:

"Tables 1-4 show examples of the present invention (samples 1-20), and Table 5 shows comparison examples (samples 21 and 22)." EX2005, 15; EX2006, ¶18. Accordingly, "it would be clear to a POSA, and thus the Examiner, that not only were Tables 1-5 present in the original document, but that they were critical for the evaluation of patentability, as they contained the actual glass compositions that Miwa disclosed." EX2006, ¶18.

Furthermore, in the original Japanese-language copy of Miwa, the glass compositions of each of Miwa's 20 examples, as well as 2 comparison examples, are disclosed in Tables 1-5, exactly as described in the English language translation. EX2006, ¶19. And as Patent Owner's expert Dr. Brow explains, a POSA, and thus Examiner Hoban, would have understood the metal oxide concentrations as follows.

POSA would understand that these numbers are the given sample's composition by weight percentage

POSA would understand this refers to the compounds $SiO_2$ through Cl

POSA would understand that these numbers are sample numbers 1-5

| | 実施例 | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 組成（質量%） | | | | | |
| $SiO_2$ | 63.0 | 63.0 | 63.0 | 63.0 | 63.0 |
| $Al_2O_3$ | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| $B_2O_3$ | 11.0 | 11.0 | 11.0 | 11.0 | 10.0 |
| MgO | — | — | — | — | — |
| CaO | 7.0 | 7.0 | 7.0 | 7.0 | 8.0 |
| SrO | 1.5 | 1.5 | 1.5 | 1.5 | 1.0 |
| BaO | 0.5 | 0.5 | 0.5 | 0.5 | 1.0 |
| ZnO | — | — | — | — | — |
| $ZrO_2$ | — | — | — | — | — |
| $SnO_2$ | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| $As_2O_3$ | — | — | — | — | — |
| $Sb_2O_3$ | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Cl | — | — | — | — | — |
| 全$Fe_2O_3$ | 0.008 | 0.010 | 0.012 | 0.015 | 0.020 |

EX2005, 27; EX2006, ¶19 (annotations in color).

From this annotation, it is clear that a POSA (and therefore, Examiner Hoban), would have (i) "understood and appreciated that Miwa disclosed 22 glass compositions in Tables 1-5, and that these glass compositions were described in weight percentage[,]" and (ii) "understood and appreciated the weight percentages of $SiO_2$, $Al_2O_3$, $B_2O_3$, MgO, CaO, SrO, BaO, ZnO, $ZrO_2$, $SnO_2$, $As_2O_3$, $Sb_2O_3$, and Cl for each of glass samples 1-22." EX2006, ¶20.

It is also clear that Examiner Hoban would have been able to understand the other metrics listed in Miwa – transmittance, density, CTE, strain point, liquid phase temperature, log η, acid resistance, and buffered hydrofluoric acid resistance. Each of these material properties were listed, in order, in the translation submitted by Patent Owner. EX2005, 27; EX2006, ¶22. The only header missing from this list was the log η header, which was already in English. EX2006, ¶22. As shown in the annotated table below, comparing the English-language headers with the Japanese-language table "makes it clear that the translation refers to the material properties listed in Tables 1-5." EX2006, ¶22.

| | 実施例 | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 組成（質量%） | | | | | |
| $SiO_2$ | 63.0 | 63.0 | 63.0 | 63.0 | 63.0 |
| $Al_2O_3$ | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| $B_2O_3$ | 11.0 | 11.0 | 11.0 | 11.0 | 10.0 |
| MgO | — | — | — | — | — |
| CaO | 7.0 | 7.0 | 7.0 | 7.0 | 8.0 |
| SrO | 1.5 | 1.5 | 1.5 | 1.5 | 1.0 |
| BaO | 0.5 | 0.5 | 0.5 | 0.5 | 1.0 |
| ZnO | — | — | — | — | — |
| $ZrO_2$ | — | — | — | — | — |
| $SnO_2$ | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| $As_2O_3$ | — | — | — | — | — |
| $Sb_2O_3$ | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Cl | — | — | — | — | — |
| 全$Fe_2O_3$ | 0.008 | 0.010 | 0.012 | 0.015 | 0.020 |
| 透過率（%） 300nm | 74 | 71 | 69 | 66 | 60 |
| 400nm | 92 | 91 | 91 | 91 | 90 |
| 600nm | 92 | 91 | 91 | 91 | 90 |
| 800nm | 92 | 92 | 92 | 92 | 91 |
| 密度（g/cm³） | 2.38 | 2.38 | 2.38 | 2.38 | 2.40 |
| 熱膨張係数[30-380℃]（$\times 10^{-7}$／℃） | 32 | 32 | 32 | 32 | 33 |
| 歪点（℃） | 675 | 675 | 675 | 675 | 676 |
| $\log\eta$ at $10^{2.5}$（℃） | 1610 | 1610 | 1610 | 1610 | 1595 |
| 液相温度（℃） | 1095 | 1095 | 1095 | 1095 | 1105 |
| 耐酸性 | ○ | ○ | ○ | ○ | ○ |
| 耐バッファードフッ酸性 | ○ | ○ | ○ | ○ | ○ |

[0039]

[Table 1]

Example

Composition (%)

Total $Fe_2O_3$

Transmittance (%)

Density (g/cm2)

Thermal Expansion Coefficient

Strain Point

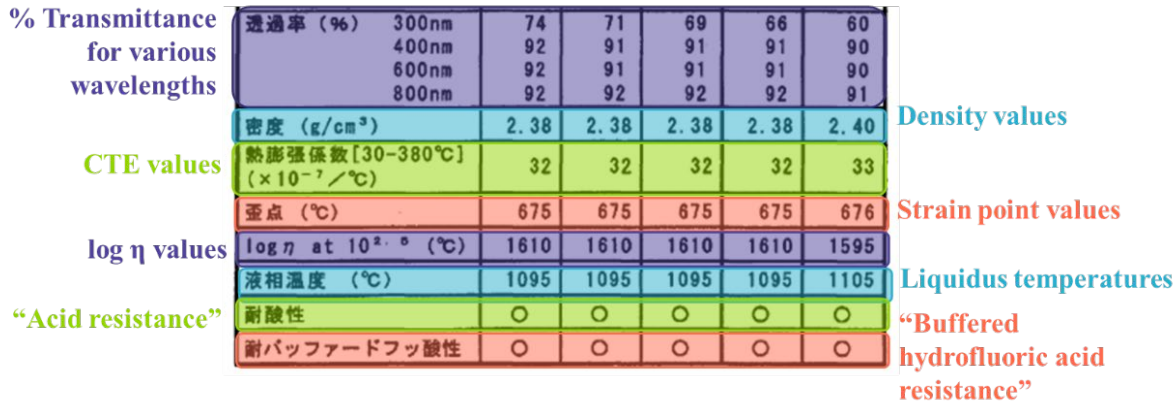
Liquid Phase Temperature

Acid Resistance

Buffered Hydrofluoric Acid Resistance

EX2006, ¶22.

