

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIVACCO Technology Inc.,
Petitioner, v.

LEONHARD KURZ Stiftung & Co. KG,
Patent Owner.

Case No. PGR2026-00011

Patent No. 12,220,935 B2

**PETITION FOR POST GRANT REVIEW
OF U.S. PATENT NO. 12,220,935**

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LIST OF EXHIBITS

Ex-1001	U.S. Patent No. 12,220,935 to Lasch (“the ’935 Patent”)
Ex-1002	Declaration of Dr. Christopher K. Haas
Ex-1003	Curriculum Vitae of Dr. Christopher K. Haas
Ex-1004	Prosecution History of the ’935 Patent
Ex-1005	ASTM D6862-11: Standard Test Method for 90 Degree Peel Resistance of Adhesives. ASTM International, West Conshohocken, PA, 2011. https://doi.org/10.1520/D6862-11
Ex-1006	ZwickRoell. (n.d.). Materials testing machines ProLine Z005 to Z100 [Product information, PI 375 623]. ZwickRoell GmbH & Co. KG.
Ex-1007	ASTM International. (2018). <i>ASTM D3330/D3330M-04(2018): Standard test method for peel adhesion of pressure-sensitive tape.</i> ASTM International. https://doi.org/10.1520/D3330_D3330M-04R18
Ex-1008	ASTM International. (2025). <i>ASTM D903-98(2025): Standard test method for peel or stripping strength of adhesive bonds.</i> ASTM International. https://doi.org/10.1520/D0903-98R25

Ex-1009	Gandur, M. C., Kleinke, M. U., & Galembeck, F. (1997). <i>Complex dynamic behavior in adhesive tape peeling</i> . <i>Journal of Adhesion Science and Technology</i> , 11(1), 11–28. https://doi.org/10.1163/156856197X00994
Ex-1010	IMASS Inc. IMASS TL-2300 Tester: Slip/Peel Tester for Peel, Release and COF. Datasheet TL2300 DS 0211. Accord, MA: IMASS Instruments for the Materials and Surface Sciences.
Ex-1011	Peel-Zone Model of Tape Peeling Based on the Gecko Adhesive System (http://dx.doi.org/10.1080/00218460701282539)
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Ex-1015	Pocius, A. V. (2012). <i>Adhesion and adhesives technology: An introduction</i> (3rd ed.). Carl Hanser Verlag GmbH & Co. KG.
Ex-1016	Dalbe, M.-J., Santucci, S., Vanel, L., & Cortet, P.-P. (2014). <i>Peeling-angle dependence of the stick-slip instability during adhesive tape peeling</i> . <i>Soft Matter</i> , 10(45), 9637–9643. https://doi.org/10.1039/c4sm01840k

Ex-1017	Callister, W. D., Jr., & Rethwisch, D. G. (2018). <i>Fundamentals of materials science and engineering: An integrated approach</i> (5th ed.). Wiley. ISBN 978-1-119-17550-6
Ex-1018	Precision Urethane & Machine, Inc. (2025). <i>Mechanical properties of polyether</i> [PDF]. https://www.precisionurethane.com/assets/files/pdfs/PolyetherMechanicalProperties.pdf

I. INTRODUCTION

UNIVACCO Technology Inc. (“Petitioner”) requests post-grant review (“PGR”) of Claims 1-7, 9, 11, 13-18 and 21-25 of U.S. Patent No. 12,220,935 (“the ’935 Patent”) (Ex-1001), currently assigned to LEONHARD KURZ Stiftung & Co. KG (“PO”).

II. MANDATORY NOTICES, STANDING, AND FEES

Mandatory Notices Under 37 C.F.R. §42.8

Real Parties-in-Interest: Petitioner identifies the following real parties-in-interest: UNIVACCO Technology Inc.

Related Matters: PO has not asserted the ’935 Patent against Petitioner or any Real Parties-in-Interest

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A. Grounds for Standing

Petitioner certifies that the '935 Patent is available for review, and Petitioner is not barred or estopped from requesting review.

B. Fee Authorization

The PTO is authorized to charge any fees due during this proceeding to Deposit Account No. 50-2075.

III. RELIEF REQUESTED

Petitioner requests review and cancellation of Claims 1-7, 9, 11, 13-18 and 21-25 as unpatentable based on the following grounds, and supported by a declaration from Dr. Christopher K. Haas. Ex-1002, ¶¶ 1-77; Ex-1003.

As established herein, the '935 Patent is eligible for PGR because it has at least one claim that is not entitled to any pre-AIA filing date, and this Petition is being filed within 9 months of the February 11, 2025 grant date. Ex-1001, Cover Page. The actual 9-month due date is November 11, 2025. Because November 11, 2025 is a Federal holiday, the due date is extended to November 12, 2025 under 35 U.S.C. § 21(b).

The Board has previously held that where the statutory due date is on a Saturday, Sunday or Federal holiday, and where a petition was filed on the next business day, the filing was considered timely and in compliance with the statutory due date. For example, please see *Samsung Electronics Co., Ltd. v. Immersion Corporation*, Case IPR2018-01500, slip op. 12-14, (PTAB April 2, 2019) (Paper 10), in Footnote 4 at page 12: “In compliance with the statute directly addressing such situations, Petitioner properly filed its Petition on the

next business day, August 6, 2018. 35 U.S.C. § 21(b)”. See also *Samsung Electronics Co., Ltd. v. Immersion Corporation*, Case IPR2018-01467, slip op. 13–19 (PTAB Feb. 20, 2019) (Paper 10).

Petitioners respectfully request review of Claims 1-7, 9, 11, 13-18 and 21-25 (“challenged claims”) of the ’935 Patent, and cancellation of these claims as unpatentable.

The challenged claims should be canceled as unpatentable on the following grounds:

Ground 1: Claims 1-7, 9, 11, 13-18 and 21-25 are unpatentable under AIA 35 U.S.C. § 112(a) as failing to satisfy the enablement requirement.

Ground 2: Claims 1-7, 9, 11, 13-18 and 21-25 are unpatentable under AIA 35 U.S.C. § 112(a) as failing to satisfy the written description requirement.

Ground 3: Claims 1-7, 9, 11, 13-18 and 21-25 are unpatentable under AIA 35 U.S.C. § 112(b) as failing to particularly point out and distinctly claim the subject matter which the inventor regards as the invention.

IV. **THE CHALLENGED PATENT**

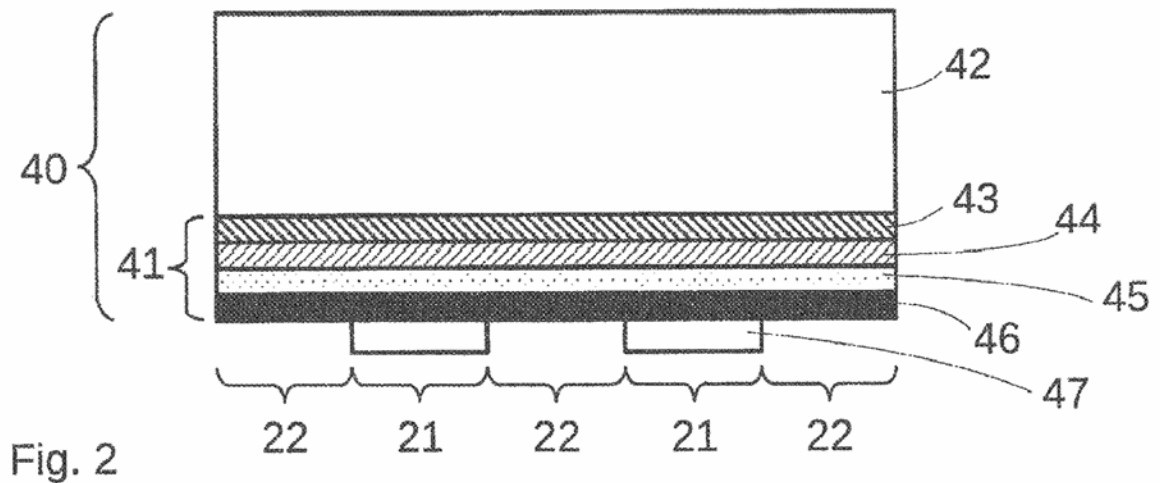
A. **The ‘935 Patent**

The '935 Patent is based on U.S. Patent Application No. 17/780,090 which was filed in the U.S. Patent and Trademark Office on November 20, 2020. The "Summary of the Invention" in the '935 Patent describes a decorative foil and a method for producing this foil. The foil consists of an "all-over varnish layer" and a "carrier film." (Ex-1001, 1:45-49.)

The all-over varnish layer can be applied to a substrate using an adhesive, and the carrier film is removed. The force required to remove this carrier film after application and fluctuations in that force are key to the claims, as is the thickness of the carrier film and the thickness of the all-over varnish layer. (*See* Ex-1001, Abstract.) Ex-1002, ¶19.

In particular, the all-over varnish layer consists of several other layers, which includes "at least one detachment layer and/or at least one protective varnish layer and/or at least one decorative layer and/or at least one primer layer and/or at least one adhesive layer and/or at least one color layer." (Ex-1001, 3:1-5.) Ex-1002, ¶20.

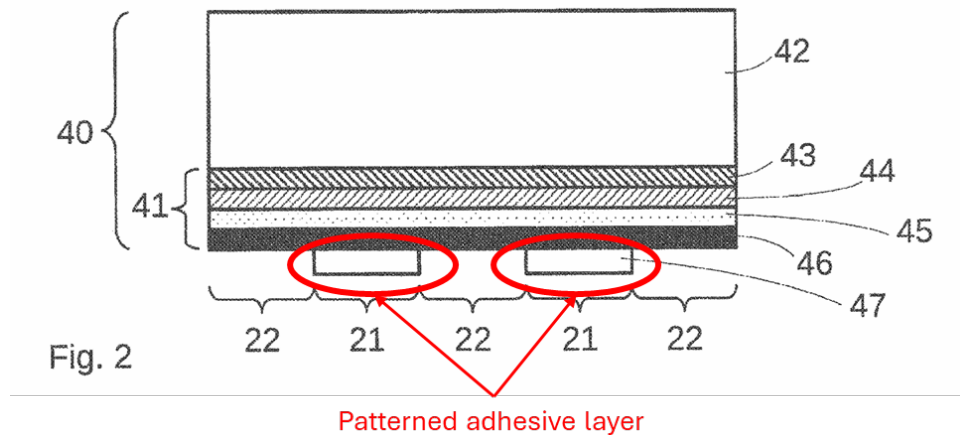
The "Detailed Description of the Invention" in the '935 Patent describes a foil that has a carrier film and includes figures such as figure 2 which describes one configuration:



(Ex-1001, fig. 2)

Where element 40 is the decorative foil, element 41 is the all-over varnish layer, element 42 is the carrier film, element 43 is the detachment layer, element 44 is the protective varnish layer, element 45 is the decorative layer, element 46 is the primer layer, and element 47 is the adhesive layer. (Ex-1001, 20: 36-43.)

Decorative foils like this are typically applied to a substrate to which an adhesive is applied in a certain pattern. Ex-1002, ¶23. Fig. 2 of the '935 Patent shown above demonstrates a patterned adhesive layer as noted below.



(Ex-1001, fig. 2 (annotation added)) Ex-1002, ¶23.