Each of these material properties were also discussed narratively in the English translation of Miwa, as well as the experimental methods used to obtain these properties. EX2005, 17-19; EX2006, ¶23. This list of measured values, in the same order, and explicitly referenced as the values measured in Tables 1-5, would equip a POSA to understand exactly what the values mean. EX2006, ¶24. When looking at the Japanese-language version of Tables 1-5 themselves, a POSA, and thus Examiner Hoban, would have been able to determine which values matched with those listed in the English-language version. EX2005, 27-31; EX2006, ¶25. As an example, Dr. Brow's following annotated table shows the way a POSA would understand the properties listed in Miwa's Table 1.




| | | | | | | |
|---|---|---|---|---|---|---|
| 透過率（%） | 300nm | 74 | 71 | 69 | 66 | 60 |
| | 400nm | 92 | 91 | 91 | 91 | 90 |
| | 600nm | 92 | 91 | 91 | 91 | 90 |
| | 800nm | 92 | 92 | 92 | 92 | 91 |
| 密度（g/cm³） | | 2.38 | 2.38 | 2.38 | 2.38 | 2.40 |
| 熱膨張係数[30-380℃]（×10⁻⁷／℃） | | 32 | 32 | 32 | 32 | 33 |
| 歪点（℃） | | 675 | 675 | 675 | 675 | 676 |
| logη at 10^2.5（℃） | | 1610 | 1610 | 1610 | 1610 | 1595 |
| 液相温度（℃） | | 1095 | 1095 | 1095 | 1095 | 1105 |
| 耐酸性 | | ○ | ○ | ○ | ○ | ○ |
| 耐バッファードフッ酸性 | | ○ | ○ | ○ | ○ | ○ |

EX2005, 27; EX2006, ¶26 (annotation in color).

**b. Converting from weight percentage to mole percentage is a routine skill that the Examiner was well-equipped to perform.**

As established above, the compositions of Miwa are in weight percentages. The '394 patent describes compositions in mole percentage. *See, e.g.*, EX1001, Abstract, 21:1-3. That said, as explained by Dr. Brow, mole percentage and weight percentage, while presented differently, describe the same concept in this context: the concentration of an oxide present in a glass composition. EX2006, ¶28. "The conversion between mole percent and weight percent is a common calculation that a POSA would be well-equipped to perform, as described, for example, on pages 90-91 of Exhibit 1007." EX2006, ¶28.

Even Petitioner's expert acknowledges that "***[i]t is well-known*** that glass compositions may be presented on a weight percent or a mole percent basis, ***where weight% can be converted to mole% and vice-versa***." EX1003(substitute), ¶62

(emphasis added); EX2006, ¶29. Dr. Ernst concedes that this calculation was routine as of June 28, 2005. EX2006, ¶29.

Thus, a POSA would have been readily able to interconvert between mole and weight percentage for oxides in a glass composition, and so would have Examiner Hoban. Indeed, Examiner Hoban converted a weight percentage of tin oxide to a mole percentage of tin oxide during prosecution. EX1002, 267 ("For example, composition 9 in Table 5 [of Narita] contains .9 wt% or .42 mol% tin oxide.") Apparently, Examiner Hoban routinely converted weight percentages to mole percentages during examination. *See* EX2009, 5 (converting weight percentages for five compounds in a composition to corresponding mole percentages).

**c. The Examiner would have fully appreciated the glass compositions of Miwa when considering patentability of the '394 patent.**

Accordingly, given the English translation and original Japanese-language copy of Miwa, a POSA would have been able to clearly understand Tables 1-5 as describing the glass compositions by weight percentage, as well as having disclosed a variety of other notable glass properties. EX2006, ¶31. A POSA would have been able to readily convert weight percentages into mole percentages. *Id.* And a POSA would have been able to compare those converted mole percentages directly to the mole percentages of a claimed glass composition, such as those

disclosed in the '394 patent. *Id.* Thus, Examiner Hoban would have been able to appreciate the disclosure of Miwa in its totality, and in doing so, properly evaluate the patentability of the '394 patent claims over Miwa. *Id.*

Because both Miwa and Bange were fully considered by the Examiner during prosecution, the Director should deny institution of all Grounds under § 325(d).

**2. Petitioner fails to identify Office material error in the Examiner's previous evaluation of Miwa and Bange.**

The '394 patent was allowed because the Examiner agreed that Patent Owner had "shown through evidence that the ratio between the alkali earth and aluminum components causes dramatic changes in the glass, which would be unexpected in the art." EX1002, 19. Petitioner would have the Board reconsider the Examiner's determination without showing material error. Petitioner fails to sufficiently point out, under *Becton, Dickinson* factor (e), *how* the Examiner erred in its evaluation of the asserted prior art. Indeed, Petitioner does not even attempt to identify any material error. This warrants denial under §325(d) in the present case. *See Ecto World, LLC v. RAI Strategic Holdings, Inc.*, IPR2024-01280, Paper 10 at 11-12 (P.T.A.B. Mar. 6, 2025) (denying institution where the Board found that Petitioner "failed to address the second prong of *Advanced Bionics*, much less show that the Examiner erred in a manner material to patentability."); *see also Vital Connect, Inc. v. Bardy Diagnostics, Inc.*, IPR2023-00381, Paper 7 at 19-20

(P.T.A.B. July 11, 2023) ("[P]etitioner is silent on material error, even though its relied-upon references (or their substantially identical disclosures), were before the Office during examination of the application leading to the [patent-at-issue].").

Petitioner only addresses discretionary denial under § 325(d) by stating that:

> [T]he Office has not considered the combinations of references forming the grounds for this Petition, and the combinations are not redundant to any combination of references considered during prosecution. Additionally, the instant Petition provides the analysis of Dr. Goel,[1] which has likewise not been presented to the Office before.

Pet., 9-10.

But all of the art cited by Petitioner was before the Office during prosecution, and fully considered by Examiner Hoban. And, as discussed herein, Petitioner's expert fails to provide any credible rationale or evidence as to why the Examiner erred in considering a hypothetical combination of Miwa and Bange. Petitioner has failed to overcome the deference due to the Examiner by showing material error. Accordingly, it would be an inefficient use of the Board's limited resources to revisit patentability of the '394 patent here.

[1] Dr. Goel has since been replaced with Dr. Ernst.

### C. The Director should use discretion under § 312(a)(3) to deny the Petition.

A petition must identify "with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim." 35 U.S.C. § 312(a)(3). Indeed, "[i]t is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify with particularity the evidence that supports the grounds for the challenge to each claim." *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (internal quotes omitted). That is because "the expedited nature of IPRs bring with it an obligation for petitioners to make their case in their petition to institute." *Id.*, 1369-70.