As described in the ‘935 Patent, the adhesive can be “a hot glue, a thermoplastic adhesive, a cold glue, [or] a radiation-curable adhesive” (Ex-1001, 15:64-65; fig. 2.) After the foil-adhesive-substrate bond has been formed, the carrier film is removed. When the carrier film is removed, the portions of the all-over varnish layer bonded to adhesive (which is bonded to the substrate) will remain on the substrate, while the all-over varnish layer not bonded to the adhesive will remain with the carrier film. Ex-1002, ¶23. The force needed to separate the carrier film from the all-over varnish layer/adhesive/substrate system is defined as the “tear-off force” (Ex-1001, 3:12-16.)

For some of the all-over varnish layer to remain with the adhesive/substrate, and some of the all-over varnish layer to leave with the carrier film requires some cracking and breaking within the all-over varnish layer; the force required to form

these cracks is defined in the '935 Patent as the "cracking force" (Ex-1001, 7:43-45.) Ex-1002, ¶24.

As stated in the '935 Patent, the adhesive is often applied in a pattern so that the final product will have a similar pattern. This pattern can be a "character, symbol, microprint, image, photo, logo, portrait, pictogram, pattern..." etc. (Ex-1001, 7:28-31.) In order to have the best possible final image, the all-over varnish layer should break cleanly along the edge with no missing portions within the applied pattern. Ex-1002, ¶25. "The covering power is a measure of the number of defects in a target substrate decorated with a continuous solid surface. In the case of 100% covering power, therefore, no defects or holes occur inside this solid surface..." (Ex-1001, 4:50-54.)

The detailed description also includes some description of a process of applying an adhesive layer to a substrate and then applying the decorative foil. This process description includes some peel force data related to the force required to remove the carrier film from the all-over varnish layer, with some description of the test used to generate those data. Although it is not explicitly stated in the '935 Patent, this peel force is a combination of the cracking and tear-off forces. Ex-1002, ¶26.

B. Prosecution History of the '935 Patent

The '935 Patent issued on February 11, 2025 from U.S. application No. 17/780,090, which is a National Stage entry of PCT/EP2020/082896, filed November 20, 2020, which in turn claims priority to German application No. 102019132787.3, filed December 3, 2019. Ex-1001, Cover.

During prosecution of the '935 Patent, an Office Action was issued on April 16, 2024. Ex-1004, pp. 284-316. In that Office Action, the Examiner indicated that then-pending claims 7, 12, 16 and 28 were rejected under 35 USC 112(b) due to indefiniteness. Ex-1004, page 289. The Examiner erroneously did not list claim 6 as being rejected. However, in the detailed explanation of the grounds of this rejection, the Examiner rejected then-pending claim 6. Ex-1004, page 290. In that detailed explanation, the Examiner erroneously indicated then-pending claim 6 as having two conflicting interpretations, in contradiction to the three conflicting interpretations in the following sentence: (1) said tear-off force is with respect to the carrier film and the all-over varnish layer; (2) said tear-off force with respect to the all-over varnish layer and some other surface; or (3) said tear-off force is with respect to the carrier film and some other surface. Ex-1004, page 290. Then, the Examiner indicated that for purposes of examination that the "former interpretation" applies, wherein the claim will be treated to read as "a[[the]] tear-off force between the carrier film and the all-over varnish film has fluctuations". Ex-1004, page 290.

In response, the applicant filed an Amendment on September 10, 2024. Ex-1004, pp. 272-281. More specifically, the applicant amended the claims by canceling then-pending claim 7, incorporating then-pending claim 6 into independent claim 1 (which matured into claim 1 of the '935 Patent), and rewriting claim 8 in independent form (which matured into claim 25 of the '935 Patent as renumbered). Ex-1004, pp. 274-278. The applicant either did not notice or acquiesced in the above-mentioned errors.

Addition to the errors by the Examiner and the failure of the applicant to correct the errors, no explanation was provided as to how one of skill in the art would have understood how to make or use the claimed invention, taking into account the specification and drawings of the '090 Application. Moreover, given the Examiner's errors in the rejection, as well as the applicant's failure to address them, it is unclear if the Examiner or applicant comprehended the scope of then-pending claim 6, or how POSITA would have made or used the claimed invention. This Petition presents substantially new arguments that were not considered during prosecution.

C. Level of Ordinary Skill in the Art

A person of ordinary skill in the art ("POSITA") at the time of the purported invention of the '935 Patent would have had at least three years' experience working with polymers, plastics, and/or adhesives with a BS or engineering degree in

chemistry, analytical chemistry, polymer engineering, materials science, chemical engineering, or an equivalent field. Alternatively, a POSITA would have had a master's degree or in one of the above academic disciplines with one year of work experience as described above. Additional education can substitute work experience, and vice versa. Ex-1002, ¶¶ 8.

V. CLAIM CONSTRUCTION

Petitioner interprets the challenged claims of the '935 Patent according to the *Phillips* claim construction standard. 37 C.F.R. § 42.100(b).

Petitioner respectfully submits that the following claim limitations cannot be construed in a manner which preserves their validity, due to the failure of the specification to provide enablement and written description, as well as the claim language itself being so indefinite as to prevent the demonstration that the inventor was in possession of the claimed subject matter.

Petition believes that at least the following terms are invalid based on at least the above-identified grounds:

Claim 1: “wherein a tear-off force between the carrier film and the all-over varnish layer has fluctuations in the force amplitude around its average in a range of from more than or equal to -0.5 cN to less than or equal to 0.5 cN.” (Ex-1001, 20:48-55.)

Claim 25: “wherein the all-over varnish layer has a covering power of more than or equal to 99.5%, in the case of a decoration of a continuous solid surface and a decoration or point perception of more than or equal to 99.5%, in the case of a decoration of a 10% halftone area”. (Ex-1001, 22:38-47.)

Further, Petitioner submits that the challenged dependent claims do not recite any further limitations that overcome or in any way clarify the scope of the above subject matter.

The detailed analysis and arguments associated with the claim construction issues are further explained below in association with Grounds (1)-(3).

VI. DETAILED EXPLANATION OF THE UNPATENTABILITY GROUND

A. Ground 1: 1-7, 9, 11, 13-18 and 21-25 are unpatentable under AIA 35 U.S.C. § 112(a) as failing to satisfy the enablement requirement.

1. Claim 1

Claim 1 recites:

1. A decorative foil comprising a carrier film and an all-over varnish layer, wherein the carrier film has a thickness in the range of from 3.0 μm to 10.0 μm , and

wherein a tear-off force between the carrier film and the all-over varnish layer has fluctuations in the force amplitude around its average in a range of from more than or equal to -0.5 cN to less than or equal to 0.5 cN.

Ex-1001, 20:48-55.

The claimed decorative foils operate in a complex, multi-layer, viscoelastic environment. The all-over varnish layer itself comprises multiple stacked sublayers—including detachment, protective varnish, decorative, primer, adhesive, and color layers—many of which are polymeric and therefore viscoelastic, exhibiting both solid- and liquid-like behavior during peel. This architecture makes the peel mechanism in these foils highly complex, with deformation and energy dissipation occurring across several interacting layers rather than at a single interface. Ex-1002, ¶13.

The prior art confirms that force oscillations in such adhesive systems are deterministic but complex phenomena require sophisticated mathematical analysis to distinguish from random noise, including tools such as Lyapunov exponents and Grassberger–Procaccia dimensions. (Ex-1009, Abstract.) Work with multi-layer viscoelastic systems requires practitioners with expertise in polymer mechanics, adhesive science, and force-measurement analysis. The relative skill level is high, but so is the technical complexity. Ex-1002, ¶69.

Under *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988), relevant factors include the breadth of the claims, the nature of the invention, the state of the prior art, the predictability of the art, the amount of direction provided, and the quantity of experimentation required. In complex, less predictable fields, more detailed and comprehensive enabling disclosure is required to avoid undue experimentation. That is especially true where, as here, the challenged claims recite broad structural genera tied to precise numerical performance limits that must be verified by testing. The relative skill of practitioners in the field is correspondingly high, given the technical complexity involved in understanding and controlling force fluctuation phenomena in multi-layer adhesive systems. Ex-1002, ¶69.

In such systems, several data points—certainly more than a single “good” example and a single “bad” example—are required to characterize and control performance across a broad thickness range. Yet, the ‘935 Patent discloses only one working example at 5.7 μm and one comparative failure at 12 μm , leaving most of the claimed 3-10 μm thickness range experimentally unexplored. Ex-1002, ¶61.

As a result, a POSITA cannot practice the full claimed 3-10 μm genus with the required fluctuation and covering-power performance. The experimental work of finding methods to handle the primary determinants of material properties that determine peeling behavior to reproduce and achieve the specific claimed

performance across the full scope and across all material and system conditions has thus been left to the field. In particular, the '935 Patent does not tell the POSITA which thicknesses, adhesive systems, or process conditions are likely to succeed, and which are likely to fail, across the 3-10 μm range. These issues as to which the '935 Patent offers insufficient guidance—including how to identify and make the claimed decorative foils and how to determine whether a foil satisfies the respective functional limitations—raise complex issues of viscoelastic mechanics and chaotic dynamics. Ex-1002, ¶¶59-64.

In view of this multi-layer viscoelastic complexity, the non-linear and deterministic but difficult-to-model behavior of peel forces, and the high sensitivity of performance to multiple interacting variables, coupled with the limited and non-representative data the '935 Patent provides, a POSITA cannot practice the full claimed 3-10 μm thickness range of claim 1 (or the corresponding variations in claim 25) without undue experimentation. Ex-1002, ¶64.

Claim 1 Enablement Failure – Fluctuation Requirement

A. Breadth of Claimed Genus and Sparse Examples for Claim 1

Claim 1 embraces a vast genus of decorative foils as it is not limited to any particular all-over varnish layer composition or structural class. While the claim limits the carrier film thickness to 3.0 μm to 10.0 μm , the structural limitations still

encompass a broad genus of structurally and functionally disparate compositions. Moreover, the claim includes the functional limitation requiring “fluctuations in the force amplitude around its average in a range of from more than or equal to -0.5 cN to less than or equal to 0.5 cN.” Ex-1001, 20:47–55. Ex-1002, ¶64.

The ‘935 Patent offers limited guidance compared to this claim breadth. The only working example achieving the fluctuation requirement involves a decorative foil with a $5.7\text{ }\mu\text{m}$ carrier film producing fluctuations smaller than ± 0.5 cN. (Ex-1001 at 18:55-60.) Claim 1 covers carrier film thicknesses from $3.0\text{ }\mu\text{m}$ to $10.0\text{ }\mu\text{m}$ —a $7\text{ }\mu\text{m}$ range. No generally applicable guidance appears in the ‘935 Patent, and its single example represents only one specific thickness within the claimed range. The patent never translates that one success into rules, ranges, or process conditions that would allow a POSITA to reproduce the ± 0.5 cN performance at other points in the $3\text{-}10\text{ }\mu\text{m}$ range. Ex-1002, ¶59-64.

Claim 1’s breadth is not merely abstract, it expressly allows the carrier film to be made from “PET, PMMA, PC, PE, PVC, PS, ABS, PU, PBS, PLA, PAN, and/or glass.” Ex-1001, 2:66–67. These materials span roughly four orders of magnitude in modulus of elasticity, from on the order of $\sim 10^3$ psi for certain polyurethanes to $\geq 10^7$ psi for glasses, as reflected in standard polymer and glass property tables. Ex-1017; Ex-1018. Materials with such widely differing stiffness properties behave very

differently under peel loading. Ex-1002, ¶64. Both the average tear-off force and the magnitude and frequency content of force fluctuations are strongly dependent on the carrier's modulus and other mechanical properties. Ex-1002, ¶56, 64. Yet the '935 Patent provides no guidance on how to configure these structurally and mechanically disparate carrier materials—individually or in combination—so that all of them (or even most of them) can satisfy the ± 0.5 cN fluctuation limitation across the 3-10 μm thickness range. Ex-1002, ¶59-64.

A POSITA would therefore have to perform extensive, material-by-material trial-and-error experimentation across this full set of carrier polymers and glasses simply to identify which combinations, if any, meet the claimed functional boundary. That is hallmark undue experimentation under *Wands* and *Amgen Inc. v. Sanofi*, 598 U.S. 594, 143 S. Ct. 1243 (2023).

B. Theoretical Inadequacy for Fluctuation Mechanism

The '935 Patent attributes the claimed fluctuation behavior primarily to the position of the neutral fiber in the carrier film during bending, suggesting that varying carrier film thickness within the claimed range adjusts the neutral fiber and thereby controls tear-off behavior. (Ex-1001 at 19:63–20:1.)

However, the prior art shows that fluctuations in peel forces arise from multiple interacting mechanisms beyond neutral-fiber position, including the

formation and rupture of adhesive fibrils, stick–slip phenomena, cohesive-zone propagation, friction and shear at the interface, and rate-dependent filamentation effects. (Ex-1009 Abstract (two frequency domains associated with stick–slip and fibril rupture)); (Ex-1012, Abstract (cohesive zone length and filamentation increasing with peeling rate and affecting peel-off force)). These mechanisms, along with peel angle, rate, surface roughness, and interfacial adhesive properties, significantly influence fluctuation behavior. Ex-1002, ¶62.

The ‘935 Patent does not integrate these variables. It treats fluctuations as a simple, thickness-driven result of neutral-fiber positioning, without providing any quantitative or qualitative rules for how adhesive, rate, angle, roughness, or other structural and process variables must be controlled to achieve ± 0.5 cN fluctuations. Without such guidance, a POSITA cannot reliably predict which foils will achieve the claimed fluctuation range across the full breadth of claim 1. Thickness alone cannot serve as a reliable design variable in the absence of a more complete theoretical and empirical framework. Ex-1002, ¶63, 64.

C. Data Deficiency and Non-Linear Thickness-Performance Behavior

The ‘935 Patent’s own data underscore the lack of enablement. The specification discloses only one working example achieving the fluctuation limitation: a decorative foil with a $5.7\text{ }\mu\text{m}$ carrier film exhibiting fluctuations smaller

than ± 0.5 cN. By contrast, the 12 μm carrier film produces much larger fluctuations—reported in the text as ± 1 cN, and, when the 7.4 cN spike in figure 9b is included, actually about ± 1.8 cN (from roughly 3.8 cN to 7.4 cN). Ex-1002, ¶51, 69-71.

The dramatic difference between the 5.7 μm performance and the 12 μm performance demonstrates that small changes in thickness produce large, non-linear changes in performance. This unpredictability makes the absence of guidance for intermediate thicknesses even more problematic because a POSITA cannot simply interpolate between the single working example and the failed comparison. The '935 Patent provides no intermediate data points between 5.7 μm and 12 μm , nor any data at the lower end of the claimed range (3-5 μm). Even under a generous, linear-interpolation assumption between the 5.7 μm and 12 μm data points, a 9-10 μm carrier would be expected to exhibit fluctuations on the order of ± 1.2 -1.4 cN if the true 12 μm fluctuation is ± 1.8 cN, already more than double the claimed ± 0.5 cN band; the actual non-linear trend suggests performance would likely be worse, not better. Ex-1002, ¶51, 70.

Without any intermediate examples or rules tying thickness and construction parameters to performance, a POSITA is left to trial-and-error across most of the

claimed 3-10 μm range, particularly near the upper end, where the patent's own data indicate increasing difficulty in meeting the ± 0.5 cN requirement. Ex-1002, ¶¶69-73.

D. Measurement-Method Sensitivity as an Enablement Problem

The enablement failure is exacerbated by the '935 Patent's omission of essential measurement parameters for the fluctuation limitation. As discussed *supra* in Section VI.C, the '935 Patent never specifies a unique, objective protocol for computing "fluctuations in the force amplitude around its average," including averaging window, peel angle, data processing, or the treatment of outliers such as the 7.4 cN spike in figure 9b. A POSITA seeking to test candidate foils must not only design and tune the foil structures themselves, but also develop and select among competing fluctuation-measurement methodologies, each of which may yield different numerical results. Ex-1002, ¶¶51, 60, 69-71.

Designing both the foils and the test protocol under these circumstances would require a substantial research program rather than routine optimization. The '935 Patent, thus, leaves to the field the experimental work of discovering which combinations of thickness, carrier materials, adhesive systems, process conditions, and measurement choices yield the claimed ± 0.5 cN performance. Ex-1002, ¶¶49, 50, 59, 60.

Therefore, claim 1 covers a broad genus of decorative foils spanning many structurally disparate carrier materials and a thickness range tied to a stringent fluctuation requirement that can only be determined by testing. The '935 Patent provides only a single working example at 5.7 μm and a failed comparative example at 12 μm , offers no generally applicable design rules, and does not teach a unique measurement protocol for verifying compliance. Given the complexity and unpredictability of the underlying viscoelastic system, a POSITA would need to engage in extensive, unguided experimentation to identify compliant foils. Ex-1002, ¶59-64.

Claim 1 is therefore not enabled across its full scope.

Screening Across the Genus Constitutes Undue Experimentation

The scope of required experimentation is substantial as identifying compliant decorative foils requires extensive experimentation across the entire 3-10 μm thickness range for both functional limitations. A POSITA would need to: (1) establish and validate measurement protocols for chaotic force-fluctuation analysis and defect detection; (2) control multiple interacting variables affecting both fluctuations and covering power (including carrier material, adhesive system, peel angle, rate, and substrate/adhesive application conditions); and (3) screen compositions and constructions across different measurement conditions and

thicknesses. The ‘935 Patent provides no roadmap for this effort. This is precisely the type of unguided, trial-and-error research program that *Wands* and later cases identify as undue experimentation, not routine optimization. The Federal Circuit’s precedent in *Wyeth* is on point. There, the court held claims not enabled where the specification provided “only a starting point for further iterative research.” *Wyeth & Cordis Corp. v. Abbott Labs.*, 720 F.3d 1380, 1386 (Fed. Cir. 2013).

Here, the ‘935 Patent provides little more than a single data point at 5.7 μm and a comparative failure at 12 μm , with no teaching about intermediate or lower portions of the claimed range and no design rules for navigating the multi-variable, non-linear behavior the patent’s own data reveal. Ex-1002, ¶59.

Idenix Pharms. LLC v. Gilead Scis. Inc. further confirms that requiring a POSITA to screen a broad structural genus to identify those compositions that satisfy a functional requirement constitutes undue experimentation, “even if routine.” 941 F.3d 1149, 1163 (Fed. Cir. 2019). The required screening here is far from routine—it would involve sophisticated fluctuation and defect analysis across a broad, largely unexplored genus in an unpredictable field.

The Federal Circuit in *Genentech* emphasized that inventors “knew how to enable that which they had invented.” 108 F.3d 1361, 1367 (Fed. Cir. 1997). The ‘935 Patent shows, at most, that the inventors knew how to produce one specific

decorative foil—a 5.7 μm carrier construction under undisclosed test conditions—that meets the ± 0.5 cN fluctuation requirement and the 99.5% covering-power requirement. It does not teach a general method by which a POSITA could achieve those performance metrics across the full 3-10 μm thickness range and across the breadth of permitted carrier materials and adhesive systems recited in the claims. Ex-1002, ¶59.

Nor can these deficiencies be cured by appealing to “general knowledge” in the art. *Genentech* cautioned that the principle that a specification “need not disclose what is well known in the art” is “merely a rule of supplementation, not a substitute for a basic enabling disclosure.” 108 F.3d at 1366. The information missing from the ‘935 Patent—any concrete guidance on how to achieve the claimed ± 0.5 cN fluctuation performance and $\geq 99.5\%$ covering power across the full thickness and materials range—is precisely the type of basic enabling disclosure that must appear in the patent itself, not be left to the general skill of the art or to post-hoc experimentation by others.

For the reasons set forth above—including the complex viscoelastic and multi-layer interactions, the breadth of carrier and adhesive materials and the 3-10 μm thickness range, the sparse and non-representative data, and the absence of generalizable design rules and measurement protocols—the ‘935 Patent does not

enable a POSITA to practice claim 1 across its full scope without undue experimentation.

Claim 1 is therefore are not enabled under 35 U.S.C. § 112(a).

2. Claims 2-7, 9, 11, 13-18 and 21-24

Dependent Claims 2-7, 9, 11, 13-18 and 21-24 further limit the structures or numerical parameters of independent claim 1. However, none of the challenged dependent claims further clarify the scope of claim with respect to the enablement issues identified above.

Claims 2-7, 9, 11, 13-18 and 21-24 are similarly not enabled by the '935 Patent. Claims 2-3 further limit the thicknesses of the various limitations of claim 1. Claim 4 further limits the wavelength range of transmissibility for UV radiation. Claims 5-9, 11, 13-18 and 21-23 further define the structures of the all-over varnish layer. Claim 24 further defines the numerical range of force for tearing the all-over varnish layer off the carrier film. None of these dependent limitations address the issues related to composition, thickness and material of the carrier and all-over varnish layers, fluctuations in the force amplitude and thus they do not mitigate the enablement problems shown herein with respect to Claim 1.

Dependent Claims 2-7, 9, 11, 13-18 and 21-24 likewise should be canceled because they do not in any way address the undue experimentation issues required

to demonstrate enablement, included in those dependent claims by virtue of their dependence from independent claim 1.

3. Claim 25

Claim 25 recites:

25. A decorative foil comprising a carrier film and an all-over varnish layer, wherein the carrier film has a thickness in the range of from 3.0 μm to 10.0 μm , and

wherein the all-over varnish layer has a covering power of more than or equal to 99.5%, in the case of a decoration of a continuous solid surface and a decoration or point perception of more than or equal to 99.5%, in the case of a decoration of a 10% halftone area.

Ex-1001, 22:38-47

Claim 25 recites a similarly broad genus of decorative foils, again with carrier films having thicknesses from 3.0 μm to 10.0 μm , and imposes a stringent functional limitation requiring “covering power of more than or equal to 99.5%, in the case of a decoration of a continuous solid surface and a decoration or point perception of more than or equal to 99.5%, in the case of a decoration of a 10% halftone area.” Ex-1001, 20:19–23.