Petitioner here has not identified "with particularity" the evidence relied upon for Grounds 1 and 3. At a high level, the Petition identifies Ground 1 as an obviousness challenge based on Embodiment 15 of Miwa in view of Bange. Pet., 22. Ground 2 is a narrow anticipation challenge based on Embodiment 20 of Miwa. Pet., 42. Ground 3 is an obviousness challenge based on the combination of two different embodiments of Miwa (Embodiments 15 and 20). Pet., 46. A closer look at the arguments presented in Grounds 1 and 3, however, reveals inconsistencies and ambiguities in how these Grounds are actually applied to the challenged claims.

### 1. The Petition does not explain the combination of Miwa and Bange for Ground 1

It is unclear exactly how Petitioner relies on Bange for at least the independent claims of Ground 1. *See* Pet., 25 (citing Bange for disclosing mole percentage ranges consistent with limitation 1[a]), 29 (citing Bange for the same purpose for limitation 5[a]). Ground 1 relies on Miwa's Embodiment 15 as the primary reference. It acknowledges that Miwa's Embodiment 15 fails to disclose the BaO content required by the claims. It then observes that Bange discloses large ranges of glass components that overlap with the claimed ranges, including a BaO content of 0-14 mole percent. *Id.* But merely disclosing large numeric ranges from which one of skill in the art could select ingredients for a glass composition does not disclose a *particular* glass composition that satisfies the claims.

To illustrate, Bange refers to mole percentages of "$SiO_2$: 60-73, $Al_2O_3$: 8-14, $B_2O_3$: 5-17, MgO: 0-5, CaO: 1-13, SrO: 0-8, BaO: 0-14, $TiO_2$: 0-5 and $Ta_2O_5$: 0-5." Pet., 25, 29 (quoting EX1005, Claim 13). It is well understood that the amount of one component selected impacts the amounts of others; one would not simply select any numeric value from within each range without consideration of, and independent of, the other components. For that reason, Bange provides numerous examples of glass compositions wherein the components are selected from these large numeric ranges in relative amounts that balance each other. None of Bange's examples would fall within the claims.

In a properly formulated multi-reference obviousness ground, where a patent challenger identifies a primary reference that allegedly discloses some (but not all) limitations of the claims, the challenger must also identify which limitations are missing from the primary reference and where they can be found in the secondary reference. *See, e.g.*, *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966) (providing that identifying the differences between the prior art and the claims is a required step in the obviousness analysis). The challenger must also explain why a POSA would modify the primary reference to incorporate the teachings of the secondary reference. *See Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 888 (Fed. Cir. 2024) (emphasizing that the mere existence of the claim limitations in the prior art is not enough without a clear motivation to modify and combine). Also, in a properly formulated obviousness ground, a patent challenger must address why non-obviousness evidence from prosecution does not defeat their motivation to combine. *See Volvo Penta of the Ams. LLC v. Brunswick Corp.*, 81 F.4th 1202 (Fed. Cir. 2023) (vacating a PTAB decision of obviousness for failing to adequately consider objective indicia of non-obviousness). The Petition here does not do that.

Ground 1 identifies Bange as the secondary reference, but does not purport to identify the claim limitations that are missing from Miwa, does not explain why

Bange is invoked, and does not explain what disclosure Bange provides in the combination. Pet., 25, 29. It is not even clear why Bange is part of the ground.

The Petition also fails to articulate why one of skill in the art would be motivated to combine Bange with Miwa and modify Miwa to arrive at the challenged claims, other than the fact that the recited glass components were generally known. *See Virtek*, 97 F.4th (reversing PTAB obviousness decision for lacking articulation of motivation to modify or combine). "It does not suffice to meet the motivation to combine requirement to recognize that two alternative arrangements . . . were both known in the art." *Id.*, 886. Rather, the patent challenger must show that a skilled artisan would swap the element in one reference for an element in another reference. "The mere fact that these possible arrangements existed in the prior art does not provide a reason that a skilled artisan would have substituted" one for the other. *Id.*, 887.

In other words, Petitioner cites Bange as disclosing broad glass compositions, but fails to identify any teaching in Bange that would lead a person of ordinary skill in the art to modify Miwa in such a way as to satisfy the claimed inventions of the '394 patent. Nor does the Petition articulate any reasons why one of skill in the art reading Bange's disclosures would modify Miwa's example 15 to arrive at the claimed BaO content—a very specific modification that is suggested nowhere in Bange's broad disclosure. According to the Petition, Bange provides

the same high-level disclosure as Miwa and is deficient for the same reasons. Pet., 25, 29.

Finally, the Petition ignores the Rule 132 declarations submitted by the inventor during prosecution, which the Examiner explicitly cited as showing the non-obviousness of the combinations. By failing to address this non-obviousness evidence, e.g., *Graham* factor four, the Petition is defective and incomplete under Section 312(a)(3). *See Volvo Penta*, 81 F.4th at 1202 (requiring analysis of all four *Graham* factors to sustain obviousness).

**2. The Petition does not explain how or why different embodiments of Miwa would be combined or the role that Bange plays in the analysis.**

Petitioner does not identify Bange as part of Ground 3. *See* Pet., 5 (identifying Ground 3 as based on Miwa alone). Petitioner nonetheless relies upon Bange on pages 49-51 and 57-58 of the obviousness analysis, seemingly to provide alleged teachings that are missing from Miwa. Indeed, the Petition's use of Bange for claim 5 in Ground 3 appears to be identical to its use of Bange for claim 5 in Ground 1. *Compare* Pet., 29, *with* Pet., 49. Petitioner has therefore failed to articulate the role Bange is actually playing in Ground 3.

Further, for claim 5 in Ground 3, Petitioner does not explain how the ranges in Miwa's examples 15 and 20 would be modified or combined to arrive at the challenged claims. Pet., 47-49. Rather, the Petitioner's entire argument seems to

rest solely on the position that, because there are overlapping ranges, the claims are per se obvious. The Federal Circuit made clear in *Virtek* that merely pointing to known arrangements in the prior art is not a complete obviousness analysis. Notably, Petitioner does not advance the argument that it would have been obvious to substitute BaO for SrO that it presents in Ground 1. Petitioner has therefore left it to the Board to try to decipher the obviousness rationale for Ground 3.

### D. The weakness of Petitioner's unpatentability arguments weighs against institution under § 314(a).

Petitioner fails to articulate a sufficient motivation to modify Miwa for both Grounds 1 and 3. Petitioner bases the entirety of its arguments on the overly simplistic proposition that a POSA would have been motivated to substitute one oxide (BaO) for another (SrO) because the two oxides have a similar ionic field strength. Petitioner fails to appreciate (or even consider) that Miwa's glass compositions are not a simplistic system that allows for independent change of one oxide with little or no material effect on the composition as a whole. Petitioner does not meaningfully explain, or offer any evidence to explain, why a POSA would have been motivated to modify the mole percentage for a single oxide within a single, isolated embodiment in Miwa's disclosure to arrive at the claimed glass compositions.