As with claim 1, whether a decorative foil meets this covering-power limitation cannot be known from its structure alone and must be established by testing. Yet, the '935 Patent discloses only one working example achieving the covering-power requirement—a decorative foil with a 5.7 μm carrier film producing 100% covering power—and a comparative 12 μm example showing only 99% covering power. The '935 Patent provides no examples or specific guidance for achieving 99.5% covering power at any other thickness within the claimed 3-10 μm range. Ex-1002, ¶¶59, 60, 66, 70

The same mechanisms that govern tear-off force fluctuations also influence the covering powering mechanism. Adhesive fibril formation, stick-slip behavior, cohesive-zone propagation, and rate-dependent filamentation effects determine whether the all-over varnish layer transfers uniformly to the target substrate or leaves microscopic and macroscopic gaps and holes that reduce covering power. Ex-1002, ¶¶25, 50.

The '935 Patent, however, again relies on a simplistic thickness-driven neutral-fiber narrative and does not provide a mechanistic or empirical framework that links carrier thickness, adhesive properties, peel rate, angle, or surface roughness to the 99.5% covering-power threshold. Without such understanding, a POSITA cannot predict which combinations of thickness, materials, and process conditions will yield

99.5% covering power, particularly at thicknesses near 10 μm where the '935 Patent's own data show performance degradation. Ex-1002, ¶63.

Data Deficiency for Covering Power Across the Claimed Range

The '935 Patent's covering-power data are limited to a single 5.7 μm success at 100% covering power and a single 12 μm example at 99% covering power. (Ex-1001 at 20:50–55.) This sparse dataset provides no information about performance at 3 μm , 4 μm , 6 μm , 8 μm , or 10 μm , nor any explanation of how covering power varies with thickness or how to control the underlying variables to maintain $\geq 99.5\%$ covering power. Ex-1002, ¶60.

Given that covering power falls from 100% to 99% over the jump from 5.7 μm to 12 μm , and that the same multi-variable viscoelastic and adhesive phenomena govern transfer quality, it is not reasonable to assume a simple, linear relationship that could be interpolated or extrapolated. Without additional examples or design rules, a POSITA would be left to trial-and-error experimentation across the 3-10 μm range to find combinations that achieve the 99.5% requirement, if they exist. Ex-1002, ¶60-63.

Moreover, the '935 Patent does not provide a concrete, objective method for measuring “covering power” or for identifying and counting “defects” or “holes,”

leaving the POSITA to develop and validate measurement protocols as part of the same trial-and-error endeavor.

As with fluctuations, the lack of a specified covering-power measurement protocol aggravates the enablement problem. A POSITA would have to choose instrumentation, inspection conditions, criteria for what counts as a defect, and statistical methods for computing percentages, all without guidance. Different reasonable choices will produce different numerical “covering power” values, complicating any attempt to systematically design foils that meet a 99.5% threshold. The patent effectively asks the field to invent both the measurement methodology and the structural/process configurations needed to hit that numerical target. Ex-1002, ¶¶60-63.

Therefore, Claim 25 recites a broad structural genus with a stringent covering-power requirement, supported only by a single 5.7 μm success and a non-compliant 12 μm comparative example. The ‘935 Patent does not provide sufficient mechanistic understanding, empirical data, or measurement protocol to allow a POSITA to design and identify foils that reliably meet the 99.5% covering-power requirement across the full 3-10 μm thickness range. Claim 25 is therefore not enabled across its full scope.

Screening Across the Genus Constitutes Undue Experimentation

The scope of required experimentation is substantial as identifying compliant decorative foils requires extensive experimentation across the entire 3-10 μm thickness range for both functional limitations. A POSITA would need to: (1) establish and validate measurement protocols for chaotic force-fluctuation analysis and defect detection; (2) control multiple interacting variables affecting both fluctuations and covering power (including carrier material, adhesive system, peel angle, rate, and substrate/adhesive application conditions); and (3) screen compositions and constructions across different measurement conditions and thicknesses. The '935 Patent provides no roadmap for this effort. This is precisely the type of unguided, trial-and-error research program that *Wands* and later cases identify as undue experimentation, not routine optimization. The Federal Circuit's precedent in *Wyeth* is on point. There, the court held claims not enabled where the specification provided "only a starting point for further iterative research." *Wyeth & Cordis Corp. v. Abbott Labs.*, 720 F.3d 1380, 1386 (Fed. Cir. 2013).

Here, the '935 Patent provides little more than a single data point at 5.7 μm and a comparative failure at 12 μm , with no teaching about intermediate or lower portions of the claimed range and no design rules for navigating the multi-variable, non-linear behavior the patent's own data reveal.

Idenix Pharms. LLC v. Gilead Scis. Inc. further confirms that requiring a POSITA to screen a broad structural genus to identify those compositions that satisfy a functional requirement constitutes undue experimentation, “even if routine.” 941 F.3d 1149, 1163 (Fed. Cir. 2019). The required screening here is far from routine—it would involve sophisticated fluctuation and defect analysis across a broad, largely unexplored genus in an unpredictable field.

The Federal Circuit in *Genentech* emphasized that inventors “knew how to enable that which they had invented.” 108 F.3d 1361, 1367 (Fed. Cir. 1997). The ‘935 Patent shows, at most, that the inventors knew how to produce one specific decorative foil—a 5.7 μm carrier construction under undisclosed test conditions—that meets the ± 0.5 cN fluctuation requirement and the 99.5% covering-power requirement. It does not teach a general method by which a POSITA could achieve those performance metrics across the full 3-10 μm thickness range and across the breadth of permitted carrier materials and adhesive systems recited in the claims. Ex-1002, ¶160.

Nor can these deficiencies be cured by appealing to “general knowledge” in the art. *Genentech* cautioned that the principle that a specification “need not disclose what is well known in the art” is “merely a rule of supplementation, not a substitute for a basic enabling disclosure.” 108 F.3d at 1366. The information missing from the

‘935 Patent—any concrete guidance on how to achieve the claimed ± 0.5 cN fluctuation performance and $\geq 99.5\%$ covering power across the full thickness and materials range—is precisely the type of basic enabling disclosure that must appear in the patent itself, not be left to the general skill of the art or to post-hoc experimentation by others.

For the reasons set forth above—including the complex viscoelastic and multi-layer interactions, the breadth of carrier and adhesive materials and the 3-10 μm thickness range, the sparse and non-representative data, and the absence of generalizable design rules and measurement protocols—the ‘935 Patent does not enable a POSITA to practice claim 25 across its full scope without undue experimentation.

B. Ground 2: 1-7, 9, 11, 13-18 and 21-25 are unpatentable under AIA 35 U.S.C. § 112(a) as failing to satisfy the written description requirement.

The written description requirement of 35 U.S.C. § 112(a) asks whether “the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). For genus claims, possession of a single species does not necessarily give possession of all species in the genus. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*,

119 F.3d 1559, 1568 (Fed. Cir. 1997). That concern is “especially acute with genus claims that use functional language to define the boundaries of a claimed genus.”

Ariad, 598 F.3d at 1349.

Here, claims 1 and 25 define broad genera of decorative foils solely by a 3.0–10.0 μm carrier thickness and stringent functional performance metrics (± 0.5 cN fluctuations and $\geq 99.5\%$ covering power), yet the ‘935 Patent discloses only a single working embodiment at 5.7 μm and a failed comparative example at 12 μm . As discussed below [cite], a “one-species plus theory” disclosure does not demonstrate possession of the full claimed genera.

1. Claim 1

Claim 1 requires “fluctuations in the force amplitude around its average in a range of from more than or equal to -0.5 cN to less than or equal to 0.5 cN” for decorative foils whose carrier film thickness lies anywhere between 3.0 μm and 10.0 μm . The ‘935 Patent, however, demonstrates possession of this functional limitation at only a single thickness: 5.7 μm . Ex-1002, ¶59.

Nowhere does the ‘935 Patent articulate a unifying structural feature or reproducible process recipe that would allow a POSITA to visualize or recognize additional members of the claimed functional genus within the 3-10 μm span. No working examples, guidance, or methodology appear for achieving the ± 0.5 cN

fluctuation requirement with 3.0 μm , 4.0 μm , 6.0 μm , 8.0 μm , or 10.0 μm carrier films. This omission covers the vast majority of the claimed genus. Ex-1002, ¶59-64.

The '935 Patent's own comparative example at 12 μm —producing fluctuations of approximately ± 1 cN as mentioned in the text, and about ± 1.8 cN if the 7.4 cN spike in figure 9b is included—demonstrates that the inventors did not possess a general method for controlling fluctuations across different thicknesses. The '935 Patent shows possession of a specific solution (5.7 μm) but not the broader functionally defined genus bounded by the ± 0.5 cN requirement. The comparative failure at 12 μm , coupled with complete silence at 9-10 μm (the claimed hard edge), underscores non-possession of the upper portion of the range. Ex-1002, ¶59-64.

The '935 Patent attempts to explain performance primarily through a neutral-fiber bending theory, even though the record and prior art show that fluctuation behavior arises from a complex interaction of variables, including adhesive fibril formation, stick-slip phenomena, cohesive-zone propagation, peel angle, rate, and interfacial adhesive properties. The detailed mathematical treatment of neutral-fiber position, without corresponding examples or rules across the claimed thickness range, demonstrates that the inventors had a hypothesis about why 5.7 μm worked—not possession of a general class of decorative foils achieving the claimed fluctuation performance from 3-10 μm . Ex-1002, ¶59-64.

The dramatic difference between the 5.7 μm performance ($<\pm 0.5$ cN fluctuations) and the 12 μm performance (± 1 cN or ± 1.8 cN) shows that thickness changes produce large, non-linear changes in performance. Non-linear behavior of this sort defeats any inference that one success at 5.7 μm evidences possession of the remainder of the range. In such a regime, each thickness regime may require different construction choices or optimization, which the '935 Patent does not identify. Ex-1002, ¶59.

In an unpredictable, multi-variable field, a single working embodiment at 5.7 μm plus a failed example at 12 μm , with no examples or rules for 3, 4, 6, 8, or 10 μm , does not “reasonably convey” to a POSITA that the inventors had possession of the entire 3-10 μm genus of decorative foils meeting the ± 0.5 cN fluctuation requirement. Under *Ariad* and *Eli Lilly*, claim 1 therefore lacks adequate written description.

Further, claim 1 suffers from a selective disclosure pattern. The '935 Patent provides detailed disclosure for a single thickness (5.7 μm) that allegedly meets both the ± 0.5 cN fluctuation requirement and the 99.5% covering-power requirement, but is completely silent as to successful examples at any other thickness within the claimed range. This “one-species plus theory” presentation reads as knowledge of a

single working embodiment rather than possession of the full genus bounded by the functional results.

“A genus can be sufficiently disclosed by ‘either a representative number of species falling within the scope of the genus or structural features common to the members of the genus so that one of skill in the art can visualize or recognize the members of the genus.’” *Ariad*, 598 F.3d at 1350 (internal citations omitted). The problem “is especially acute with genus claims that use functional language to define the boundaries of a claimed genus.” *Id.* at 1349.

Claim 1 define its genera by functional language—requiring particular fluctuation behavior and covering power performance across a broad structural range. These functional boundaries make the written description requirement more demanding. The ‘935 Patent satisfies neither prong of the *Ariad* test: (1) representative species: The ‘935 Patent provides only a single working example at 5.7 μm within the claimed 3.0–10.0 μm range, plus a failed comparative example at 12 μm . One success and one failure do not constitute a “representative number of species” for a 7 μm -wide functional genus in a complex, non-linear field, or (2) common structural features: The 935 Patent does not identify “structural features common to the members of the genus” that achieve the claimed fluctuation or covering-power performance. Thickness, standing alone, is not that common feature.