Petitioner also fails in (and is truly silent on) establishing a reasonable expectation of success for modifying Miwa to arrive at what is claimed. Indeed,

Miwa and Petitioner's own analysis demonstrates that there would not have been a reasonable expectation of success in modifying Miwa to arrive at the claimed glass compositions. And Petitioner fails to rebut how the objective indicia presented in the Rule 132 declarations the Examiner relied on to overcome rejections during prosecution would also not demonstrate non-obviousness of the current Grounds.

In an IPR, "the burden of proving a proposition of unpatentability" is borne by (and remains at all times with) the petitioner. 35 U.S.C. §§ 314(a), 316(e); *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016). To satisfy its burden, a petitioner must "articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness"—"mere conclusory statements" will not suffice. *Magnum Oil*, 829 F.3d at 1380. Indeed, "[i]t is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify 'with particularity' the 'evidence that supports the grounds for the challenge to each claim.'" *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (quoting 35 U.S.C. § 312(a)(3)).

"An obviousness determination requires finding that [a Skilled Artisan] would have been motivated to combine or modify the teachings in the prior art *and* would have had a reasonable expectation of success in doing so." *Regents of the Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018); *Intelligent*

*Bio-Sys.*, 821 F.3d at 1367-68; *see also, e.g.*, *NJOY, LLC v. JUUL Labs, Inc.*, IPR2024-00536, Paper 17 (P.T.A.B. Aug. 12, 2024) (denying institution where petitioner did not show a reasonable expectation of success in combining the asserted references); *Honeywell Int'l Inc. v. DSM IP Assets, B.V.*, IPR2024-00493, Paper 7 (P.T.A.B. Aug. 21, 2024) (same).

"[O]bviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention." *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). The fact that the combination might have been successful does not mean that an ordinarily skilled artisan would have been motivated to make the combination. *See Id.* It is not sufficient "for obviousness that a variation of the prior art would predictably work, but requires consideration of whether, in light of factors such as 'design incentives and other market forces,' the hypothetical skilled artisan would recognize the potential benefits and pursue the variation." *Id.* at 1075 (*citing KSR Int'l v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)).

Petitioner falls far short of carrying its burden of establishing a reasonable likelihood of prevailing to show that the claims challenged in Grounds 1 and 3 are obvious for multiple reasons.

**1. Petitioner's arguments in Ground 1 lack the required rationale to establish that it would have been obvious to combine Miwa with Bange to arrive at what is claimed.**

Ground 1 relies on the Miwa-Bange combination for obviousness of all three independent claims—claims 1, 5, and 8. Pet., 22-30, 33-35. For all three independent claims, Petitioner cites Embodiment 15 of Miwa as the basis for its unpatentability ground. Pet., 24, 29, 34. Petitioner acknowledges that the mol% for BaO in Embodiment 15 is 0.21 mol%, which is above the claimed maximum value of 0.1 mol%. Pet., 24, 29, 34.

In an attempt to cure this deficiency in Miwa's Embodiment 15, Petitioner argues that a POSA would have been motivated to reduce the 0.21 mol% for BaO to 0 mol%. Pet., 24-25, 34-35.[2] To account for the reduction of BaO, Petitioner argues that a POSA would have found it obvious to add 0.21 mol% SrO to the composition of Embodiment 15, thereby increasing the total mol% of SrO from 0.63 mol% to 0.84 mol%. Pet., 24-25, 34-35. Petitioner surmises that only the amount of SrO would be changed, with all the other ten possible oxides listed for

[2] Petitioner does not actually make an obviousness argument for the BaO mol% of claim 5. Page 29 of the Petition simply argues that Miwa and Bange disclose mole percentages for various oxides.

Embodiment 15 on page 10 of EX1004—$SiO_2$, $Al_2O_3$, $B_2O_3$, MgO, CaO, ZnO, $ZrO_2$, $SnO_2$, $As_2O_3$, and $Sb_2O_3$—remaining unchanged.

Petitioner bases the entirety of this argument on the overly simplistic proposition that a POSA would have been motivated to substitute all 0.21 mol% of the BaO for 0.21 mol% SrO because BaO and SrO have a similar ionic field strength. Pet., 21-22. According to Petitioner and its unqualified expert, the similarity in ionic field strength indicates that BaO and SrO "play a similar role of network modifier in the silicate glass structure," presumably meaning that these two oxides can be freely substituted for each other in all instances. Pet., 21. Petitioner cites to the entirety of Exhibit 1006 on page 21 of the Petition, but only a single table on page 60 of Exhibit 1006, listing ionic field strengths, could even potentially support Petitioner's argument.

Petitioner further attempts to bolster its argument by citing Bange. According to Petitioner, Bange's disclosure of glass compositions comprising, in terms of mol% on an oxide basis, $SiO_2$: 60-73, $Al_2O_3$: 8-14, $B_2O_3$: 5-17, MgO: 0-5, CaO: 1-13, SrO: 0-8, BaO: 0-14, $TiO_2$: 0-5, and $Ta_2O_5$: 0-5 would have helped motivate a POSA to change the mol% of BaO in Miwa's Embodiment 15. Pet., 25. Aside from citing Bange as disclosing broad oxide ranges for a glass composition, Petitioner provides no actual reason for why Bange's disclosure would have motivated a POSA to modify Miwa's Embodiment 15.

Simply put, Petitioner's motivation to combine Miwa and Bange hinges solely on the proposition that, because both references disclose glass compositions comprising BaO and SrO and because these two oxides have a similar ionic field strength, it would have been obvious to modify Miwa in view of Bange. This kind of cursory analysis falls well short of establishing that a POSA would have been motivated to combine Miwa and Bange to arrive at what is claimed.

Petitioner does not even attempt to establish that a POSA would have been motivated to modify the BaO mol% in Miwa's Embodiment 15 in view of Bange to achieve any of the glass properties touted by Miwa. Indeed, Petitioner does not cite any particular portion of Bange's disclosure as providing motivation to modify Miwa. Obviousness, however, requires "a reason that would have prompted a person of ordinary skill in the relevant field *to combine the elements in the way the claimed new invention does*." *KSR*, 550 U.S. at 418 (emphasis added).

Critically, Petitioner also does not establish that a POSA would have been motivated to modify the BaO and SrO in Miwa's Embodiment 15 while preserving the disclosed mole percentages for the other ten possible oxides listed for Embodiment 15. This is critical to establishing obviousness in view of Miwa and Bange for multiple reasons. First, claims 1, 5, and 8 require specified mole percentages for six additional oxides—$SiO_2$, $Al_2O_3$, $B_2O_3$, MgO, CaO, and $SnO_2$. EX1001, 21:2-20, 21:32-49, 22:7-22. Second, claims 1, 5, 8 require that the ratio

of $RO/Al_2O_3$ be greater than or equal to 1.00, and claims 1 and 5 require that this ratio be less than or equal to 1.25. EX1001, 21:15, 21:46, 22:20. Petitioner cannot assume, without evidence, that the mole percentages for BaO and SrO can be freely adjusted while preserving (i) the amount for six additional oxides and (ii) the desired glass characteristics touted by Miwa. Petitioner does not consider or address the interplay among a multitude of different oxides and oxide ratios in Miwa.

Indeed, Miwa's disclosure makes it clear that modifying the mole percentage for BaO and/or SrO results in multiple other changes within the glass composition. Tables 1A and 1B below show all 20 embodiments[3] from Miwa in terms of mol% on an oxide basis, along with the ratio of $RO/Al_2O_3$ ("RO/Al"). Embodiment 15 is highlighted orange and the embodiments in which BaO is within the claimed range of 0 to 0.1 mol% are highlighted blue.

[3] Embodiments 21 and 22 are not included here because Miwa describes them as comparative embodiments.

| Em. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| $SiO_2$ | 69.45 | 69.45 | 69.45 | 69.45 | 69.36 | 69.36 | 68.77 | 68.74 | 68.67 | 69.38 |
| $Al_2O_3$ | 10.39 | 10.39 | 10.39 | 10.39 | 10.38 | 10.38 | 10.29 | 10.29 | 10.28 | 10.22 |
| $B_2O_3$ | 10.47 | 10.46 | 10.46 | 10.46 | 9.50 | 9.50 | 11.31 | 11.30 | 11.29 | 10.29 |
| MgO | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CaO | 8.27 | 8.27 | 8.27 | 8.27 | 9.44 | 9.44 | 9.36 | 9.35 | 9.34 | 9.29 |
| SrO | 0.96 | 0.96 | 0.96 | 0.96 | 0.64 | 0.64 | 0.00 | 0.00 | 0.00 | 0.31 |
| BaO | 0.22 | 0.22 | 0.22 | 0.22 | 0.43 | 0.43 | 0.00 | 0.00 | 0.00 | 0.04 |
| $As_2O_3$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| $Sb_2O_3$ | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.18 | 0.20 | 0.17 | 0.00 |
| $SnO_2$ | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.09 | 0.02 | 0.07 | 0.09 |
| ZnO | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| $ZrO_2$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cl | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.18 | 0.37 |
| $Fe_2O_3$ | 0.0033 | 0.0041 | 0.0050 | 0.0062 | 0.0083 | 0.0104 | 0.0062 | 0.0062 | 0.0082 | 0.0082 |
| RO/Al | 0.91 | 0.91 | 0.91 | 0.91 | 1.01 | 1.01 | 0.91 | 0.91 | 0.91 | 0.94 |

**Table 1A**

| Em. | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| $SiO_2$ | 67.56 | 68.47 | 69.05 | 67.97 | 67.19 | 68.70 | 66.50 | 67.96 | 68.64 | 69.80 |
| $Al_2O_3$ | 10.44 | 9.76 | 10.33 | 10.34 | 10.22 | 10.28 | 11.85 | 10.98 | 11.59 | 9.96 |
| $B_2O_3$ | 11.47 | 8.96 | 11.35 | 10.41 | 10.29 | 8.94 | 10.13 | 9.46 | 9.21 | 8.47 |
| MgO | 0.00 | 0.82 | 0.00 | 0.00 | 2.10 | 0.00 | 0.00 | 0.49 | 0.00 | 1.14 |
| CaO | 8.31 | 8.28 | 8.22 | 9.40 | 9.29 | 10.52 | 9.58 | 9.98 | 6.62 | 7.60 |
| SrO | 1.22 | 2.56 | 0.64 | 0.32 | 0.63 | 0.63 | 0.00 | 0.32 | 2.28 | 1.26 |
| BaO | 0.43 | 0.02 | 0.13 | 0.64 | 0.21 | 0.21 | 1.31 | 0.64 | 0.22 | 0.00 |
| $As_2O_3$ | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| $Sb_2O_3$ | 0.11 | 0.16 | 0.11 | 0.00 | 0.02 | 0.06 | 0.03 | 0.00 | 0.21 | 0.09 |
| $SnO_2$ | 0.04 | 0.11 | 0.07 | 0.07 | 0.04 | 0.07 | 0.07 | 0.07 | 0.04 | 0.04 |
| ZnO | 0.41 | 0.41 | 0.00 | 0.40 | 0.00 | 0.40 | 0.41 | 0.00 | 0.83 | 0.81 |
| $ZrO_2$ | 0.00 | 0.22 | 0.00 | 0.08 | 0.00 | 0.00 | 0.11 | 0.00 | 0.16 | 0.27 |
| Cl | 0.00 | 0.19 | 0.09 | 0.37 | 0.00 | 0.18 | 0.00 | 0.09 | 0.19 | 0.55 |
| $Fe_2O_3$ | 0.0063 | 0.0062 | 0.0062 | 0.0041 | 0.0041 | 0.0041 | 0.0042 | 0.0041 | 0.0063 | 0.0062 |
| RO/Al | 0.95 | 1.20 | 0.87 | 1.00 | 1.20 | 1.10 | 0.92 | 1.04 | 0.79 | 1.00 |

**Table 1B**

As shown in Tables 1A and 1B, relative to Embodiment 15, Miwa teaches that reducing the mole percentage for BaO results in numerous other changes within the glass compositions. The embodiments make it clear that BaO is not simply replaced with an increased amount of SrO as proposed by the Petitioner. For example, in each of Embodiments 7-9 where BaO is set to 0 mol%, both MgO and SrO are also set to 0 mol%, which is a significant *reduction* from the corresponding mole percentages for MgO and SrO in Embodiment 15. In Embodiment 10 where BaO is set to 0.04 mol%, MgO is again reduced to 0 mol% and the mole percentage of SrO is *reduced* to 0.31 mol%. In Embodiment 12 where BaO is set to 0.02 mol%, MgO is reduced to 0.82 mol% and SrO is *increased* to 2.56 mol%. And finally, in Embodiment 20 where BaO is set to 0 mol%, the mole percentage of MgO is cut almost in half (2.10 mol% to 1.14 mol%) and the mole percentage of SrO is *doubled* (from 0.63 mol% to 1.26 mol%).

At least these embodiments in Miwa make it clear that there is no simplistic one-to-one correlation between oxides as suggested by Petitioner. Rather, the embodiments show that modifying even one oxide results in numerous changes to other oxides within the compositions. Changes to MgO and SrO are noted above, but a comparison of all the embodiments shows numerous changes to other oxides relative to Embodiment 15.