The '935 Patent itself ties performance to multi-variable mechanics (peel angle, rate, interfacial adhesive behavior, construction irregularities) that are not claimed and not taught as a generalizable recipe. Ex-1002, ¶59.

The dramatic performance differences between the 5.7 μm example ($<\pm 0.5$ cN fluctuations, 100% covering power) and the 12 μm example (± 1 cN/ ± 1.8 cN fluctuations, 99% covering power) show that small thickness changes produce large, non-linear performance changes. Non-linear behavior of this sort makes extrapolation across the claimed range unreliable and underscores that possession of one species (5.7 μm) does not equate to possession of other species within the 3-10 μm genus. Ex-1002, ¶59.

For claim 1, the functional requirements define the genus boundaries. For a broad, functional claim to meet the written description requirement, the patentee must demonstrate that he “has invented species sufficient to support a claim to the functionally-defined genus.” *Ariad*, 598 F.3d at 1349. Under *Eli Lilly*, possession of a single species does not demonstrate possession of the entire genus, particularly where the genus is defined by result rather than structure. *Eli Lilly*, 119 F.3d at 1568.

Here, the '935 Patent does not identify any structural fingerprint that characterizes all 3-10 μm carriers meeting the ± 0.5 cN and 99.5% performance criteria. The neutral-fiber narrative does not supply the missing common structural

features or representative coverage; it merely posits a correlational mechanism without demonstrating additional embodiments beyond 5.7 μm . Ex-1002, ¶59.

One compliant point (5.7 μm) and one failure (12 μm) are not representative of the full 3-10 μm span, particularly near the upper edge (9–10 μm), where no data are provided. The conclusory statement that 3-10 μm carriers “behave[] particularly homogeneously” is not a substitute for data showing that the inventors actually possessed such behavior across the range. (See Ex-1001 at 19:1–5.) Ex-1002, ¶59-64.

Nor does the mere inclusion in claim 1 of the 3.0-10.0 μm thickness range and the recited functional limitations demonstrate that the inventors possessed decorative foils achieving these performances across the full range. “[W]hile it is true that original claims are part of the original specification, that truism fails to address the question whether original claim language necessarily discloses the subject matter that it claims.” *Ariad*, 598 F.3d at 1349. A “mere wish or plan” for obtaining the claimed invention is not adequate written description. *Eli Lilly*, 119 F.3d at 1566.

The pattern of disclosure in the ‘935 Patent also reflects classic overclaiming relative to what the inventors actually described. The claims sweep in broad genera—multiple carrier materials and a 3-10 μm thickness range, bounded only by functional performance metrics (± 0.5 cN fluctuations and $\geq 99.5\%$ covering power)—while the specification provides detailed support for, at most, a single working

thickness at 5.7 μm and a failed comparison at 12 μm . Ex-1002, ¶¶59-64. There is no disclosure of successful species anywhere else in the claimed thickness range and no general design rule that would allow a POSITA to recognize which additional constructions belong to the claimed classes.

This pattern parallels *Brita LP v. Int’l Trade Comm’n*, where the Federal Circuit held that a patent disclosing only one type of filter meeting a performance metric could not support a broad genus claim to all filter types meeting that metric, citing *Ariad’s* principle that possession of one species does not necessarily demonstrate possession (or enablement) of all species in a genus. *See Brita LP v. ITC*, No. 24-1098 (Fed. Cir. Oct. 15, 2025) (citing *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1349 (Fed. Cir. 2010)). Here, as in *Brita*, the patentees described only one working species at a specific thickness using undisclosed test conditions, yet sought to monopolize a much broader genus of structures and performances they had neither sufficiently disclosed nor shown they actually possessed.

The Federal Circuit in *Genentech* explained that inventors “knew how to enable that which they had invented.” 108 F.3d 1361, 1367 (Fed. Cir. 1997). What the inventors had actually invented and demonstrated here was, at most, a specific solution—a decorative foil with a 5.7 μm carrier film that happens to meet the ± 0.5 cN fluctuation requirement and the 99.5% covering-power requirement under the

inventors' undisclosed measurement conditions. It does not show that they had invented, described, or otherwise possessed the full 3-10 μm classes of decorative foils that achieve those targets across the range of permissible carrier and adhesive systems. In written-description terms, the patentees claimed significantly more than they actually disclosed.

In light of the breadth of the fluctuation and covering-power limitations, the absence of representative examples across that breadth, and the lack of any articulated structural or process-based theory linking specific configurations to the claimed performance, the '935 Patent fails to demonstrate that the inventors were in possession of the full scope of the genera recited in claim 1 as of the filing date. The '935 Patent shows, at most, possession of a single working thickness (5.7 μm) under undisclosed conditions, not of all 3-10 μm carriers meeting the ± 0.5 cN fluctuation boundary and 99.5% covering-power boundary. Ex-1002, ¶¶59-64.

Accordingly, claim 1 lacks adequate written description under 35 U.S.C. § 112(a).

2. Claims 2-7, 9, 11, 13-18 and 21-24

Dependent Claims 2-7, 9, 11, 13-18 and 21-24 further limit the structures or numerical parameters of independent claim 1. However, none of the challenged

dependent claims further clarify the scope of claim with respect to the written description issues identified above.

Claims 2-7, 9, 11, 13-18 and 21-24 are similarly not enabled by the '935 Patent. Claims 2-3 further limit the thicknesses of the various limitations of claim 1. Claim 4 further limits the wavelength range of transmissibility for UV radiation. Claims 5-9, 11, 13-18 and 21-23 further define the structures of the all-over varnish layer. Claim 24 further defines the numerical range of force for tearing the all-over varnish layer off the carrier film. None of these dependent limitations address the issues related to composition, thickness and material of the carrier and all-over varnish layers, fluctuations in the force amplitude and thus they do not mitigate the written description problems shown herein with respect to Claim 1.

Dependent Claims 2-7, 9, 11, 13-18 and 21-24 likewise should be canceled because they do not in any way address the written description issues required to demonstrate possession of the claimed invention, included in those challenged dependent claims by virtue of their dependence from independent claim 1.

3. Claim 25

Claim 25 recites the same 3.0-10.0 μm carrier thickness range and imposes a functional limitation requiring “covering power of more than or equal to 99.5%, in the case of a decoration of a continuous solid surface and a decoration or point

perception of more than or equal to 99.5%, in the case of a decoration of a 10% halftone area.” Ex-1001, 22:38-47.

Again, the ‘935 Patent demonstrates the claimed performance only at 5.7 μm . The specification discusses 100% covering power at 5.7 μm , while the 12 μm example fails at 99% covering power. As with claim 1, the ‘935 Patent provides no working examples anywhere else within the 3-10 μm range. No disclosure appears of how to achieve 99.5% (or higher) covering power at 3.0 μm , 4.0 μm , 6.0 μm , 8.0 μm , or 10.0 μm .

The drop from 100% to 99% with a modest thickness change confirms that covering-power performance is highly sensitive to thickness and other interacting variables, yet the ‘935 Patent does not supply additional examples or design rules to extend beyond the single 5.7 μm embodiment. Absent representative data or a common structural principle, the record does not show possession of the broader genus of decorative foils that maintain $\geq 99.5\%$ covering power across the full 3-10 μm range.

The ‘935 Patent further fails to disclose an objective or generalizable method for identifying members of the claimed “99.5% covering power” genus. It does not identify any defect-detection modality, thresholding rule, transfer-uniformity

principle, or structural fingerprint that would allow a POSITA to recognize which constructions and thicknesses belong to the claimed class.

Instead, the ‘935 Patent defines covering power in circular terms—as a “measure of the number of defects”—without specifying what counts as a “defect” or “hole,” how they are detected, or what size or density thresholds correspond to 99.5% performance. (See Ex-1001 at 4:50-54.) Against that backdrop, disclosing a single 5.7 μm foil with 100% covering power and a 12 μm comparative foil with 99% covering power does not demonstrate possession of the entire genus of 3-10 μm decorative foils achieving $\geq 99.5\%$ covering power. Ex-1002, ¶50.

As with claim 1, the written description record for claim 25 shows, at most, possession of a narrow species (5.7 μm under unspecified test conditions) that satisfies the claimed covering-power requirement, not possession of the full genus of 3-10 μm carriers maintaining $\geq 99.5\%$ covering power.

Further, claim 25 suffers from a selective disclosure pattern. The ‘935 Patent provides detailed disclosure for a single thickness (5.7 μm) that allegedly meets both the ± 0.5 cN fluctuation requirement and the 99.5% covering-power requirement, but is completely silent as to successful examples at any other thickness within the claimed range. This “one-species plus theory” presentation reads as knowledge of a

single working embodiment rather than possession of the full genus bounded by the functional results.

“A genus can be sufficiently disclosed by ‘either a representative number of species falling within the scope of the genus or structural features common to the members of the genus so that one of skill in the art can visualize or recognize the members of the genus.’” *Ariad*, 598 F.3d at 1350 (internal citations omitted). The problem “is especially acute with genus claims that use functional language to define the boundaries of a claimed genus.” *Id.* at 1349.

Claim 25 defines its genera by functional language—requiring particular fluctuation behavior and covering power performance across a broad structural range. These functional boundaries make the written description requirement more demanding. The ‘935 Patent satisfies neither prong of the *Ariad* test: (1) representative species: The ‘935 Patent provides only a single working example at 5.7 μm within the claimed 3.0–10.0 μm range, plus a failed comparative example at 12 μm . One success and one failure do not constitute a “representative number of species” for a 7 μm -wide functional genus in a complex, non-linear field, or (2) common structural features: The 935 Patent does not identify “structural features common to the members of the genus” that achieve the claimed fluctuation or covering-power performance. Thickness, standing alone, is not that common feature.

The '935 Patent itself ties performance to multi-variable mechanics (peel angle, rate, interfacial adhesive behavior, construction irregularities) that are not claimed and not taught as a generalizable recipe. Ex-1002, ¶¶59-64.

The dramatic performance differences between the 5.7 μm example ($<\pm 0.5$ cN fluctuations, 100% covering power) and the 12 μm example (± 1 cN/ ± 1.8 cN fluctuations, 99% covering power) show that small thickness changes produce large, non-linear performance changes. Non-linear behavior of this sort makes extrapolation across the claimed range unreliable and underscores that possession of one species (5.7 μm) does not equate to possession of other species within the 3-10 μm genus. Ex-1002, ¶¶59-64.

For claim 25, the functional requirements define the genus boundaries. For a broad, functional claim to meet the written description requirement, the patentee must demonstrate that he “has invented species sufficient to support a claim to the functionally-defined genus.” *Ariad*, 598 F.3d at 1349. Under *Eli Lilly*, possession of a single species does not demonstrate possession of the entire genus, particularly where the genus is defined by result rather than structure. *Eli Lilly*, 119 F.3d at 1568.

Here, the '935 Patent does not identify any structural fingerprint that characterizes all 3-10 μm carriers meeting the ± 0.5 cN and 99.5% performance criteria. The neutral-fiber narrative does not supply the missing common structural

features or representative coverage; it merely posits a correlational mechanism without demonstrating additional embodiments beyond 5.7 μm . Ex-1002, ¶59.