Notably, the changes to SrO do not follow a simple, predictable pattern, as suggested by Petitioner. In Embodiments 7-10, a reduction in BaO results in a reduction of SrO, while in Embodiments 12 and 20, a reduction in BaO results in an increase for SrO.

Furthermore, Miwa's embodiments show that reducing the BaO relative to Embodiment 15 creates a composition that falls outside the claimed compositions. In Embodiments 7-10 and 12, the mole percentage for MgO is 0.82 mol% or less, which falls outside the claimed range of 1.0 to 3.0 mol%. In Embodiments 7-10, the ratio of $RO/Al_2O_3$ is less than claimed minimum of 1.00. And in Embodiment 12, the amount of SrO exceeds the claimed maximum values of 2.0 mol% (claim 1) and 1.0 mol% (claims 5 and 8).

Petitioner ignores the variability within Miwa's embodiments, and instead focuses on substituting one oxide for another with complete disregard to how substituting oxides would affect the overall glass composition. Indeed, Petitioner does not even attempt to explain how increasing SrO and/or reducing BaO would affect the other ten possible oxides in Miwa's embodiments. This is legal error. "Focusing on the obviousness of substitutions and differences, instead of on the invention as a whole, is a legally improper way to simplify the often difficult determination of obviousness." *Gillette Co. v. SC Johnson & Son, Inc.*, 919 F. 2d 720, 724 (Fed. Cir. 1990). It is telling that Petitioner and its expert consider only

Embodiment 15 in isolation without a discussion or analysis of the other embodiments in the context of Miwa's disclosure as a whole.

Petitioner fails to appreciate (or even consider) that glass compositions are not a system that allows for independent change of one oxide with little or no material effect on other oxides and/or glass properties. Petitioner fails to appreciate this despite the fact that Miwa exemplifies the opposite—glass compositions are a system where a change to one oxide must result in numerous changes to other oxides to maintain desired glass properties. What effect Petitioner's BaO/SrO substitution has on Miwa's desired glass properties is left entirely unaddressed by Petitioner.

Miwa and Bange disclose broad ranges for at least MgO, CaO, BaO, SrO and Petitioner does not provide any guidance on how to choose within the disclosed ranges. What is more, Petitioner does not provide any guidance on how to choose the mole percentage for MgO, CaO, BaO, and SrO to achieve a $RO/Al_2O_3$ ratio of at least 1.00. When there is no provided guidance on what modifications or steps would motivate a POSA to arrive at a claimed composition, modifying the prior art cannot be based on a simplistic optimization of one variable in insolation of other variables shown to be dependent on that variable. *See Pfizer Inc. v. Mylan Pharmaceuticals Inc.*, 71 F. Supp. 3d 458, 468–69 (D. Del. 2014), *aff'd* 628 F. App'x 764 (Fed. Cir. 2016) ("The [prior art] did not indicate that these

steps would yield better [results], nor is the court convinced that the one skilled in the art would have found these 'optimization' steps obvious without some data to support it."). "[G]iven the sheer volume of possible combinations and the additional subsequent chemical alterations necessary to arrive at the claimed compound, the court cannot say that one skilled in the art would have had a reason to alter [the prior art]" to arrive at the claim. *Id.*

Indeed, to establish obviousness of claimed ranges, Petitioner must establish that a POSA would have had a reason to attempt to get within the claimed ranges. *See Chemours Co. FC v. Daikin Indus.*, 4 F.4th 1370, 1377 (Fed. Cir. 2021) (*citing Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 995 (Fed. Cir. 2009)). Petitioner provides no reason for *why* a POSA would attempt to modify the BaO mole percentage in Miwa's Embodiment 15 to get within the claimed range of 0 to 0.1 mol%. Petitioner alludes only to the ionic field strength of SrO and BaO. Petitioner does not explain, or offer evidence to explain, why a POSA would have been motivated to (i) isolate Miwa's Embodiment 15, (ii) modify the mole percentage for a single oxide within Embodiment 15, and (iii) retain the mole percentages for all the other oxides within Embodiment 15.

Petitioner's silence on the evident interplay between different oxides in the hypothetical Miwa-Bange glass composition is fatal to the alleged motivation to combine. Simply arguing that a combination of art would have been obvious,

without some articulated rationale, "is inadequate to support a finding that there would have been a motivation to combine." *In re Van Os*, 844 F.3d 1359, 1361 (Fed. Cir. 2017). Finally, the Petition ignores and fails to rebut how the Rule 132 declarations the Examiner relied on to overcome rejections during prosecution would also not demonstrate non-obviousness of the current Grounds.

**2. Petitioner does not even attempt to establish a reasonable expectation of success for Ground 1.**

The Board properly denies institution where the petitioner does not show a reasonable expectation of success in combining asserted references. *See*, *e.g.*, *NJOY*, IPR2024-00536, Paper 17; *Honeywell*, IPR2024-00493, Paper 7; *see also Eli Lilly & Co. v. Teva Pharms. Int'l GmbH*, 8 F.4th 1331, 1344 (Fed. Cir. 2021) (A finding that a patent challenger in an *inter partes* review had demonstrated a motivation to combine references does not necessarily imply that the challenger had also met its burden of showing a reasonable expectation of success in achieving a claimed method of treatment.). The burden of proof is on Petitioner, not Patent Owner. Further, importantly, the literature need not demonstrate an expectation of *failure* in the claimed features in order for the patent to withstand Petitioner's challenge—it is enough that the prior art supports no expectations one way or the other. *See Honeywell Int'l Inc. v. Mexichem Amanco Holding S.A.*, 865 F.3d 1348, 1355 (Fed. Cir. 2017) (reversing a PTAB obviousness finding for improperly requiring the patentee to show an expectation of failure, instead of

properly finding no expectation of success—and thus nonobviousness—where the prior art gave no expectations one way or the other).

Even though there were two Rule 132 declarations used to overcome obviousness during prosecution, Petitioner gives lip service to a reasonable expectation of success only twice in the Petition—once on page 21 and once on page 25. In both instances, Petitioner surmises, without evidence, that combining Miwa and Bange, and replacing BaO with SrO, is "one of a finite number of identified ways" to obtain non-alkali low-density glass for display technologies. This falls well short of establishing a reasonable expectation of success in modifying Miwa as proposed by Petitioner, especially in view of the declaration evidence proving otherwise.

Indeed, as discussed above, Petitioner does not address criticality of certain oxide ranges. "[T]o have a reasonable expectation of success, one must be motivated to do more than merely to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful." *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (cleaned up). Petitioner does not offer any evidence to show that a POSA would have been guided to modifying Miwa in view of Bange to arrive at the claimed glass compositions.

Petitioner's conclusory assertions are not supported by any explanation as to why a POSA would have reasonably expected the Miwa-Bange combination to succeed. "Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR* 550 U.S. at 418; *see also Qiagen North American Holdings, Inc. v. HandyLab, Inc.*, 2021 WL 5024387, at *2-4 (Fed. Cir. 2021) (affirming Board's denial of obviousness when "Petitions offered only a single conclusory statement regarding the POSA's alleged reasonable expectation of success."). Here, Petitioner does not provide a single meaningful articulation or rational underpinning to support a finding of a reasonable expectation of success.

For example, not once does Petitioner provide any reason for *why* a POSA would have expected modifying Miwa's Embodiment 15 in view of Bange would retain the glass properties touted by Miwa, much less offer an improvement a POSA would have been motivated to pursue. Petitioner's cursory arguments cannot support a reasonable expectation of success in combining Miwa and Bange.

Silence and assumptions are insufficient for a *prima facie* case of obviousness. *See Orexo AB, v. Actavis Elizabeth LLC*, 903 F.3d 1265, 1273 (Fed. Cir. 2018) (finding that "silence is not a teaching or suggestion," especially where the beneficial results could not be predicted). Indeed, the Board in *Juniper*

*Networks* agreed that the petitioner must "direct us with particularity to … 'specific explanations' of 'expected results.'" *See Juniper Networks, Inc. v. Correct Transmission, LLC*, IPR2021-00682, Paper 26 at 26 (P.T.A.B. Oct. 3, 2022). Petitioner also fails to rebut how non-obviousness Rule 132 declarations the Examiner relied on to overcome rejections during prosecution would also not demonstrate non-obviousness of the current Grounds.

For at least these reasons, and in view of the Rule 132 declarations, Petitioner's unpatentability arguments for Ground 1 are facially deficient. It would be a waste of Board resources to institute trial based on Petitioner's cursory and unsupported arguments.

**3. Petitioner's arguments in Ground 3 lack the required rationale to establish that it would have been obvious to modify Miwa to arrive at what is claimed.**

Petitioner's obviousness arguments for Ground 3 are deficient for at least the same reasons as discussed above for Ground 1. In Ground 3, Petitioner cites a combination of Miwa's Embodiments 15 and 20 as the basis for its unpatentability ground.[4] Pet., 47-51, 54-58. Petitioner acknowledges that the mol% for BaO in Embodiment 15 is 0.21 mol%, which is above the claimed maximum value of 0.1

[4] Without explanation, Petitioner also cites Bange for Ground 3 on pages 49, 50, 51, 57, and 58 of the Petition.

mol%. Pet., 57. In an attempt to cure this deficiency in Miwa's Embodiment 15, Petitioner makes two arguments.

For claim 5, Petitioner argues that Miwa discloses BaO and SrO mole percent ranges that overlap the claimed ranges, and that SrO+BaO can be optimized to obtain a glass composition. Pet., 49. Petitioner cites no evidence to support this argument, and instead relies generally on an alleged reference to something "discussed earlier" in the Petition. Pet., 49.

For claim 8, Petitioner argues it would have been obvious to modify Embodiment 15 by reducing the 0.21 mol% for BaO to 0 mol%. Pet., 57-58.[5] To account for the reduction of BaO, Petitioner argues a POSA would have found it obvious to add 0.21 mol% SrO to the composition of Embodiment 15, thereby increasing the total mol% of SrO from 0.63 mol% to 0.84 mol%. Pet., 57-58. Petitioner surmises that only the amount of SrO would be changed, with all the

[5] In the paragraph bridging page 57 and 58 of the Petition, Petitioner suggests modifying Embodiment ***20*** to adjust the amount of BaO from 0.21 mol% to 0 mol%. This is clearly a mistake because Embodiment 20 does not have any BaO (the BaO is 0 mol% in Embodiment 20). For purposes of this brief, Patent Owner assumes Petitioner intended to cite Embodiment ***15*** because Embodiment 15 is shown on page 57.

other ten possible oxides listed for Embodiment 15 on page 10 of EX1004—$SiO_2$, $Al_2O_3$, $B_2O_3$, MgO, CaO, ZnO, $ZrO_2$, $SnO_2$, $As_2O_3$, and $Sb_2O_3$—remaining unchanged. Petitioner bases the entirety of this argument on the overly simplistic proposition that a POSA would have been motivated to substitute all 0.21 mol% of the BaO for 0.21 mol% SrO because BaO and SrO "play[] the same role in the glass compositions." Pet., 58. Petitioner cites no evidence to support this argument, and instead relies generally on an alleged explanation "above in relation to limitation 1[a]." Pet., 58.

Simply put, Petitioner's motivation to combine Miwa's Embodiments 15 and 20 hinges solely on the proposition that, because the two embodiments are similar, it would have been obvious to modify Embodiment 15 to arrive at the claimed compositions. This kind of cursory analysis falls well short of establishing that a POSA would have been motivated to modify Miwa to arrive at what is claimed.

Petitioner does not attempt to establish that a POSA would have been motivated to modify the BaO mol% in Miwa's Embodiment 15 glass to achieve any of the glass properties touted by Miwa. Indeed, Petitioner does not cite any particular portion of Miwa's disclosure as providing motivation, and instead relies only the unsupported proposition that SrO+BaO can be optimized to achieve desired glass properties. Pet., 49. Obviousness, however, requires "a reason that

would have prompted a person of ordinary skill in the relevant field *to combine the elements in the way the claimed new invention does*." *KSR*, 550 U.S. at 418 (emphasis added).

Critically, Petitioner also does not establish that a POSA would have been motivated to modify the BaO and SrO in Miwa's Embodiment 15 while preserving the disclosed mole percentages for the other ten possible oxides in Embodiment 15. This is critical to establishing obviousness in view of Miwa for multiple reasons. First, claims 5 and 8 require specified mole percentages for six additional oxides—$SiO_2$, $Al_2O_3$, $B_2O_3$, MgO, CaO, and $SnO_2$. EX1001, 21:2-20, 21:32-49, 22:7-22. Second, claims 5 and 8 require that the ratio of $RO/Al_2O_3$ be greater than or equal to 1.00, and claim 5 requires that this ratio be less than or equal to 1.25. EX1001, 21:15, 21:46, 22:20. Petitioner cannot assume, without evidence, that the mole percentages for BaO and SrO can be freely adjusted while preserving (i) the amount for six additional oxides and (ii) the desired glass characteristics touted by Miwa. Petitioner does not consider or address the interplay between a multitude of different oxides and oxide ratios in Miwa.

Indeed, as exemplified in Tables 1A and 1B above, Miwa's disclosure makes it clear that modifying the mole percentage for BaO and/or SrO results in multiple other changes within the glass composition. There is no simplistic one-to-one correlation between oxides as suggested by Petitioner. Rather, the

embodiments show that modifying even one oxide results in numerous changes to other oxides within the compositions.