One compliant point (5.7 μm) and one failure (12 μm) are not representative of the full 3-10 μm span, particularly near the upper edge (9–10 μm), where no data are provided. The conclusory statement that 3-10 μm carriers “behave[] particularly homogeneously” is not a substitute for data showing that the inventors actually possessed such behavior across the range. (See Ex-1001 at 19:1–5.)

Nor does the mere inclusion in claim 25 of the 3.0-10.0 μm thickness range and the recited functional limitations demonstrate that the inventors possessed decorative foils achieving these performances across the full range. “[W]hile it is true that original claims are part of the original specification, that truism fails to address the question whether original claim language necessarily discloses the subject matter that it claims.” *Ariad*, 598 F.3d at 1349. A “mere wish or plan” for obtaining the claimed invention is not adequate written description. *Eli Lilly*, 119 F.3d at 1566.

The pattern of disclosure in the ‘935 Patent also reflects classic overclaiming relative to what the inventors actually described. The claims sweep in broad genera—multiple carrier materials and a 3-10 μm thickness range, bounded only by functional performance metrics (± 0.5 cN fluctuations and $\geq 99.5\%$ covering power)—while the specification provides detailed support for, at most, a single working

thickness at 5.7 μm and a failed comparison at 12 μm . There is no disclosure of successful species anywhere else in the claimed thickness range and no general design rule that would allow a POSITA to recognize which additional constructions belong to the claimed classes.

This pattern parallels *Brita LP v. Int’l Trade Comm’n*, where the Federal Circuit held that a patent disclosing only one type of filter meeting a performance metric could not support a broad genus claim to all filter types meeting that metric, citing *Ariad’s* principle that possession of one species does not necessarily demonstrate possession (or enablement) of all species in a genus. *See Brita LP v. ITC*, No. 24-1098 (Fed. Cir. Oct. 15, 2025) (citing *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1349 (Fed. Cir. 2010)). Here, as in *Brita*, the patentees described only one working species at a specific thickness using undisclosed test conditions, yet sought to monopolize a much broader genus of structures and performances they had neither sufficiently disclosed nor shown they actually possessed.

The Federal Circuit in *Genentech* explained that inventors “knew how to enable that which they had invented.” 108 F.3d 1361, 1367 (Fed. Cir. 1997). What the inventors had actually invented and demonstrated here was, at most, a specific solution—a decorative foil with a 5.7 μm carrier film that happens to meet the ± 0.5 cN fluctuation requirement and the 99.5% covering-power requirement under the

inventors' undisclosed measurement conditions. It does not show that they had invented, described, or otherwise possessed the full 3-10 μm classes of decorative foils that achieve those targets across the range of permissible carrier and adhesive systems. In written-description terms, the patentees claimed significantly more than they actually disclosed.

In light of the breadth of the fluctuation and covering-power limitations, the absence of representative examples across that breadth, and the lack of any articulated structural or process-based theory linking specific configurations to the claimed performance, the '935 Patent fails to demonstrate that the inventors were in possession of the full scope of the genera recited in claims 1 and 25 as of the filing date. The '935 Patent shows, at most, possession of a single working thickness (5.7 μm) under undisclosed conditions, not of all 3-10 μm carriers meeting the ± 0.5 cN fluctuation boundary and 99.5% covering-power boundary.

Claim 25 therefore lacks adequate written description under § 112(a).

C. Ground 3: Claims 1-7, 9, 11, 13-18 and 21-25 are unpatentable under AIA 35 U.S.C. § 112(b) as failing to set forth subject matter that the named inventors regarded as the invention.

A patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with

reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). A claim is indefinite if, read in light of the specification, it fails to inform a POSITA “with reasonable certainty” where the boundary lies. When a measured number marks the boundary, the patent must supply an objective method to obtain it. Where, as here, a numerical performance boundary defines infringement, the patent must provide a single, objective way to determine that number; leaving it to competing methodologies defeats the *Nautilus* standard.

1. Claim 1

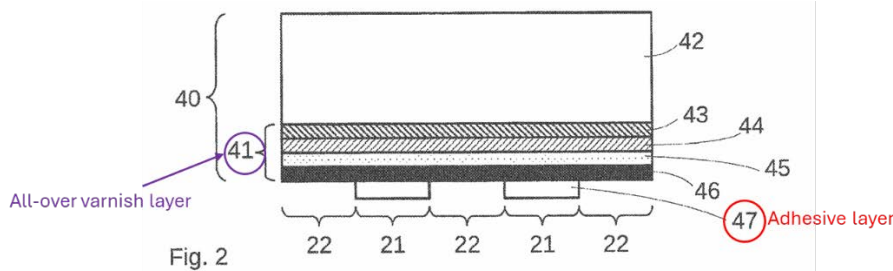
Claim 1 Is Indefinite as to the All-Over Varnish Layer Construction and Thickness

The indefiniteness in claim 1 begins even before the fluctuation limitation, with the basic construction of the “all-over varnish layer.” The 935 Patent defines the all-over varnish layer as including “at least one detachment layer and/or at least one protective varnish layer and/or at least one decorative layer and/or at least one primer layer and/or at least one adhesive layer and/or at least one color layer.” (Ex-1001 at 3:1–5; 15:46–49.) Within the 935 Patent, each of these layers is described, but the figures and reference numerals consistently depict the adhesive layer 47 as separate

from the all-over varnish layer 41. (*See, e.g.*, Ex-1001 at 20:43–55; figs. 2–5.) Ex-1002, ¶40.

In describing figures 1 and 2, the ‘935 Patent explains that figure 2 has “the same structure as shown in Fig. 1, except that an adhesive layer 47 covers a surface of the all-over varnish layers 41 in the first regions 21 and does not cover it in the second regions 22,” which implies that the adhesive layer sits on top of the all-over varnish layer rather than within it. (Ex-1001 at 13:66-14:3.) A POSITA cannot tell from these conflicting disclosures whether the adhesive layer is inside or outside the claimed “all-over varnish layer,” or whether the patent contemplates one adhesive layer or two, and that uncertainty directly affects where the claimed tear-off interface is located. Ex-1002, ¶40.

Other than the adhesive layer described as 47 in Fig. 2, 3, 4, and 5, there is no other adhesive layer described in the specification. The description of Fig. 1 (and Fig. 2) confusingly states that “...except that an adhesive layer 47 covers a surface of the all-over varnish layer 41....” (Ex-1001, 13:67-14:1.), such that the adhesive layer is either not a part of the all-over varnish layer or that there is some additional undefined adhesive layer, which would complicate any peel testing. Ex-1002, ¶40.



(Ex-1001, fig. 2 (annotation added))

The disclosure of layer thicknesses compounds this ambiguity. The all-over varnish layer is said to have a thickness “from 1.0 to 2.5 μm , in particular from 1.0 to 1.7 μm .” (Ex-1001 at 2:36-37.) Yet the component layers are given thickness ranges that, in many plausible combinations, cannot be reconciled with that “in particular” range. For example, the detachment layer is 0.01–0.50 μm , the protective varnish layer is 0.5–3 μm (or 0.8–1.3 μm “in particular”), the decorative layer is 0.08–0.50 μm , and the primer layer is 0.1–2 μm (preferably 0.2–0.8 μm). (Ex-1001 at 3:55–56; 4:60–62; 5:7–8; 6:40–41.) No thickness is provided for the adhesive or color layers. Many reasonable combinations of these ranges either exceed the stated 1.0–1.7 μm envelope or cannot realistically reach its lower bound, especially if multiple listed layers are present. This strongly suggests that some subset of the listed layers is not actually present in the all-over varnish layer for at least some embodiments, but the patent never clarifies which layers must be present, which may be omitted, or how to identify which configurations fall within the claimed term *all-over varnish layer*. Ex-1002, ¶43–45.

This conflict becomes especially stark when one considers the real-world adhesive thicknesses the patent itself contemplates. The 935 Patent identifies “hot glue, thermoplastic adhesive, a cold glue, [and] a radiation-curable adhesive” as suitable materials. (Ex-1001 at 8:56-58.) Industry guidance, such as the “Foil Stamping Advice” brochure, reports typical adhesive coating thicknesses of about 1.0-1.3 μm for decorative foils—already at or above the lower end of the patent’s 1.0-1.7 μm range for the entire all-over varnish layer. (Ex-1013.) Ex-1002, ¶46.

If the adhesive layer truly resides within the all-over varnish layer as the definition suggests, the adhesive thickness alone would exhaust or exceed the claimed 1.0-1.7 μm “in particular” range, leaving no room for the other constituent layers. If instead the adhesive sits outside the all-over varnish layer to avoid this contradiction, then the definitional passages including “at least one adhesive layer” within the all-over varnish layer are incorrect. Ex-1002, ¶46.

In short, the 935 Patent’s description of the all-over varnish layer—both as to which layers it contains and what thickness it has—is internally inconsistent and incomplete. A POSITA cannot ascertain with reasonable certainty what physical stack the term “all-over varnish layer” denotes, or which combinations of layers and thicknesses fall inside or outside that limitation. Ex-1002, ¶43-47. Because every asserted claim depends on this uncertain structural term, the ambiguity in the

composition and thickness of the all-over varnish layer renders claim 1, and the other asserted claims that recite this limitation, indefinite.

Measurement-Protocol Indefiniteness – Fluctuations

There are several inconsistencies and omissions in the ‘935 Patent’s peel-force measurement system that make the ± 0.5 cN fluctuation limitation effectively impossible to apply in a consistent, objective way. Ex-1002, ¶48.

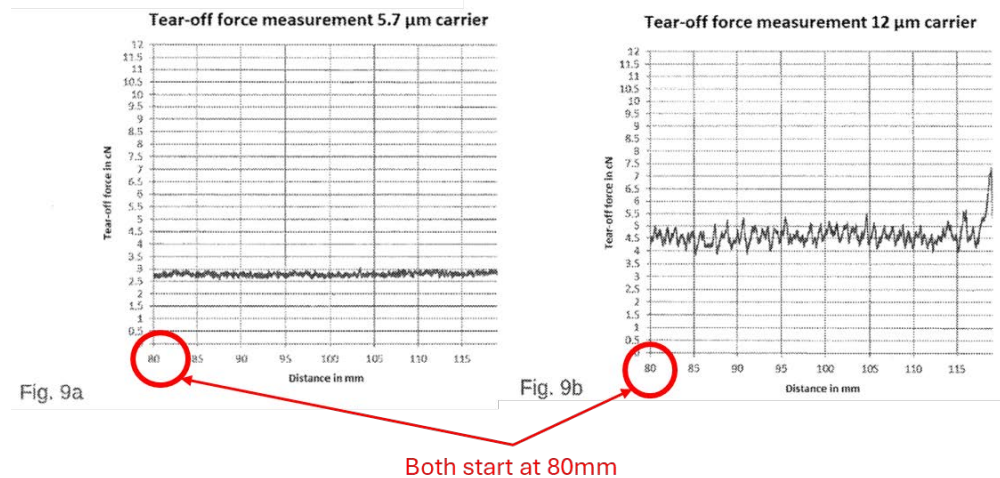
Claim 1’s “fluctuations of the tear-off force around its average” $\leq \pm 0.5$ cN sets a boundary by a measured parameter. Yet, the ‘935 Patent discloses no single, objectively defined measurement protocol capable of producing that number in a reproducible way. Ex-1002, ¶49. When a measured number marks the boundary, the patent must supply an objective method to obtain it. Where, as here, a numerical performance boundary defines infringement, the patent must provide a single, objective way to determine that number; leaving it to competing methodologies defeats the *Nautilus* standard.