Notably, as previously discussed, changes to SrO in Miwa's embodiments do not follow a simple, predictable pattern, as suggested by Petitioner. In Embodiments 7-10, a reduction in BaO results in a reduction of SrO, while in Embodiments 12 and 20, a reduction in BaO results in an increase for SrO.

Petitioner ignores the variability within Miwa's embodiments, and instead focuses on substituting one oxide for another with complete disregard to how substituting oxides would affect the overall glass composition. Indeed, Petitioner does not even attempt to explain how increasing SrO and/or reducing BaO would affect the other ten possible oxides in Miwa's embodiments. This is legal error. "Focusing on the obviousness of substitutions and differences, instead of on the invention as a whole, is a legally improper way to simplify the often difficult determination of obviousness." *Gillette*, 919 F. 2d at 724. It is telling that Petitioner and its expert consider only Embodiments 15 and 20 in isolation without a discussion or analysis in the context of Miwa's disclosure as a whole.

Like in Ground 1, Petitioner fails to appreciate (or even consider) that glass compositions are not a system that allows for independent change of one oxide with little or no material effect on other oxides and/or glass properties. Petitioner fails to appreciate this despite the fact that Miwa exemplifies the opposite—glass

compositions are a system where a change to one oxide must result in numerous changes to other oxides to maintain desired glass properties. What effect Petitioner's BaO/SrO substitution has on Miwa's desired glass properties is left entirely unaddressed by Petitioner.

Holistically, Miwa discloses broad ranges for at least MgO, CaO, BaO, SrO, and Petitioner does not provide any guidance on how to choose within the disclosed ranges for these oxides or how to achieve a $RO/Al_2O_3$ ratio of at least 1.00. When there is no provided guidance on what modifications or steps would motivate a POSA to arrive at a claimed composition, modifying the prior art cannot be based on a simplistic optimization of one variable in insolation of other variables shown to be dependent on that variable. *See Pfizer*, 71 F. Supp. 3d at 468–69 ("The [prior art] did not indicate that these steps would yield better [results], nor is the court convinced that the one skilled in the art would have found these 'optimization' steps obvious without some data to support it.").

To establish obviousness of claimed ranges, Petitioner must establish that a POSA would have had a reason to attempt to get within the claimed ranges. *See Chemours*, 4 F.4th 1370 at 1377. Petitioner provides no reason for *why* a POSA would attempt to modify the BaO mole percentage in Miwa's Embodiment 15 to get within the claimed range of 0 to 0.1 mol%. Petitioner alludes only to the unsupported proposition that SrO+BaO can be optimized. Petitioner does not

explain, or offer evidence to explain, why a POSA would have been motivated to (i) isolate Miwa's Embodiment 15, (ii) modify the mole percentage for a single oxide within Embodiment 15, and (iii) retain the mole percentages for all the other oxides within Embodiment 15.

Petitioner's silence on the evident interplay between different oxides within Miwa is fatal to Ground 3. Simply arguing that a combination of art would have been obvious, without some articulated rationale, "is inadequate to support a finding that there would have been a motivation to combine." *In re Van Os*, 844 at 1361. Petitioner also fails to rebut how non-obviousness Rule 132 declarations the Examiner relied on to overcome rejections during prosecution would also not demonstrate non-obviousness of the current Grounds.

**4. Petitioner does not even attempt to establish a reasonable expectation of success for Ground 3.**

At *no* point does Petitioner even attempt to show a reasonable expectation of success in modifying Miwa to arrive at the claimed glass compositions for Ground 3. Petitioner only mentions a reasonable expectation of success in the combination of Miwa and Bange on pages 21 and 25 of the Petition. Petitioner does not argue a reasonable expectation of success in modifying Miwa's Embodiment 15 in view of Embodiment 20 as proposed in Ground 3.

Without any explanation, Petitioner must be presupposing an expectation of success based on the broad oxide ranges disclosed in Miwa. This falls well short

establishing obviousness. "[T]o have a reasonable expectation of success, one must be motivated to do more than merely to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful." *Medichem*, 437 F.3d at 1165 (cleaned up).

Petitioner's presumption of a reasonable expectation of success, without *any* supporting rationale or evidence, warrants denial. "Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR* 550 U.S. at 418; *see also Qiagen*, 2021 WL 5024387, at *2-4 (affirming Board's denial of obviousness when "Petitions offered only a single conclusory statement regarding the POSA's alleged reasonable expectation of success.").

Here, Petitioner does not even provide a conclusory statement. Petitioner says nothing. And silence and assumptions are insufficient for a *prima facie* case of obviousness. *See Juniper Networks, Inc.*, IPR2021-00682, Paper 26 at 26 (agreeing that the petitioner must "direct us with particularity to … 'specific explanations' of 'expected results.'"). Petitioner also fails to rebut how non-obviousness Rule 132 declarations the Examiner relied on to overcome rejections

during prosecution would also not demonstrate non-obviousness of the current Grounds.

For at least these reasons, Petitioner's unpatentability arguments for Ground 3 are facially deficient. It would be a waste of Board resources to institute trial based on Petitioner's cursory and unsupported arguments.

## VII. CONCLUSION

The Director should exercise discretion to deny institution of inter partes review of the '394 patent.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Jason D. Eisenberg/

Jason D. Eisenberg (Reg. No. 43,447)
Kristina Caggiano Kelly (Reg. No. 58,164)
Charles D. Hammond (Reg. No. 73,287)
Maxwell Furigay (Reg. No. 82,104)
*Counsel for Patent Owner*

Date: May 10, 2025

1101 K Street, NW, 10th Floor
Washington, DC 20005
(202) 371-2600

**CERTIFICATE OF WORD COUNT (37 C.F.R. § 42.24(d))**

1. This Patent Owner Preliminary Response complies with the type-volume limitation of 14,000 words, comprising 13,917 words, excluding the parts exempted by 37 C.F.R. § 42.24(a)(1).

2. This Patent Owner Preliminary Response complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word 2016 in 14-point Times New Roman font.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Jason D. Eisenberg/

Jason D. Eisenberg (Reg. No. 43,447)
*Counsel for Patent Owner*

Date: May 10, 2025

1101 K Street, NW, 10th Floor
Washington, DC 20005
(202) 371-2600

**CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e))**

I certify that the above-captioned **PATENT OWNER DISCRETIONARY DENIAL BRIEF** and associated Exhibits 2005-2012 were served in their entireties on May 10, 2025, upon the following parties via electronic mail:

Daniel J. Pereira (Lead Counsel) dpereira@merchantgould.com
Donald McPhail (Back-Up Counsel) dmcphail@merchantgould.com
MERCHANT AND GOULD PC

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Jason D. Eisenberg/

Jason D. Eisenberg (Reg. No. 43,447)
*Counsel for Patent Owner*

Date: May 10, 2025

1101 K Street, NW, 10th Floor
Washington, DC 20005
(202) 371-2600

24741765