Ambiguous Fluctuation Metric and Data Analysis

The ‘935 Patent creates fundamental ambiguity about how to calculate the fluctuation values themselves. The 935 Patent fails to define whether “fluctuations in the force amplitude around its average” means (1) the difference between maximum and minimum force values ($F_{\max} - F_{\min}$), or (2) the difference between average

maximum and average minimum values ($F_{avg_max} - F_{avg_min}$), or (3) some other calculation methodology entirely. These different calculation approaches would yield significantly different fluctuation values for identical test data, making the ± 0.5 cN boundary impossible to determine with reasonable certainty. Ex-1002, ¶50-51

Yet another source of ambiguity in the fluctuation testing is the absence of any description of how the force data in figures 9a and 9b were analyzed. Annotated drawings are provided as follows. Ex-1002, ¶50.



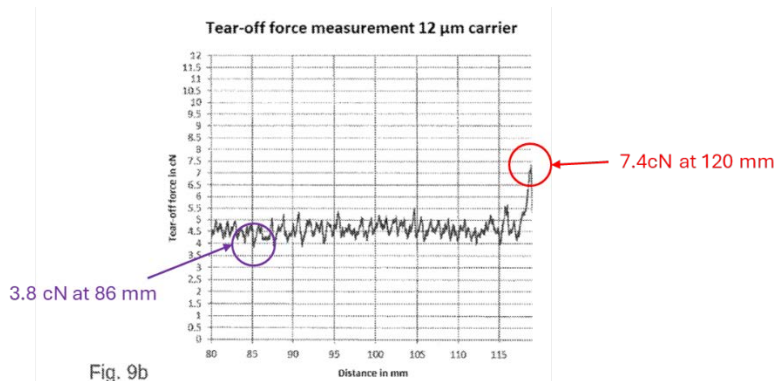
(Ex-1001, fig. 9a, 9b (annotation added))

The force–distance traces in those figures show highly irregular, non-normal, non-sinusoidal oscillations rather than simple periodic fluctuations. Depending on how a POSITA defines the averaging window, detrends the signal, and selects a metric for “fluctuation range,” multiple different numerical “average” and “ ± 0.5 cN” values could be obtained from the same underlying data. Ex-1002, ¶50. As indicated

in sec. I.B. *supra*, researchers in this field employ sophisticated mathematical tools and different quantification approaches can yield different numerical outputs for the same signal. The '935 Patent never identifies which, if any, of these analysis methods was used to compute the alleged ± 0.5 cN fluctuations, further confirming that the claims do not supply a single, objective boundary-setting protocol. Ex-1002, ¶50.

Internal Data Contradiction – 7.4 cN Spike vs. ± 1 cN Text

This calculation ambiguity is demonstrated by the '935 Patent's own irreconcilable data inconsistency. Figure 9b shows a peak force of approximately 7.4 cN for the 12 μ m carrier film at around 120 mm on the distance axis.



(Ex-1001, fig. 9b (annotation added))

However, the 935 Patent states that “fluctuations in the force amplitude of up to ± 1 cN around the average occur in the case of a decorative foil with a carrier film thickness of 12 μ m.” (Ex-1001 at 18:55-60, fig. 9b.) If the 7.4 cN value shown in figure 9b is included in calculations, the actual fluctuation is approximately ± 1.8 cN from the average (roughly a maximum of 7.4 cN and a minimum of 3.8 cN), not the

± 1 cN stated in the 935 Patent. If the 7.4 cN value is excluded as an outlier, no guidance exists on what standard governs such exclusions or how to consistently apply data processing methods. Ex-1002, ¶51.

Missing Core Test Parameters

The '935 Patent compounds the measurement uncertainty by failing to specify critical testing parameters. The patent provides no guidance on: (1) how to define the averaging window for fluctuation calculations; (2) what tear-off angle to maintain; (3) what statistical methods govern fluctuation calculations; (4) how to identify and handle measurement outliers; (5) what data processing methods to apply before calculating fluctuations; (6) sample conditioning temperature and humidity requirements; (7) application technique specifications; and (8) whether the claimed performance applies to raw or processed measurement data.

Peel-Angle and Fixture Indefiniteness

The only angular disclosure associated with the tear-off tests states that “the peel angle between the carrier film 42 and the all-over varnish layer 41 lies in a range of from 0° to 120°, preferably of from 0° to 90°.” (Ex-1001 at 17:55-58.) The incompleteness of the fluctuation test method is further illustrated by the 12 μ m comparative example: the higher “force amplitude” of the fluctuations reported for that sample is consistent with stick-slip adhesive behavior. Ex-1002, ¶52. The peel

angle is the angle of the removing the tape (in this case the carrier film) from the substrate, as shown in the figure below, where θ denotes the peel angle:

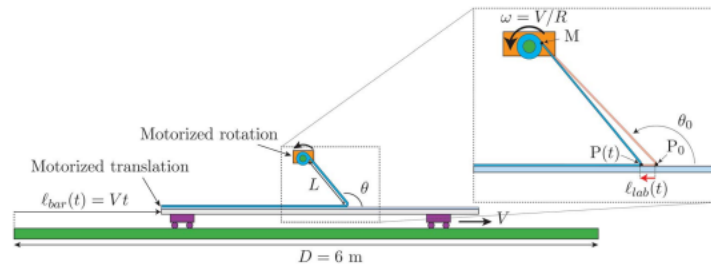


Fig. 1 Scheme of the peeling experiment at controlled velocity V , angle θ and peeled tape length L . The translation velocity V of the rigid bar and the winding velocity $R\omega$ are slaved electronically to each other. $l_{bar}(t)$ is the position of the rigid bar and $l_{lab}(t) = \overline{P_0P}(t)$ is the position of the peeling front in the laboratory frame. M is the location of the point where the winding of the peeled tape proceeds, P_0 is the average location of the peeling point and $P(t)$ is its location as a function of time t . θ_0 is the average peeling angle. We denote $L = |MP_0|$ as the average peeled tape length.

(Ex-1016, Fig. 1)

In those references, the criteria for “large” fluctuations depend sensitively on peel angle—the same adhesive system can exhibit relatively smooth peeling or pronounced stick–slip oscillations depending on the angle at which it is peeled. Yet the ‘935 Patent never identifies which specific peel angle within the disclosed 0° – 120° (preferably 0° – 90°) range was actually used to generate the Figure 9 force traces. A POSITA attempting to determine whether a decorative foil satisfies the ± 0.5 cN limitation would therefore have to conduct trial-and-error peel testing over multiple angles between 0° and 90° simply to guess which angle, if any, matches the undisclosed test geometry. As a result, the ± 0.5 cN boundary would turn on unclaimed, method-contingent angle choices rather than any structural feature of the claimed decorative foil, reinforcing the indefiniteness of claim 1. Ex-1002, ¶18-28.

The '935 Patent also never states whether the carrier was detached pre- or post-transfer to a target substrate, a choice that materially affects both the mean peel force and the fluctuation amplitude. Moreover, the only equipment detail the '935 Patent provides is that “a materials testing machine of the Z005 type from ZwickRoell GmbH & Co. KG was used to record the measured values.” (Ex-1001 at 18:39-44.) The Z005 Product Information guide (Ex-1006) describes a general-purpose materials-testing frame and does not identify any peel-test capability or peel-angle fixtures. To perform a peel test on such a frame, a POSITA would first have to select and acquire a separate peel fixture from among dozens of available grips and fixtures, including both standard and customized options.

As is well known in the art, peel angle is a critical parameter in peel-adhesion testing. Standard references, including *Adhesion and Adhesives Technology* (Ex-1015), explain that 90° and 180° peel geometries are commonly used for pressure-sensitive adhesives, but they are not the only geometries employed in practice. Exhibits 1011, 1012, and 1014 all show that both the average peel force and the variability of that force—including the kind of fluctuations claimed in the '935 Patent—depend sensitively on peel angle. Reflecting this reality, commercial peel-test equipment such as the TL2300 tester is designed to accommodate a wide range of peel angles (e.g., from roughly 22½° to 180°) (Ex-1010.) Ex-1002, ¶53.

In ordinary product-development practice, peel tests are configured to mimic the geometry the product experiences in manufacture and use. For decorative foils, that means selecting a test peel angle that matches the angle at which the carrier is actually removed from the decorated substrate. Yet the '935 Patent never discloses what peel angle the claimed foils experience during application. A POSITA would therefore have to undertake substantial trial-and-error to divine both the appropriate fixture and peel angle. Ex-1002, ¶55. Reasonable but different choices among these fixtures and angles—such as 90° versus 180° peel—produce systematically different mean forces and fluctuation envelopes, so identical specimens could pass or fail the ± 0.5 cN limitation based solely on unclaimed fixture and geometry choices rather than any structural property of the decorative foil. Ex-1002, ¶55.

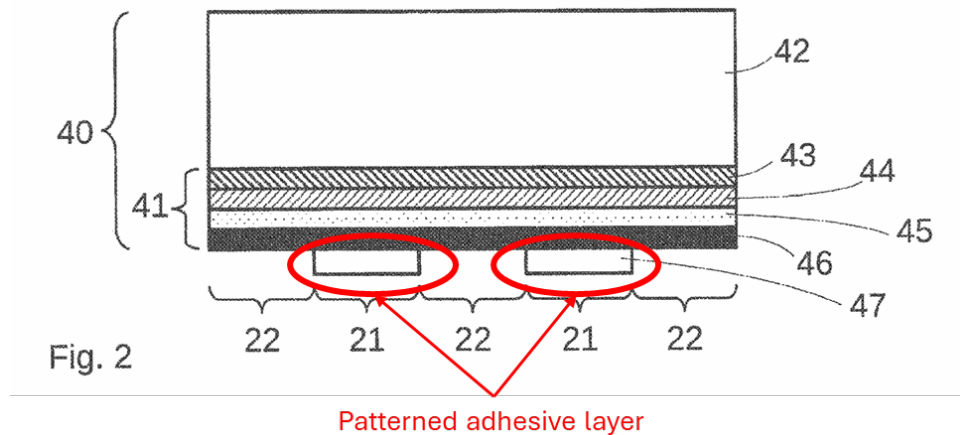
Unspecified adhesive pattern and substrate bonding

The test setup is further indefinite because the patent never states whether the decorative foil was first adhered to a substrate, or how, before the carrier was peeled to generate the force traces in Figures 9a and 9b. In commercial use, the foil is applied to a substrate with an adhesive layer between the all-over varnish layer and the substrate, and the carrier is then removed. The 935 Patent, however, does not say whether that same configuration was used for the fluctuation testing or whether the

carrier film was peeled from a free all-over varnish stack without any substrate. Ex-1002, ¶56.

The '935 Patent also discloses that the adhesive may only be present in “first regions” and absent in “second regions,” such that “an adhesive layer 47 covers a surface of the all-over varnish layers 41 in the first regions 21 and does not cover it in the second regions 22.” (Ex-1001 at 13:66-14:2; figs. 2-5.) In other words, even if the foil is adhered to a substrate, there are multiple possible adhesive-coverage patterns (full-area vs. partial-area coverage) that materially change the effective bond area and peel behavior. The 935 Patent never identifies which adhesive pattern, if any, was used in the fluctuation test. Ex-1002, ¶57.

The '935 Patent does not specify what adhesive pattern was used to apply the foil to the substrate, if the foil was first attached to a substrate prior to the removal of the carrier film. As shown in Figs. 2 – 5 of the '935 Patent, sometimes the adhesive might coat the entirety of the interface between the foil and the substrate, and it might only cover a portion of the surface. This is described in Fig. 2 as “with the same structure as shown in Fig. 1, except that an adhesive layer 47 covers a surface of the all-over varnish layers 41 in the first regions 21 and does not cover it in the second regions 22.” (Ex-1001, 13: 66 – 14:2]. Ex-1002, ¶57.



(Ex-1001, fig. 2 (annotation added))

Because adhesion pattern and the presence or absence of a substrate are core test parameters that strongly affect the measured tear-off force and its fluctuations, leaving them undefined prevents a POSITA from knowing what configuration corresponds to the claimed ± 0.5 cN boundary. That is a further source of indefiniteness under *Nautilus*.

Unspecified application technique

The application technique used to join the carrier/all-over varnish stack to the adhesive/substrate interface is likewise undefined for the fluctuation tests. Standardized peel tests such as those described in Exhibits 1005, 1007, and 1008 ordinarily specify how the adhesive is applied (for example, coating method) and how the adhesive layer is “rolled down” or pressed into contact with the substrate under controlled force, because the application process itself is a critical testing parameter. Exhibit 1015 expressly identifies the roll-down procedure as “a testing

parameter important for PSAs [pressure sensitive adhesives] when determining peel or shear.” Different application techniques—such as hand lamination versus controlled roll-down, variations in roll-down pressure, speed, or number of passes, or process differences between hot-melt and pressure-sensitive systems—produce different real contact areas and bond strengths at the interface, which in turn change both the average peel force and the magnitude of force fluctuations. Ex-1002, ¶58.

The ‘935 Patent, however, does not disclose how the decorative foil specimens for figures 9a and 9b were applied or “rolled down” to any substrate before carrier removal. A POSITA attempting to reproduce the claimed ± 0.5 cN limitation would therefore have to engage in substantial trial-and-error to infer the undisclosed application technique, and different reasonable choices would again cause the measured fluctuations to depend on unclaimed test-setup choices rather than on any structural feature of the claimed decorative foil.

Unspecified Temperature and Sample Conditioning

Basic test-environment parameters are likewise omitted. Standardized peel-adhesion tests, as reflected in Exhibits 1005, 1007, and 1008, ordinarily specify both the measurement temperature and the sample conditioning (time at a defined temperature and humidity before testing), because viscoelastic polymer behavior—and therefore both average peel force and force-fluctuation amplitude—varies

strongly with temperature and prior thermal history. For example, Exhibit 1015 expressly shows that “the modulus (dashed line) of the adhesive [is] a function of the temperature...,” so changes in measurement temperature or conditioning shift the adhesive modulus and dissipation, altering both the mean peel force and the size and “noisiness” of the force oscillations in a peel test. Ex-1002, ¶66.

The ‘935 Patent does not state the measurement temperature, the conditioning time, or the humidity for the Figure 9 tests, nor does it disclose any pre-test conditioning protocol A POSITA attempting to reproduce the claimed ± 0.5 cN boundary would therefore be forced to guess at these environmental parameters and engage in substantial trial-and-error to divine what combination of temperature, humidity, conditioning, and application technique would generate the data presented in the 935 Patent. The absence of any objective environmental specification further prevents the claims from informing a POSITA, with reasonable certainty, where the boundary of infringement lies.

Data Presentation and Mathematical Mismatch

The data presentation itself contains unexplained discrepancies that further compound the measurement uncertainty. Figures 9a and 9b both begin at 80 mm on the distance axis, yet the 935 Patent states test samples had “a length of 41 mm in both tests.” (Ex-1001 at 18:39-44) (stating that “[t]he carrier film 42 to be peeled off

has a width of 13.5 mm and a length of 41 mm in both tests”). If the sample is 41 mm long, the data should span from some starting point to that point plus 41 mm, but the figures show data beginning at 80 mm with no explanation of the test setup or data collection methodology. Ex-1002, ¶¶69, 71.

The claims read as a signed ± 0.5 cN band “around an average,” while the 935 Patent describes the amplitude “regarded absolutely” (i.e., absolute deviation from the mean). (Ex-1001 at 18:55-56) (emphasis added). These are mathematically different concepts: a signed band constrains all signed deviations, whereas an absolute envelope constrains only magnitudes $|F - \bar{F}|$. This irreconcilable mismatch yields competing constructions and underscores the absence of a single boundary-setting protocol. Ex-1002, ¶¶59.

Without objective measurement protocols, different operators testing identical samples could reach opposite conclusions about compliance with the ± 0.5 cN limitation simply by using reasonable but different methodological choices. This creates precisely the “zone of uncertainty” that *Nautilus* prohibits—where the claim boundary depends on unclaimed methodological choices rather than the claim language itself. This is analogous to *Dow v. Nova*, where the patent was found indefinite because it “fail[ed] to teach a person having ordinary skill in the art how to measure the ‘slope of strain hardening,’ which is required to calculate the strain

hardening coefficient.” *Dow Chem. Co. v. Nova Chems. Corp.*, 803 F.3d 620, 635 (Fed. Cir. 2015).

Considering the undefined test parameters, ambiguous layer constructions and thicknesses, ambiguous fluctuation protocols, and circular or subjective performance standards, the fluctuation limitation of claim 1 fails to inform a POSITA, with reasonable certainty, about the scope of the claimed invention.

Claim 1 is therefore indefinite under 35 U.S.C. § 112.

2. Claims 2-7, 9, 11, 13-18 and 21-24

Dependent Claims 2-7, 9, 11, 13-18 and 21-24 further limit the structures or numerical parameters of independent claim 1. However, none of the dependent claims further clarify the scope of claim with respect to the indefiniteness issues identified above.

Claims 2-7, 9, 11, 13-18 and 21-24 are similarly not enabled by the '935 Patent. Claims 2-3 further limit the thicknesses of the various limitations of claim 1. Claim 4 further limits the wavelength range of transmissibility for UV radiation. Claims 5-9, 11, 13-18 and 21-23 further define the structures of the all-over varnish layer. Claim 24 further defines the numerical range of force for tearing the all-over varnish layer off the carrier film. None of these dependent limitations address the issues related to composition, thickness and material of the carrier and all-over

varnish layers, fluctuations in the force amplitude and thus they do not mitigate the indefiniteness problems shown herein with respect to Claim 1.

Dependent Claims 2-7, 9, 11, 13-18 and 21-24 likewise should be canceled because they do not in any way address the indefiniteness issues required to demonstrate compliance with 35 USC 112(b), included in those dependent claims by virtue of their dependence from independent claim 1.

3. Claim 25

Measurement-Protocol and Definition Indefiniteness – Covering Power (Claim 25)

Circular Definition and Subjective Standards for Covering Power

Claim 25 requires “covering power of more than or equal to 99.5%, in the case of a decoration of a continuous solid surface and a decoration or point perception of more than or equal to 99.5%, in the case of a decoration of a 10% halftone area.” (Ex-1001 at 22:38-47.)

The ‘935 Patent defines “covering power” as “a measure of the number of defects in a target substrate decorated with a continuous solid surface. In the case of a 100% covering power, therefore, no defects or holes occur inside this solid surface on the decorated target substrate. The defects can appear microscopically, thus not

able to be resolved by the human eye, or macroscopically, thus able to be resolved by the human eye.” (Ex-1001 at 4:54-56.)

This definition is circular and indefinite, as it defines covering power as “a measure of the number of defects” but fails to define what constitutes a “defect” or “hole.” This creates the “zone of uncertainty” prohibited by *Nautilus*—where identical samples could be deemed compliant or non-compliant depending solely on the observer’s subjective interpretation of undefined terms. *Nautilus*, 572 U.S. at 901; *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1342 (Fed. Cir. 2018) (claims indefinite when they depend on undefined terms).

The 935 Patent does not provide any objective method for measuring “covering power.” Parameters remain undefined, including how to identify and count “defects” or “holes,” what constitutes a microscopic versus macroscopic defect, what instruments to use for defect detection, how to calculate the percentage from defect counts, and how many measurements are needed for reliable results. No threshold size, optical contrast, illumination condition, magnification, or sampling area is specified; thus, different but reasonable inspection set-ups will return different “99.5%” results for the same foil. Ex-1002, ¶25.

The ‘935 Patent’s distinction between defects that are “not able to be resolved by the human eye” versus those “able to be resolved by the human eye” inherently

introduces subjectivity. Different observers examining identical surfaces will inevitably reach different conclusions about defect visibility, making the 99.5% threshold impossible to determine with the reasonable certainty required by *Nautilus*. An objective microscopic criterion could have been specified (e.g., minimum defect size or density), but the patent does not do so.

The 935 Patent describes different test conditions for related measurements. The adhesion test uses a 90° peel angle at 500 mm/min. (Ex-1001 at 3:24-41.) The tear-off test uses a longitudinal direction at 100 mm/min. (Ex-1001 at 18:39-44.) The ‘935 Patent fails to specify which conditions apply to covering power measurement, creating further uncertainty about claim boundaries. A POSITA is left to choose among these inconsistent regimes—or others—without any indication which, if any, defines the legal 99.5% covering-power line.

Taken together, these defects mean that the covering-power limitation of claim 25 depends on undefined, subjective, and method-contingent choices. Claim 25 therefore fails to inform a POSITA, with reasonable certainty, where the 99.5% covering-power boundary lies.

Considering the undefined test parameters, ambiguous layer constructions and thicknesses, ambiguous fluctuation protocols, and circular or subjective performance

standards, the covering-power limitation of claim 25 fail to inform a POSITA, with reasonable certainty, about the scope of the claimed invention.

Claim 25 is therefore indefinite under 35 U.S.C. § 112.

VII. CONCLUSION

For the reasons given above, Petitioner requests institution of PGR for Claims 1-7, 9, 11, 13-18 and 21-25 of the '935 Patent based on each of the grounds specified in this Petition.

Respectfully Submitted,

/Mainak H. Mehta/

Mainak H. Mehta (Reg. No. 46924)

November 12, 2025

CERTIFICATE OF WORD COUNT

Under 37 C.F.R. § 42.24(d), Petitioner certifies that this petition includes 14639 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under § 42.8, certificates of service, word count, and exhibits.

CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(E)(1))

The undersigned certifies pursuant to 37 C.F.R. §§42.6(e) and 42.105 that on November 12, 2025 a true and correct copy of the Petition For Post-Grant Review Of U.S. Patent No. 12,220,935 and Exhibits 1001 through 1018 were served via Federal Express on the Patent Owner at the below correspondence address of record:

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Syosset, NY 11791

Dated: 12NOV2025

Respectfully submitted,

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